Aural Habilitation/Rehabilitation of the Hearing Impaired (3) Introduction to psychosocial aspects, amplification components/characteristics, assistive devices, speech acoustics, speech perception, speech training, parent education, preschool school years of children, confounding factors and their implications on speech perception, auditory development, and travel habits. Prereq: 493 and 494. Consent of instructor necessary.

Senior Seminar in Communication Sciences and Disorders (5) Capstone experience. A writing emphasis. Critical thinking and organizational skills. Prerequisite: Consent of instructor and culminating experience.

BIOCHEMISTRY (186)

10. Introduction to Biochemistry (1) Biochemical principles, including enzymes, metabolism, and the building blocks of life. Prerequisites: 304, 305, and consent of instructor.

304. Introduction to Language Pathology in Children (3) Speech and language development in the normal child. Prerequisites: 304, 305, and consent of instructor. (Same as Special Education 306.)

305. Speech Science I: Phonetics and Acousticsof Speech (3) Basic phonetics including recognition and production of spoken English sounds with analysis of their formation; acoustic characteristics of speech and speech perception.

306. Speech Science II: Anatomy and Physiology (3) Anatomy, physiology and anatomical development of the speech and swallower system. Prerequisites: 304, 305, and consent of instructor. (Same as Special Education 306.)

307. Speech and Language Development (3) Speech and language development in the normal child. Prerequisites: 304, 305, and consent of instructor. (Same as Special Education 306.)

311. Audiology I (3) Basic audiological sciences, including hearing loss, hearing aids, and rehabilitation. Prerequisites: 304, 305, and consent of instructor. (Same as Special Education 306.)

315. Child Language Development (3) The development of language in children. Prerequisites: 304, 305, and consent of instructor. (Same as Special Education 306.)

331. Articulation Disorders (3) Etiology, diagnosis, and treatment of speech and language disorders. Prerequisites: 304, 305, and consent of instructor.

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

401. Introduction to Language Pathology in Children (3) Nature, etiology and treatment of language retardation in children; observations of language therapy techniques. Prerequisite: 300 or consent of instructor.

402. Foreign Language of the Culturally Different Child (3) Speech and language differences of children from different racial, ethnic, or cultural backgrounds. Prerequisite: Consent of instructor.

404. Clinical Practice in Speech-Language Pathology (1-4) Prerequisite: 343 or consent of instructor. Excellent for those who wish to complete their undergraduate coursework. Prerequisite: 343 or consent of instructor. (Same as Special Education 404.)

405. Introductory Plant Physiology (4) Organismal physiology and plant morphology. Prerequisites: 310 and 313. Three lectures and discussion. F, Sp, Su

BIOLOGY (190)

110-130 General Biology (4) Biology 110—Biology of cells, chemical basis of life, cell structure and function, energy metabolism: metabolism (respiration and photosynthesis); development, and evolution of plants and animals. Prerequisites: Chemistry 232 and consent of instructor. (Same as Science 110-130, 111-130, or 112-130 in biology, 111-112 in zoology, 112-113 in botany, and 113-114 in ornithology.

112 Cell Biology (4) Organization and function of the cell. Prerequisites: 110 or 112. Prerequisite: 110 or 112, or consent of instructor. (Same as Science 112.)

150-170 General Biology (4) Biology 150—Biology of plants, growth and development, and reproduction. Prerequisites: Chemistry 232 and consent of instructor. (Same as Science 150-170, 151-171, or 152-172 in botany, and 153-173 in zoology.)

210 Exploring Interpersonal Behavior (3) Introduction to interpersonal behavior. Prerequisite: Consent of instructor.

240. Independent Research in Biochemistry (1-6) Special experimental problems under direction of a staff member. Limited to undergraduates and by consent of department. Prerequisite: 410 or 419. Consent of instructor.

309. Biology of Human Affairs (3) Basic biological processes and their role in determining and preserving an optimal environment. Prerequisite: Consent of instructor.

310. Plant Biology (5) An introduction to the plant kingdom, morphological, genetic, and phylogenetic relationships. Prerequisite: 110 or 111 or 112. Consent of instructor.

321. Introductory Plant Physiology (4) An introduction to the microscopic anatomy and physiology of plants. Prerequisites: 110, 111, 112, or consent of instructor. Consent of instructor.

322. Field Botany (5) Principles of taxonomy, identification, and classification of vascular plants. Prerequisites: 110, 111, 112, or 113. Consent of instructor.

409. Advanced Topics in Biochemistry (5) Selected topics in current research. Prerequisite: 410 or consent of instructor.


411. Thermodynamics (3) Physicochemical principles with application to biological systems. Prerequisite: 310 or consent of instructor. (Same as Science 411.)

419. Cellular and Comparative Biochemistry Lab (2) Experiments with enzymes, nucleic acids, and cell organelles. Chromatography, kinetics, hybridization, and conceptual methods. Prerequisite: 410 or 411. Consent of instructor.

420. Advanced Topics in Biochemistry (3) Selected topics in current research. Prerequisite: 410 or consent of instructor.
procedures, safety precautions in agriculture, biochemistry, microbiology, nutrition, etc. Not for study by chemistry or physics majors or minors. Prereq: Mathematics 120 or equivalent and successful scores on the following: 100, 110, 120, 131-135, 138, 139.


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

473-493 Physical Chemistry (3,3) (Same as Chemistry 473-493.) Prereq: CHEM 245, 251, and 252 or consent of instructor. Students may not receive credit for both 471-473 or 471-472 for both 481 and 483. 471, 472, 481, and 483. Properties of gases, liquids, solids; final states of matter; applications to gas kinetics, liquids, solids, phase equilibria, properties of solutes; introduction to statistical thermodynamics. 481, 483. Molecular model building; introduction to the structure of molecules and their properties. Prereq: 130 or 131, 251, 252, 253 in Chemistry 241, 242. Instructive

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

490 Introductory Polymer Chemistry (3) Fundamental principles involving the role of chemistry in the interrelationship of a polymer system. Relation of molecular structure to bulk properties of polymers. Prereq 350, Prereq. Or Coreq. 481 or 483.

CHILD AND FAMILY STUDIES (245)

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

210 Human Development (3) Concentration through related fields of biology, psychology, sociology, anthropology, philosophy, history, and the arts. Prereq: 220 or consent of instructor. Prereq or Coreq: 481 or 483. F.

211 Development in Infancy and Early Childhood (3) Development from conception through early childhood: interactions among cognitive, emotional, social, moral, noncognitive, nondevelopmental factors. Prereq: 220 or consent of instructor. F.

212 Development in Middle Childhood and Adolescence (3) Interpersonal relationships, moral development, family transitions, middle childhood, developmental disabilities, adolescence, interventions among cognitively, emotionally, behaviorally impaired children, family dynamics in nonnormative families, and nonpreventive interventi. Prereq: 220 or consent of instructor. F.

213 Development in Middle Childhood and Adolescence (3) Interpersonal relationships, moral development, family transitions, middle childhood, developmental disabilities, adolescence, interventions among cognitively, emotionally, behaviorally impaired children, family dynamics in nonnormative families, and nonpreventive interventi. Prereq: 220 or consent of instructor. F.

214 Development in Middle Childhood and Adolescence (3) Interpersonal relationships, moral development, family transitions, middle childhood, developmental disabilities, adolescence, interventions among cognitively, emotionally, behaviorally impaired children, family dynamics in nonnormative families, and nonpreventive interventi. Prereq: 220 or consent of instructor. F.

215 Development in Middle Childhood and Adolescence (3) Interpersonal relationships, moral development, family transitions, middle childhood, developmental disabilities, adolescence, interventions among cognitively, emotionally, behaviorally impaired children, family dynamics in nonnormative families, and nonpreventive interventi. Prereq: 220 or consent of instructor. F.

216 Development in Middle Childhood and Adolescence (3) Interpersonal relationships, moral development, family transitions, middle childhood, developmental disabilities, adolescence, interventions among cognitively, emotionally, behaviorally impaired children, family dynamics in nonnormative families, and nonpreventive interventi. Prereq: 220 or consent of instructor. F.

217 Development in Middle Childhood and Adolescence (3) Interpersonal relationships, moral development, family transitions, middle childhood, developmental disabilities, adolescence, interventions among cognitively, emotionally, behaviorally impaired children, family dynamics in nonnormative families, and nonpreventive interventi. Prereq: 220 or consent of instructor. F.

218 Development in Middle Childhood and Adolescence (3) Interpersonal relationships, moral development, family transitions, middle childhood, developmental disabilities, adolescence, interventions among cognitively, emotionally, behaviorally impaired children, family dynamics in nonnormative families, and nonpreventive interventi. Prereq: 220 or consent of instructor. F.

219 Development in Middle Childhood and Adolescence (3) Interpersonal relationships, moral development, family transitions, middle childhood, developmental disabilities, adolescence, interventions among cognitively, emotionally, behaviorally impaired children, family dynamics in nonnormative families, and nonpreventive interventi. Prereq: 220 or consent of instructor. F.

220 Development in Infancy and Early Childhood (3) Development from conception through early childhood: interactions among cognitive, emotional, social, moral, noncognitive, nondevelopmental factors. Prereq: 220 or consent of instructor. Prereq or Coreq: 481 or 483. F.

221 Early Greek Mythology (3) Archaic Greek religion and mythology, Homer's Iliad and Odyssey, connections between the two, myths from Bronze Age to about 450 B.C. Prereq: 220 or consent of instructor. F.

222 Classical Greek and Roman Mythology (3) Use of myth in literature, history, religion and philosophy of Western civilization. Introduction of Greek myths and the rise of organized religion, Greek religion, and Greek mythology. Prereq: 220 or consent of instructor. F.

223 Film and American Culture (3) (Same as Political Science 223.) American cinema and national identity. Film and popular culture. Prereq: 220 or consent of instructor. F.

224 Introduction to Art History (3) (Same as Fine Arts 224.) Writing-emphasis course. Survey of Greek archaeology from prehistoric times to the Roman period (ca. 3000-100 B.C.). For prehistoric and classical Greece. Prereq: 220 or consent of instructor. F.

225 Film Design (3) (Same as Art 225.) Writing-emphasis course. Survey of Greek archaeology from prehistoric times to the Roman period (ca. 3000-100 B.C.). For prehistoric and classical Greece. Prereq: 220 or consent of instructor. F.

226 Latin American and South American Film (3) (Same as Fine Arts 226.) Writing-emphasis course. Survey of Greek archaeology from prehistoric times to the Roman period (ca. 3000-100 B.C.). For prehistoric and classical Greece. Prereq: 220 or consent of instructor. F.

227 Film and Italian Literature (3) (Same as Italian 227.) Writing-emphasis course. Survey of Greek archaeology from prehistoric times to the Roman period (ca. 3000-100 B.C.). For prehistoric and classical Greece. Prereq: 220 or consent of instructor. F.

228 Film and Japanese Culture (3) (Same as Asian 228.) Writing-emphasis course. Survey of Greek archaeology from prehistoric times to the Roman period (ca. 3000-100 B.C.). For prehistoric and classical Greece. Prereq: 220 or consent of instructor. F.

229 Film and Chinese Cinema (3) (Same as Chinese 229.) Writing-emphasis course. Survey of Greek archaeology from prehistoric times to the Roman period (ca. 3000-100 B.C.). For prehistoric and classical Greece. Prereq: 220 or consent of instructor. F.

230 Film and Canadian Culture (3) (Same as Film Studies 230.) Writing-emphasis course. Survey of Greek archaeology from prehistoric times to the Roman period (ca. 3000-100 B.C.). For prehistoric and classical Greece. Prereq: 220 or consent of instructor. F.

231 Film and Russian Culture (3) (Same as Russian 231.) Writing-emphasis course. Survey of Greek archaeology from prehistoric times to the Roman period (ca. 3000-100 B.C.). For prehistoric and classical Greece. Prereq: 220 or consent of instructor. F.

232 Film and Mexican Film (3) (Same as Film Studies 232.) Writing-emphasis course. Survey of Greek archaeology from prehistoric times to the Roman period (ca. 3000-100 B.C.). For prehistoric and classical Greece. Prereq: 220 or consent of instructor. F.

233 Film and European Film (3) (Same as Film Studies 233.) Writing-emphasis course. Survey of Greek archaeology from prehistoric times to the Roman period (ca. 3000-100 B.C.). For prehistoric and classical Greece. Prereq: 220 or consent of instructor. F.

234 Film and Nordic Film (3) (Same as Film Studies 234.) Writing-emphasis course. Survey of Greek archaeology from prehistoric times to the Roman period (ca. 3000-100 B.C.). For prehistoric and classical Greece. Prereq: 220 or consent of instructor. F.

235 Film and Austrian Film (3) (Same as Film Studies 235.) Writing-emphasis course. Survey of Greek archaeology from prehistoric times to the Roman period (ca. 3000-100 B.C.). For prehistoric and classical Greece. Prereq: 220 or consent of instructor. F.

236 Film and German Film (3) (Same as Film Studies 236.) Writing-emphasis course. Survey of Greek archaeology from prehistoric times to the Roman period (ca. 3000-100 B.C.). For prehistoric and classical Greece. Prereq: 220 or consent of instructor. F.

237 Film and French Film (3) (Same as Film Studies 237.) Writing-emphasis course. Survey of Greek archaeology from prehistoric times to the Roman period (ca. 3000-100 B.C.). For prehistoric and classical Greece. Prereq: 220 or consent of instructor. F.
the world's first legal professionals. Emphasis on under- standing legal institutions in relationship to human society. Class visual aids of Roman law and current text.

401 Foreign Study (1-15)

COLLEGE SCHOLARS HONORS

317-318 College Scholars Seminar (1,3) Sequence on an open area centered on and required of all College Scholars not yet fulfilled. May be repeated. Maximum 8 hours. Satisfactory/Unsatisfactory grading only.

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

380 Theory of Computation (3) Recursive functions, computability, Turing machines, and Halting problem. May be repeated. Maximum 9 hours.

392 College Honors: College Honors (1-15) Topics vary. Emphasis on faculty research. May be repeated. Maximum 9 hours.

382 Roman Civilization (3) Major aspects of ancient Rome, including the Republic and early Empire. Writing-emphasis course.

381 Greek Civilization (3) Major aspects of ancient Greece, including the Archaic, Classical, and Hellenistic periods and their effect on the modern Western and Roman world. Evidence for daily life, religion, trade, and foreign contacts. Architecture, wall paintings, and art. Prereq: One of the following: 232, 234, 290, ancient history (ancient Near East or Ancient Egypt), or consent of Instructor. Writing-emphasis course.

334 Cities and Sanctuaries of the Ancient Greek World (3) Archaeological survey of the development of the Greek city and society from prehistoric times through the Roman period (c. 2000 B.C. - A.D. 200). Includes topography and plans of major cities and sanctuaries, functions of buildings, development of city plan- ning, quality of city life, religious rites and festivals including the Olympic Games. Ancient sites include Mycenae, Athens, Priene, Alexandria, Pergamon, Olympia, Delphi. Students are recommended to have taken one of the following: 317, 318, 331, 332, 333. History 312. Written Examination course.

472 Numerical Algebra (3) (Same as Mathematics 472) Emphasis on faculty research. May be repeated. Maximum 9 hours.

471 Numerical Analysis (3) (Same as Mathematics 471) Emphasis on faculty research. May be repeated. Maximum 9 hours.

470 Advanced Topics in Scientific Computation (3) Topics such as search, learning, expert systems, neural networks, evolutionary algorithms, and natural language pro- cessing. Emphasis on faculty research. May be repeated. Maximum 8 hours. Prereq: Completion of core curriculum or consent of instructor.

460 Advanced Topics in Software Systems (3) Topics such as numerical methods, supercomputer architecture, parallelism, operating systems, and programming languages. Emphasis on faculty research. May be repeated. Maximum 9 hours. Prereq: Completion of core curriculum or consent of instructor.

450 Introduction to Information Systems Design (3) Prerequisite: differential and integral calculus. Advanced data structures, concepts and techniques. Formal 2 lecture hours and 3 lab hours. Prereq: 311 and 312. 3 hour lab required.

441 Introduction to Mass Media (2) Introduction to the mass media, with emphasis on the role played by the media in society. Prereq: 100 or consent of instructor.

430 Advanced Topics in Machine Intelligence (3) Topics such as search, learning, expert systems, neural networks, evolutionary algorithms, and natural language pro- cessing. Emphasis on faculty research. May be repeated. Maximum 8 hours. Prereq: Completion of core curriculum or consent of instructor.

420 Advanced Topics in Hardware Systems (3) Topics such as numerical methods, supercomputer architecture, parallelism, operating systems, and programming languages. Emphasis on faculty research. May be repeated. Maximum 9 hours. Prereq: Completion of core curriculum or consent of instructor.

419 Introduction to Computational Linguistics (3) Topics such as numerical methods, supercomputer architecture, parallelism, operating systems, and programming languages. Emphasis on faculty research. May be repeated. Maximum 9 hours. Prereq: Completion of core curriculum or consent of instructor.

418 Introduction to Information Systems Design (3) Prerequisite: differential and integral calculus. Advanced data structures, concepts and techniques. Formal 2 lecture hours and 3 lab hours. Prereq: 311 and 312. 3 hour lab required.

330 Symbolic Logic (3) (Same as Mathematics 330) Emphasis on faculty research. May be repeated. Maximum 9 hours.

320 Problem Solving (3) General approachestoprob- lemsolving, techniques, and computer applications. Emphasis on faculty research. May be repeated. Maximum 9 hours.

319 Numerical Algorithms (3) (Same as Mathematics 319) Emphasis on faculty research. May be repeated. Maximum 9 hours.

318 Advanced Topics in Scientific Computation (3) Topics such as search, learning, expert systems, neural networks, evolutionary algorithms, and natural language pro- cessing. Emphasis on faculty research. May be repeated. Maximum 8 hours. Prereq: Completion of core curriculum or consent of instructor.

317 Mathematical Techniques in Information Science (2) Emphasis on faculty research. May be repeated. Maximum 9 hours.

316 Introduction to Scientific Computation (3) Emphasis on faculty research. May be repeated. Maximum 9 hours.

315 Digital Signal Processing (3) Topics such as numerical methods, supercomputer architecture, parallelism, operating systems, and programming languages. Emphasis on faculty research. May be repeated. Maximum 9 hours. Prereq: Completion of core curriculum or consent of instructor.

314 Machine Intelligence (3) Topics such as numerical methods, supercomputer architecture, parallelism, operating systems, and programming languages. Emphasis on faculty research. May be repeated. Maximum 9 hours. Prereq: Completion of core curriculum or consent of instructor.

313 Numerical Computation (3) (Same as Mathematics 313) Emphasis on faculty research. May be repeated. Maximum 9 hours.

312 Analytical Algorithms (3) (Same as Mathematics 312) Emphasis on faculty research. May be repeated. Maximum 9 hours.

311 Data Structures (3) (Same as Mathematics 311) Emphasis on faculty research. May be repeated. Maximum 9 hours.

310 Introduction to Information Systems Design (3) Prerequisite: differential and integral calculus. Advanced data structures, concepts and techniques. Formal 2 lecture hours and 3 lab hours. Prereq: 311 and 312. 3 hour lab required.

309 Communication and Graphics (1) Current hardware and software used in the electronic production of communications media. Emphasis on faculty research. May be repeated. Maximum 9 hours.

308 Theory of Computation (3) Recursive functions, computability, Turing machines, and Halting problem. May be repeated. Maximum 9 hours.

307 Computational Linguistics (3) Topics such as search, learning, expert systems, neural networks, evolutionary algorithms, and natural language pro- cessing. Emphasis on faculty research. May be repeated. Maximum 8 hours. Prereq: Completion of core curriculum or consent of instructor.

306 Computer Systems (3) Topics such as numerical methods, supercomputer architecture, parallelism, operating systems, and programming languages. Emphasis on faculty research. May be repeated. Maximum 9 hours. Prereq: Completion of core curriculum or consent of instructor.

305 Computer Organization (3) Topics such as numerical methods, supercomputer architecture, parallelism, operating systems, and programming languages. Emphasis on faculty research. May be repeated. Maximum 9 hours. Prereq: Completion of core curriculum or consent of instructor.
306 Special Topics (1-3) Selected topics in one of the fields. Credit limited to six hours in any one area. Prerequisite: Consent of instructor. May be repeated. Maximum 6 hours.

307 Research Seminar (1-3) Seminar in one of the fields. Credit limited to six hours. Prerequisite: Consent of instructor. May be repeated. Maximum 6 hours.

310 Independent Study (1-6) Independent study in one of the fields. Credit limited to six hours in any one area. Prerequisite: Consent of instructor. May be repeated. Maximum 6 hours.

312 Teaching Assistantship (1-2) Teaching of undergraduate courses under the supervision of a faculty member. Available to majors only. Credit limited to six hours in any one area. Prerequisite: Consent of instructor. May be repeated. Maximum 6 hours.

318 Advanced Research (1-3) Supervised advanced research for the preparation of a dissertation. Available to graduate students only. Credit limited to 3 hours in any one area. Prerequisite: Consent of instructor. May be repeated. Maximum 6 hours.

326 Internship (1-6) Practical experience in the fields of economics. Participation through faculty supervision. Credit limited to six hours. Prerequisite: Consent of instructor. May be repeated. Maximum 6 hours.

327 Internship for Graduate Students (1-6) Practical experience in the fields of economics. Participation through faculty supervision. Credit limited to six hours. Prerequisite: Consent of instructor. May be repeated. Maximum 6 hours.

331 Advanced Microeconomics (3) Measurement of income and prices, aggregate demand, output, employmen...and growth. Prerequisite: Economics 201.

332 International Economics (3) Openness to trade, exchange rate determination, monetary and fiscal plans...er and political policies. Prerequisite: Economics 201.

333 Economic Development (Third World) (3) Theories of economic development, policies and strategies for development in underdeveloped countries. Prerequisite: Economics 201. Writing emphasis course.

334 Comparative Economic Systems (3) Economic systems, their internal organization and allocation mechanisms. Prerequisite: Economics 201. Writing emphasis course.

335 Mathematical Economics (3) Mathematical methods in the analysis of economic theory and application. Prerequisite: Mathematics 203. Writing emphasis course.

336 History of Economics (3) A survey of the development of economic thought, from ancient times to the present. Prerequisite: Economics 201. Writing emphasis course.

337 Microeconomic Theory (3) The theory of demand, supply, market determination, and general equilibrium. Prerequisite: Mathematics 201. Writing emphasis course.

338 Macroeconomic Theory (3) Theories of national income, inflation, and monetary and fiscal policies. Prerequisite: Economics 201. Writing emphasis course.

339 International Economics (3) International trade, exchange rates, balance of payments, monetary and fiscal plans... and economic indicators. Prerequisite: Economics 201. Writing emphasis course.

340 International Finance (3) International capital markets, foreign exchange, monetary and fiscal plans...and growth. Prerequisite: Economics 201. Writing emphasis course.

341 Business Economics (3) The role of economic theory in business decision making. Prerequisite: Economics 201. Writing emphasis course.

342 Labor Economics (3) Theories of labor supply and demand, wages, unemployment, and labor market institutions. Prerequisite: Economics 201. Writing emphasis course.

343 Money and Banking (3) Theories of money and banking, monetary policy, and the federal funds market. Prerequisite: Economics 201. Writing emphasis course.

344 Fiscal Policy (3) Theories of fiscal policy, government expenditures, and taxes. Prerequisite: Economics 201. Writing emphasis course.

345 Monetary Policy (3) Theories of monetary policy and the federal funds market. Prerequisite: Economics 201. Writing emphasis course.

346 Macroeconomics (3) Theories of national income, inflation, and monetary and fiscal policies. Prerequisite: Economics 201. Writing emphasis course.

347 International Economics (3) International trade, exchange rates, balance of payments, monetary and fiscal plans... and economic indicators. Prerequisite: Economics 201. Writing emphasis course.

348 International Finance (3) International capital markets, foreign exchange, monetary and fiscal plans... and growth. Prerequisite: Economics 201. Writing emphasis course.

349 International Economics (3) International trade, exchange rates, balance of payments, monetary and fiscal plans... and economic indicators. Prerequisite: Economics 201. Writing emphasis course.

350 Microeconomic Theory (3) The theory of demand, supply, market determination, and general equilibrium. Prerequisite: Mathematics 201. Writing emphasis course.

351 Macroeconomic Theory (3) Theories of national income, inflation, and monetary and fiscal policies. Prerequisite: Economics 201. Writing emphasis course.

352 International Economics (3) International trade, exchange rates, balance of payments, monetary and fiscal plans... and economic indicators. Prerequisite: Economics 201. Writing emphasis course.

353 Economic Development (Third World) (3) Theories of economic development, policies and strategies for development in underdeveloped countries. Prerequisite: Economics 201. Writing emphasis course.

354 Comparative Economic Systems (3) Economic systems, their internal organization and allocation mechanisms. Prerequisite: Economics 201. Writing emphasis course.

355 Mathematical Economics (3) Mathematical methods in the analysis of economic theory and application. Prerequisite: Mathematics 203. Writing emphasis course.

356 History of Economics (3) A survey of the development of economic thought, from ancient times to the present. Prerequisite: Economics 201. Writing emphasis course.

357 Microeconomic Theory (3) The theory of demand, supply, market determination, and general equilibrium. Prerequisite: Mathematics 201. Writing emphasis course.

358 Macroeconomic Theory (3) Theories of national income, inflation, and monetary and fiscal policies. Prerequisite: Economics 201. Writing emphasis course.

359 International Economics (3) International trade, exchange rates, balance of payments, monetary and fiscal plans... and economic indicators. Prerequisite: Economics 201. Writing emphasis course.

360 International Finance (3) International capital markets, foreign exchange, monetary and fiscal plans... and growth. Prerequisite: Economics 201. Writing emphasis course.
491 Honors Seminar (3) Topics vary. Upper division credit. Prerequisite: senior standing. 491S-491SP 4 unit maximum GPA in economics and consent of instructor.

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

EDUCATION (289)

105 Special Topics (1-4) Study in selected disciplinary or professional areas representative in the College of Education. Topics to be determined as needed courses are identified as and resources are available to support the course.

102 Teaching and Helping Professions in Education (2) Study in selected interdisciplinary or professional areas in the College of Education. The course is designed for students considering a major in the College of Education or who are entering students in the College. The course provides an opportunity to review the major and minor program courses in the College.

302 School and American Society (3) Same as Educational Curriculum and Instruction 302.

400 Professional Studies: Teachers, School, and Society (2) Focus on roles and responsibilities of teachers, on how schools are organized and the relationships between the schools and the broader society. Prerequisite: Coreq: Educational and Counseling Psychology 210. Prerequisite: Admission to Teacher Education.

431 Personality and Mental Health (3) Perspectives of approaches to facilitating career development and success in educational settings. Primarily for students enrolled in major or minor in career education. May be repeated. Maximum 3 credit hours.

404 Special Topics (1-3) Instructor initiated course. Semester hours. Satisfactory/No Credit or letter grade. E

406 Application of personality and mental health theories to classroom and school environments. Prerequisite: Consent of instructor. May be repeated. Maximum 3 credit hours.

EDUCATIONAL CURRICULUM AND INSTRUCTION (301)

101 Efficient Reading and Study Skills (2) Improvement of reading comprehension and skills, interpretation of written materials, affective and learning skills. For BS Education majors only. Prerequisite: Consent of instructor. May be repeated. Prerequisite: Admission to Teacher Education Program.

110 Independent Study in Education (1-3) Positions of students in active role in the field. Includes methods of teaching, curriculum materials and methods, classroom management, community relations, and school organization. May be repeated. Maximum 6 hours.

300 School and American Society (2) Historical, philosophical, and social-philosophical perspectives on contemporary educational issues. Same as Education 302. E, F

308 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 educational software. Explores ways to use educational technology. May be repeated. Maximum 9 credit hours. Prerequisites: Consent of instructor. Prerequisite: Teacher Education Program.

309 Teaching Science and Social Studies in Elementary and Middle Schools (3) Methods and materials for teaching science and social studies in elementary and middle schools. Teaching approaches common to both fields including inquiry, teaching activities, and group work. Prerequisite: Admission to Teacher Education Program. F

310 Language Arts Reading in Elementary and Middle Schools (3) Introduction to language development as it applies to teaching of language (language-speaking, reading-listening, writing, and memory) and other content areas. Prereq: Coreq: Educational and Counseling Psychology 210 and Education 400; Prerequisite: Admission to Teacher Education Program.

311 Teaching Developmental Reading in the Elementary and Middle Schools (3) Methods and backgrounds for teaching reading processes, character and levels, selection of appropriate instructional strategies, and reading comprehension. Prerequisite: Coreq: Educational and Counseling Psychology 210; Coreq: Education 400; Prerequisite: Admission to Teacher Education Program.

325 Elementary and Middle School Mathematics (3) Methods and materials for teaching mathematics in the elementary and middle schools. Unit planning, daily planning, grouping, teaching and assessing. Prerequisite: Admission to Teacher Education Program. F

326 Teaching Language Arts Reading in Elementary Schools (3) In the context of reading developmentally appropriate programs for children. Prerequisite: Consents of instructor. Prerequisite: Admission to Teacher Education Program. F, Sp

340 Special Topics in Reading Education (1-6) May be repeated. Maximum 15 hours. Prerequisite: Admission to Teacher Education Program.

344 Teaching of Foreign Language, Grades 7-12 (3) Methods and materials for teaching foreign languages to secondary students. Instruction in the teaching of the major languages: French, Spanish, and German. Prerequisites: Admission to Teacher Education Program.

402 Teaching Developmental Reading in the Elementary and Middle Schools (3) Methods and background for teaching reading process, character and levels, selection of appropriate instructional strategies, and reading comprehension. Prerequisite: Coreq: Educational and Counseling Psychology 210; Coreq: Education 400; Prerequisite: Admission to Teacher Education Program.

403 Professional Studies: Teaching and Curriculum Management (3) Organization of curriculum, and classroom. Prerequisites: Admission to Teacher Education Program and a course in Reading Education. Topics to be determined as needs/issues are identified and as resources are available to support the course.

404 Special Topics (1-3) Instructor initiated course. Semester hours. Satisfactory/No Credit or letter grade. E

407 Pre-Internship Seminar (1) Objectives and policies of the internship program. Must be completed before internship. Prerequisite: Admission to Teacher Education Program. Satisfactory/No Credit or letter grade. E

419 Teaching Laboratory (3) Learning and practicing teaching techniques. Video taping in simulated school settings. E, F

421 Elementary and Middle School Science and Social Studies Instruction (2) Methods and materials for teaching science and social studies. Development of functional situations that simulate contexts of the two fields in active student-centered settings. Prerequisites: Consent of instructor. Prerequisite: Coreq: Admission to Teacher Education Program.

423 Elementary and Middle School Developmental Reading Instruction (2) Word recognition (including phonics), comprehension, and materials. Not open to students who have had recent course in reading. Prerequisite: Admission to Teacher Education Program. E

434 Topics in Reading Education (1-4) May be repeated. Maximum 15 hours. Prerequisite: Admission to Teacher Education Program.

435 Elementary and Middle School Mathematics Instruction (2) Procedures for helping children learn mathematics. Unit planning, daily planning, background of current programs and their background. Not open to students with recent course in teaching. Prerequisite: Admission to Teacher Education Program.


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

438 Pre-Internship Seminar (1) Objectives and policies of the internship program. Must be completed before internship. Prerequisite: Admission to Teacher Education Program. Satisfactory/No Credit or letter grade. E

493 Independent Study (1-3) Instructor initiated course. Semester hours. Satisfactory/No Credit or letter grade. E

494 Independent Study (1-3) Instructor initiated course. Semester hours. Satisfactory/No Credit or letter grade. E

494 Special Topics in Reading Education (1-6) May be repeated. Maximum 15 hours. Prerequisite: Admission to Teacher Education Program.

495 Special Topics in Reading Education (1-6) May be repeated. Maximum 15 hours. Prerequisite: Admission to Teacher Education Program.

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

500 Field Study in Elementary Education (1-3) Simulated and actual experiences in which students apply concepts and skills from professional courses. Prerequisites: Consent of instructor. Prerequisite: Admission to Teacher Education Program. Satisfactory/No Credit or letter grade. E

501 Laboratory and Field Studies in Elementary Education (1) Simulated and actual experiences in which students apply concepts and skills from professional courses. Prerequisites: Consent of instructor. Prerequisite: Admission to Teacher Education Program. Satisfactory/No Credit or letter grade. E

502 Field Studies in Elementary Education (2) Simulated and actual experiences in which students apply concepts and skills from professional courses. Prerequisites: Consent of instructor. Prerequisite: Admission to Teacher Education Program. Satisfactory/No Credit or letter grade. E, F

504 Field Experience in Secondary (1) Field experiences in selected related to teaching integrated science. Prerequisite: Consent of instructor. Admission to Teacher Education Program. E

506 Field Experience in Secondary (2) Field experience in selected related to teaching integrated science. Prerequisite: Consent of instructor. Admission to Teacher Education Program. E

507 Field Experience in Secondary (1-3) Field experiences in selected related to teaching integrated science. Prerequisite: Consent of instructor. Admission to Teacher Education Program. Satisfactory/No Credit or letter grade. E

509 Introduction to Secondary Subjects (2) An introduction to the teaching of grades 9-12, including curriculum program and the philosophical and social factors that influence the selection of content. Prerequisites: Admission to Teacher Education Program. Prerequisite: Coreq: Educational Psychology 210. E, F

514 Elementary and Secondary School Teaching Laboratory (2) Opportunities for hands-on application of knowledge gained in practicum to teaching in the classroom. Prerequisite: Admission to Teacher Education Program. Coreq: Educational Psychology 210.

516 Elementary and Secondary School Teaching Laboratory (2) Opportunities for hands-on application of knowledge gained in practicum to teaching in the classroom. Prerequisite: Admission to Teacher Education Program. Coreq: Educational Psychology 210.

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524 Elementary and Secondary School Teaching Laboratory (2) Opportunities for hands-on application of knowledge gained in practicum to teaching in the classroom. Prerequisite: Admission to Teacher Education Program. Coreq: Educational Psychology 210.
ENGINEERING AEROSPACE (016)

494 Space Engineering Instrumentation and Measurement (3) Fundamentals of measurement apparatus and instrumentation techniques; data acquisition systems; analog and digital data treatment; instrumentation signal conditioning, control, and data measurement. Prereq: 352, NE 341, ECE 310. F, Sp

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

ENGINEERING BASIC (179)

100 Seminar (1) College, engineering student development and career planning. Prereq: Sophomore standing. F, Sp


111 Fundamentals of Engineering Graphics (3) Technical drawing techniques, application of AutoCAD to solve engineering problems, presentation and analysis of engineering data, graphical solution of three dimensional problems, primary and secondary reference views. Application of Computer-Aided Design and Drafting (CADD) in solving engineering graphic problems. Two three-hour periods or two three-hour periods, including one hour of lecture per week. F

121 Statics (3) Vectors, force systems, equilibrium and compatibility of force systems, centroids, center of mass, force distribution, frames, trusses and trusses. Coreq: Math 141.

122 Dynamics (3) Kinematics, simple harmonic motion, work, energy and momentum, rigid body motion, simple and compound machines. Coreq: Math 141.


ENGINEERING CHEMICAL (226)

200 Chemical Engineering Fundamentals (4) Molar and energy balances, mass-transfer, chemical reaction kinetics, and reactor design. Prereq: MATH 131, CHEM 100.

201 Fluid Flow and Heat Transfer (4) Forces, energy, and conservation equations; streamlines, potential flow, vorticity, energy transfer, and separation of fluid flow. Prereq: 203, MATH 132.

300 Chemical Engineering Thermodynamics (3) Basic concepts and principles of thermodynamic analysis; analytical and computer methods to design of new generation of chemical processes. Prereq: 101 and Math 142.

301 Process Dynamics and Control (3) Introduction to process modeling and control analysis for chemical engineering systems and processes. Prereq: CHEM 200, CHEM 201.

302 Chemical Engineering Thermodynamics (3) Basic concepts and principles of thermodynamics applied to chemical engineering processes. Prereq: CHEM 200, CHEM 201.

303 Mass Transfer and Separation Processes (3) Principles of separation processes; mass and energy balances; application of analytical, graphical and computer methods to design of separation processes. Prereq: CHEM 200, CHEM 201.

304 Chemical Engineering Thermodynamics (3) Analysis and design of chemical engineering systems and processes. Prereq: CHEM 200, CHEM 201.

305 Chemical Engineering Thermodynamics (3) Analysis and design of chemical engineering systems and processes. Prereq: CHEM 200, CHEM 201.

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311 Chemical Engineering Thermodynamics (3) Analysis and design of chemical engineering systems and processes. Prereq: CHEM 200, CHEM 201.

312 Chemical Engineering Thermodynamics (3) Analysis and design of chemical engineering systems and processes. Prereq: CHEM 200, CHEM 201.

313 Chemical Engineering Thermodynamics (3) Analysis and design of chemical engineering systems and processes. Prereq: CHEM 200, CHEM 201.

314 Chemical Engineering Thermodynamics (3) Analysis and design of chemical engineering systems and processes. Prereq: CHEM 200, CHEM 201.

315 Chemical Engineering Thermodynamics (3) Analysis and design of chemical engineering systems and processes. Prereq: CHEM 200, CHEM 201.

316 Chemical Engineering Thermodynamics (3) Analysis and design of chemical engineering systems and processes. Prereq: CHEM 200, CHEM 201.
440 Transport Phenomena (3) Overview of mechanisms, transport and mass transfer processes, the strategies, differential and microscopic balances, applications across engineering, and the influence of diffusion and thermal diffusion reaction.

445 Separation Process Technology (3) Principles of separation processes, including distillation, absorption, and extraction. Focus on mass and energy balances and the application of these principles to real-world problems.

450 Chemical Reactor Fundamentals (3) Homogeneous reactors and chemical process systems, including reaction rates, reaction mechanisms, and reactor design. Focus on the mathematical modeling of chemical reactions.

452 Traffic Engineering (3) Characteristic of driver, vehicle, and roadway and their interaction; traffic data and models; traffic flow characteristics; traffic control devices; traffic signalization.

454 Reinforced Concrete Design (3) Reinforced concrete design and stress analysis, including stress-strain relationships, beam design, and interaction of concrete and reinforcing steel.

469 Engineering Internship in Process Control (4) Lab. Prereq: 360. Experience in process control systems design and implementation. Includes computer control of industrial processes.

474 Reinforced Slab Design (3) Reinforced concrete slabs and slabs of various types, including flat plates, slabs, and composite beams. Focus on structural analysis and design.

480 Equipment Design and Economic Methods (4) Cost analysis and optimization of design, including cost estimation, cost-benefit analysis, and economic evaluation of design alternatives.

489 Design Internship in Industrial Pollution Prevention (3) The design and implementation of pollution prevention strategies in industrial settings. Focus on environmental compliance and sustainable practices.


490 Water Resources Project Design (3) Prerequisites: 340. Design and implementation of water resources projects, including water supply systems, wastewater treatment plants, and water quality management.

521 Circuits I (3) Fundamentals of circuit theory, including circuit analysis, circuit components, and circuit theorems. Focus on network analysis and circuit simulation.

522 Structural Analysis II (3) Stress analysis, structural design, and finite element analysis of structural systems. Focus on the use of computational tools for structural analysis.

525 Transportation Engineering (3) Transportation network analysis and planning, including traffic flow, traffic demand, and traffic control systems. Focus on the use of mathematical models for transportation planning.

526 Construction Methods and Equipment (3) Construction methods, equipment, and materials, including construction standards, labor productivity, and cost analysis. Focus on the use of technology in construction.

530 Seminar (1-12) Special topics in civil engineering, including professional and ethical responsibilities. Prereq: Junior standing.

531 Materials of Construction (3) Physical and mechanical properties of materials used in construction, including masonry, concrete, steel, and wood. Focus on the selection and usage of construction materials.

532 Water and Waste Treatment (3) Prerequisites: 340, 350. Treatment of wastewater and stormwater, including biological and chemical processes. Focus on water quality management.

535 Structural Analysis I (3) Stress analysis, structural design, and finite element analysis of structural systems. Focus on the use of computational tools for structural analysis.

540 Water Resources Project Design (3) Prerequisites: 340. Design and implementation of water resources projects, including water supply systems, wastewater treatment plants, and water quality management.

549 Engineering Internship in Process Control (4) Lab. Prereq: 360. Experience in process control systems design and implementation. Includes computer control of industrial processes.

550 Reinforced Slab Design (3) Reinforced concrete slabs and slabs of various types, including flat plates, slabs, and composite beams. Focus on structural analysis and design.

554 Reinforced Concrete Design (3) Reinforced concrete design and stress analysis, including stress-strain relationships, beam design, and interaction of concrete and reinforcing steel.

561 Advanced Structural Analysis (4) Stress analysis, structural design, and finite element analysis of structural systems. Focus on the use of computational tools for structural analysis.

564 Reinforcement in Reinforced Concrete (3) Reinforced concrete design and stress analysis, including stress-strain relationships, beam design, and interaction of concrete and reinforcing steel.

569 Reinforced Slab Design (3) Reinforced concrete slabs and slabs of various types, including flat plates, slabs, and composite beams. Focus on structural analysis and design.

570 Reinforcement in Reinforced Concrete (3) Reinforced concrete design and stress analysis, including stress-strain relationships, beam design, and interaction of concrete and reinforcing steel.

575 Structural Analysis I (3) Stress analysis, structural design, and finite element analysis of structural systems. Focus on the use of computational tools for structural analysis.

576 Construction Methods and Equipment (3) Construction methods, equipment, and materials, including construction standards, labor productivity, and cost analysis. Focus on the use of technology in construction.

580 Seminar (1-12) Special topics in civil engineering, including professional and ethical responsibilities. Prereq: Junior standing.
205 Electrical and Computer Engineering Computing

(3) Computer analysis and process control: linear algebra; algorithms for roots of equations; numerical integration; simulation and solution of ordinary differential equations; Programming languages. Prerequisites: Mathematical Prog. I, II, or consent of instructor.

231 Small Computer Systems (3) Structured assembly language; hardware in the personal computer; introduction to computer architecture; interfacing to I/O devices. Prerequisite: CS 251 or equivalent computer science course.

301 Circuits and Electronic Components (3) DC and AC Circuits, Transistors, Transistors, Miso, Generators. For non-majors only. Prerequisite: Math 301.

309 Electronics and Computer Circuits (3) Analyzing Circuits, Operational Amplifiers, Digital Systems and Logic Circuits, Semiconductor Devices. For non-majors only. Prerequisite: 301.

311 Transient Analysis (3) Parallel treatment of continuous and discrete time systems, solution of linear circuits, computer program for solving circuits. Prerequisite: 309.

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

321 Electric Energy System Components (3) Basic principles and applications of electrical power systems. Introduction to power systems, D.C. machines, converters, control systems. Includes laboratory experiments and projects. Design content: 1 hour. Prerequisite: 312.


332 Analog Signal Processing Electronics (4) Transistors, diodes, front end amplifiers, feedback systems. Design content: 2 hours. Prerequisite: 321.


342 Communication Systems I (3) System analysis and design, transmission line theory, circuits, noise, modulation, communications. Design content: 1 hour. Prerequisite: 341.

351 Digital and Analog Integrated Electronics (4) Design, simulation, and fabrication of integrated circuits, analog and digital circuits, VLSI design, microprocessors, microcontrollers, computer architecture. Design content: 2 hours. Prerequisite: 342.

352 Power Electronics (4) Principles and characteristics of power semiconductor devices, single-stage and multistage power converters, interfacing electronics, power electronic systems, design and control. Design content: 1 hour. Prerequisite: 351.

353 Microprocessor Systems (3) Assembly language programming, digital electronics, microprocessors, microcomputers, computer systems. Design content: 1 hour. Prerequisite: 352.

361 Introduction to Plasma Engineering (3) Plasma science and technology; plasma generation, characterization, and interaction with materials. Includes laboratory experiments and projects. Design content: 2 hours. Prerequisite: 353 or consent of instructor.

369 Junior Seminar (3) Presentations and discussions related to professionals working in current topics in electrical engineering. Prerequisite: Prepr 369. Satisfactory/No Credit.

405 Digital Signal Processing and Filter Design (3) Discrete-time line end systems, sampling, DIF/FFT transform, analog filter characteristics, performance and recursive filter design, and CAD software. Filter design. Includes experiments and projects. Design content: 1 hour.

412 Linear Control System Design (3) Classical and modern techniques for design and implementation of linear frequency control systems. Design content: 2 hours. Prerequisite: 405.

413 Passive and Active Network Synthesis (3) Network analysis techniques, passive and active device modeling, Laplace transforms, transfer function synthesis, approximation theory, active network synthesis. Design content: 1 hour. Prerequisite: 412.

415 Direct Electrical Energy Conversion (3) Principles of electrical energy conversion, direct and indirect drive systems. Design content: 1 hour. Prerequisite: 413.

416 Direct Electrical Energy Conversion (3) Principles of electrical energy conversion, direct and indirect drive systems. Design content: 1 hour. Prerequisite: 415.

431 Digital and Analog Integrated Electronics (4) Design, simulation, and fabrication of integrated circuits, analog and digital circuits, VLSI design, microprocessors, microcontrollers, computer architecture. Design content: 2 hours. Prerequisite: 351.

432 Analog Signal Processing Electronics (4) Transistors, diodes, front end amplifiers, feedback systems. Design content: 2 hours. Prerequisite: 352.

441 Introduction to Fusion Energy I (3) Introduction to fusion energy, tokamaks, controlled thermonuclear fusion, plasma physics, plasma diagnostics, particle transport, confinement and heating, fusion reactor design, solar radiation, nuclear fusion energy, basic processes in tokamaks, tokamak physics, tokamak operation, tokamak design, tokamak control. Design content: 2 hours. Prerequisite: 441.

442 Antennas and Propagation (3) Linear antennas, array theory and design, antenna arrays, microwave antennas. Design content: 1 hour. Prerequisite: 441.


463 Introduction to Fusion Energy II (3) The tokamak and other magnetic confinement systems; the first wall, confinement, plasma and wall interactions, divertor, divertor design, divertor operation, plasma-material interactions, tokamak control. Design content: 1 hour. Prerequisite: 463.

41 Information Systems II (3) Systems engineering approach to design, development, implementation, and evaluation of systems of information. Emphasizes information flows of 85 systems. Study of data structure and management systems. Prereq: 200 and senior standing.

42 Senior Industrial Engineering Problems Analy- sis (3) Application of Industrial Engineering to real assignments in local organizations including problem definition, analysis and presentation. Prereq: 402, 403, 405.


44 Total Quality Management (2) The philosophy of continuous improvement in organizations including management and self-improvement. Focus on iden- tification and analysis of systems as compared to process analysis and improvement. Flowcharts, Pareto dia- grams, scatter diagrams, and acceptance sampling. Focus on new measurement tools, data collection and control strategies. Analyzing quality index. Emphasizes quality control and measurement issues. Prior to relevant to continuous pro- cesses; managing quality in consumer environments; the use of classical statistical tools such as correlation and experimental design to improve system value. Course contains a test component to provide hands-on exper- tise. Prereq: 301 and senior standing.

45 Special Topics in Industrial Engineering (3) Recent developments in Engineering Industriel with emphasis on process optimization, failure analysis, and new methodologies. May be repeated. Prereq: Senior standing and consent of instructor.

ENGINEERING MATERIALS SCIENCE (638)

201 Introduction to Materials Science and Engineering (3) Introduction to properties of engineering materials, including crystal structure, phase and microstructure of metals, mechanical behavior, failure, engineering plasticity, and fracture mechanics. Prereq: Chemistry 130.

301 Introduction to Materials Science Laboratory (3) Basic experiments on metals, ceramics, and polymers; hardness, density, and mechanical tests. Prereq: 201.


303 Thermodynamics of Solids (3) Phases of matter, adiabatic processes, Thermochemistry, phase equilibria, entropy, energy, the first law of thermodynamics. Prereq: 200, 201, or consent of instructor.

401 Laboratory and Methodology in Human Factors Engineering (3) Project and laboratory oriented intro into Human Factors factors, problem solving and measurement of human capabilities and limitations. Emphasis on workplace design, lighting and noise. Miserabilism of task load and effects of interface design on human performance. Field studies of work groups. Project group project. Prereq: 301 and senior standing.

42 Information Systems II (3) Systems engineering approach to design, development, implementation, and evaluation of systems of information. Emphasizes information flows of 85 systems. Study of data structure and management systems. Prereq: 200 and senior standing.

42 Senior Industrial Engineering Problems Analy- sis (3) Application of Industrial Engineering to real assignments in local organizations including problem definition, analysis and presentation. Prereq: 402, 403, 405.


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45 Special Topics in Industrial Engineering (3) Recent developments in Engineering Industriel with emphasis on process optimization, failure analysis, and new methodologies. May be repeated. Prereq: Senior standing and consent of instructor.

ENGINEERING MATERIALS SCIENCE (638)

201 Introduction to Materials Science and Engineering (3) Introduction to properties of engineering materials, including crystal structure, phase and microstructure of metals, mechanical behavior, failure, engineering plasticity, and fracture mechanics. Prereq: Chemistry 130.

301 Introduction to Materials Science Laboratory (3) Basic experiments on metals, ceramics, and polymers; hardness, density, and mechanical tests. Prereq: 201.


303 Thermodynamics of Solids (3) Phases of matter, adiabatic processes, Thermochemistry, phase equilibria, entropy, energy, the first law of thermodynamics. Prereq: 200, 201, or consent of instructor.
322 Mechanics of Materials I (3) Analysis and design of beams, singularity functions, energy methods, thick-walled pressure vessels, inelastic bending and torsion, theories of failure and fatigue. Prerequisite: 321.
323 Mechanical Behavior of Materials (3) Stress-strain behavior of metals.  Prerequisite: 322.
341 Fluid Mechanics I (3) Basic conservation laws of fluid dynamics, integral form, energy, work, potential energy, flow through pipeline, open channel flow, steady or unsteady flow, boundary layer, similarity. Prerequisite: Mathematics 241.
351 Computational Mechanics I (3) Integration of fundamental physical laws and mathematical methods of analysis with emphasis on numerical analysis and digital computer solution of engineering problems. Prerequisite: 321, 341, and Basic ENGR 101.
361 Materials of Engineering (3) Mechanical properties of engineering materials, data collection and analysis, correlation techniques. Prerequisite: Mathematics and laboratory. Prerequisites: 321, Mathematics 201.
423 Fracture Parameters I (3) Fracture cross-sections of structures, fracture mechanics, failure of brittle and ductile materials. Prerequisite: 321.
425 Principles of Nondestructive Testing II (3) Non-contact NDE methods. Prerequisite: 424.
444 Introduction to Experimental Stress Analysis (3) Prerequisite: 321, ECE 301.
445 Computational Mechanics in Design (3) Computational techniques applied to engineering design problems. Prerequisites: 431, 452, 453.
451 Engineering Acoustics (3) Techniques of acoustics, analysis, control, and equalization of sound and noise, and applications in structural mechanics, transportation, and environmental acoustics. Prerequisite: 431.
452 Dynamic Systems (3) Statistical analysis of dynamic systems; bifurcation theory; chaos; stability and chaos. Prerequisites: 321.
454 Introduction to Fusion Energy I (3) Same as Electrical and Computer Engineering 463.
455 Introduction to Fusion Energy II (3) Same as Electrical and Computer Engineering 464.
...
work in English structures, reading, or writing. Admis-
sion to this course is by the English Placement Exam only. Meet Your's with 'A, B, C, F grading.
131 Composition for Non-Native Speakers of Eng-
lish II (3) Paragraph composition and preparation of a formal persuasive
132 Composition for Non-Native Speakers of Eng-
lish III (3) Writing based on reading and discussion. Analysis of world of literature. Emphasis on research techniques and writing research papers. Includes discussion of
201 British Literature I: Beowulf through Johnson (3) Major literary works from three periods: Romantic, Victorian, and the Twentieth Century. Writing-emphasis course.
202 British Literature II: Wordsworth to the Present (3) Major works from three periods: Middle Ages, Renaissance, and Restoration and Eighteenth Century. Writing-emphasis course.
203 British Literature III: Romantic, and Modern (3) Writing-emphasis course.
204 Honors Literature of the Western World I: (3) Enriched section designed for students with a 3.25 or higher GPA.
205 Honors American Literature I: Colonial, Me-
dieval, and Renaissance (3) Writing-emphasis course.
206 Literature of the Western World II: Enlighten-
ment, Romantic, and Modern (3) Writing-emphasis course.
207 Honors Literature of the Western World II: (3) Enriched section of 201 designed for students with a 3.25 or higher GPA.
211 American Literature I: Colonial Era to the Civil War (3) May not be used for Literary Studies from 301 through 325. Beginning to the Civil War. Writing-emphasis course.
212 American Literature II: Civil War to the Present (3) Developing the techniques of the writing research paper. Requirement: English Placement Exam only. A, B, C, NC grading.
213 Major Black Literature: Selected African Literature as a literary tradition. Writing-emphasis course.
214 Honors American Literature I: Colonial Era to the Civil War (3) Enriched section of 201 designed for students with a 3.25 or higher GPA.
215 American Literature I: Colonial Era to the Civil War: (3) Enriched section of 201 designed for students with a 3.25 or higher GPA.
217 American Literature II: Colonial Era to the Civil War: (3) Enriched section of 202 designed for students with a 3.25 or higher GPA.
219 Introduction to Fiction: Fiction as a distinct mode of written expression. Critical tools for perceptive reading of novels. Writing-emphasis course.
220 American Literature III: Colonial Era to the Civil War: (3) Enriched section of 203 designed for students with a 3.25 or higher GPA.
221 Introduction to Creative Writing: Writing in creative and academic contexts. Discussion of student and professional writing. Open to sopho-
mores with instructor's consent.
222 Literature of the Western World II: Enlighten-
ment, Romantic, and Modern (3) Writing-emphasis course.
223 History of the English Language (3) Pho-
noty, morphology, and syntax of English. History of the English language from 1800. (Same as Linguistics 371.)
224 The Structure of Modern English (3) Survey of major world works of literary criticism.
225 Introduction to Folklore (3) Concepts and terms for understanding folklore. Emphasis on world folktales, legends, proverbs, riddles, superstitions, dance, games, and architecture. (Same as American Studies 354.)
226 Literature of the English Bible I (3) Texts in literature, biblical, history, history, biogra-
phy, poetry, prophecy, apocalyptic, historical, and criticism. (Same as American Studies 354.)
227 Colonialism in Literature I (3) Methods and objec-
tives of literary study, conferences to plan student's program in major.
228 The Short Story (3) Emphasis on world works of literary criticism.
229 Introduction to Fiction (3) Concepts and terms for understanding fiction. Emphasis on world fiction, and criticism. (Same as American Studies 354.)
230 Expository Writing: (3) Critical tools for percep-
tive reading of poetry. Writing-emphasis course.
231 Medieval Literature: Poetry and Prose (3) Texts in literature, and the Middle Ages. (Same as American Studies 360.)
232 Expository Writing: (3) Critical tools for percep-
tive reading of poetry. Writing-emphasis course.
233 History of the English Language (3) Pho-
noty, morphology, and syntax of English. History of the English language from 1800. (Same as Linguistics 371.)
234 Colonialism in Literature I (3) Methods and objec-
tives of literary study, conferences to plan student's program in major.
235 English/Courses of Instruction
163
543 Persuasive Writing (3) - Persuasive strategies in student and professional writing. Practice in mastering effective logical and emotional appeals.

542 Technical Editing (3) - Editing technical material for publication. Preparation of first draft, style and thematic focus. Emphasis on grammar, form, and content.

541 Advanced Technical and Professional Writing (3) - For students who need to improve their technical or professional writing. Those who need to write reports, papers, and proposals. Attention to SLA and professional writing.

540 Writing for Publication (3) - Principals and practices of writing for publication. Descriptions, essays, articles, and books in science and technology. Prereq: 439 or consent of instructor.

539 Advanced Poetry Writing (3) - Development of skills acquired in basic Writing Poetry course. Prereq: 438 or consent of instructor.

536 Fiction Writing (3) - Development of skills acquired in basic Writing Fiction course. Prereq: 366 or consent of instructor.

535 Advanced Fiction Writing (3) - Development of skills acquired in basic Writing Fiction course. Prereq: 365 or consent of instructor.

534 Special Topics in Criticism (3) - Content varies. May be repeated with consent of department. Maximum 6 hours.

533 Church and State (4) - The history and philosophy of church-state relations in the United States and the world. Prereq: 374 or consent of department. Maximum 6 hours.

532 American English (3) - Phonological, morphological, and syntactic characteristics of major social and regional varieties of American English, with attention to features used in cultural and public discourse. Prereq: Consent of instructor. (Same as Linguistics 432.)

486 Special Topics in Criticism (3) - Content varies. May be repeated with consent of department. Maximum 6 hours.

485 Special Topics in Language (3) - May be repeated. Maximum 6 hours.

484 Studies in Folklore (3) - Topic varies. May be repeated with different topic. Maximum 6 hours.

483 Folklore and American Traditions (3) - Popular ballads and folktales of English, Scottish, and Irish origin. Prereq: 481 or consent of instructor. (Same as Anthropology 483.)

482 Advanced Topics in Folklore (3) - Specialized topics in folklore. May be repeated with different topic. Maximum 6 hours.

481 Studies in Folklore (3) - Topic varies. May be repeated with different topic. Maximum 6 hours.

474 Teaching English as a Second or Foreign Language I (3) - Grammar, syntax, and semantics of English as a second language. Prereq: Junior standing in student's major or consent of instructor.

472 Advanced Topics in Folklore (3) - Specialized topics in folklore. May be repeated with different topic. Maximum 6 hours.

471 Advanced Topics in Folklore (3) - Specialized topics in folklore. May be repeated with different topic. Maximum 6 hours.

464 Advanced Topics in Folklore (3) - Specialized topics in folklore. May be repeated with different topic. Maximum 6 hours.

463 Advanced Topics in Folklore (3) - Specialized topics in folklore. May be repeated with different topic. Maximum 6 hours.

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437 Advanced Topics in Folklore (3) - Specialized topics in folklore. May be repeated with different topic. Maximum 6 hours.

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401 Advanced Topics in Folklore (3) - Specialized topics in folklore. May be repeated with different topic. Maximum 6 hours.

400 Advanced Topics in Folklore (3) - Specialized topics in folklore. May be repeated with different topic. Maximum 6 hours.
331-312 History of French Literature (3) Chronological study of French literature in relation to the specific historical developments that have influenced it. Prerequisites: French 212, 218 or equivalent.

333 Aspects of French Culture (3) Role of women in shaping French history and culture. Feydite (Georges Bataille), local industries (Bordeaux, Montmartre), and environment (Alsace-Lorraine). Must be taken in sequence. Prerequisites: French 212 or 218 or equivalent.

348 Women in French Culture (3) Role of women in shaping French history and culture. Feydite (Georges Bataille), local industries (Bordeaux, Montmartre), and environment (Alsace-Lorraine). Must be taken in sequence. Prerequisites: French 212 or 218 or equivalent.

342-343 Intermediate Conversation and Composition (3) Oral comprehension of modern French literature, grammar, and pronunciation. Prerequisites: French 212, 218 or equivalent. These courses must be taken in sequence. Prerequisites: French 212, 218 or equivalent.

349 French for Business (3) Contemporary French literature as it applies to business transactions. Understanding and composing business letters, oral communication and presentation of French culture to related business practices. Prerequisites: French 212, 218 or equivalent. These courses must be taken in sequence. Prerequisites: French 212, 218 or equivalent.

401 Advanced Grammar (3) Improving one's own style of performance Languages. Prerequisite: French 212, 218 or equivalent. Can be applied to majors in the Department of Romance Languages.

404 Comprehensive and Simultaneous French (3) Concurrent translation and linear foreign language. Introduction to simultaneous translation from English to French. Written and oral examinations in French to enter advanced level, and use of skills in business, social, academic, or professional areas. Prerequisites: French 212, 218 or equivalent.

410 Methods of French Women Literature (3) Major representative works of Medieval French Literature. Tats in modern French fiction. Prerequisites: French 212, 218 or equivalent. (Same as Medieval Studies 410.)

411 French Literature of the 16th Century (3) Highlights of 16th century French literature. Excerpts from the works of Rabelais and Montaigne; readingsof poetry from the writers from Lyons and members of the Paré. Prerequisites: French 212, 218 or equivalent.

412 French Literature of the 17th Century (3) Masterpieces of the French literature. Prerequisites: French 212, 218 or equivalent.

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

414 French Literature of the 19th Century (3) French literature of the 19th century. Prerequisites: French 212, 218 or equivalent.

415 French Literature of the 20th Century (3) Evolution of contemporary French literature. Prerequisites: French 212, 218 or equivalent.

416 Survey of French Literature (3) Introduction to French literature. Prerequisites: French 212, 218 or equivalent.

420 French Cinema (3) The French cinema from its earliest days through the New Wave directors. Prerequisites: French 212, 218 or equivalent. Students from 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.

421 Phonetics (3) Foundation in the science of phonetics. Prerequisites: Written and/or oral knowledge of French or a score of at least 25 on the ACT or a verbalscoreof520or better on the SAT; or consent of department. (Same as Linguistics 421.)

422 Survey of Francophone Literature (3) Introduction to writing in French outside of France. Prerequisites: French 212, 218 or equivalent. Can be applied to major. Writing-emphasis course.

423 History of French Cinema (3) French cinema from its earliest days through the New Wave directors. Prerequisites: French 212, 218 or equivalent. Can be applied to major. Writing-emphasis course.

424 Contemporary French Cinema (3) Contemporary French cinema and culture since World War II. Prerequisites: French 212, 218 or equivalent. Can be applied to major. Writing-emphasis course.

425 Methods of French History (3) Survey of Francophone literature from the study of the world's major historical landmarks to contemporary France. Prerequisites: French 212, 218 or equivalent. Can be applied to major. Writing-emphasis course.

426 Introduction to Descriptive Linguistics (3) Phonetics and phonology, morphology and syntax. Types of languages, language groups, dialects, and regional variations of French. Application of descriptive linguistics to modern French; Prerequisites: French 212, 218 or equivalent.

427 Intermediate Conversation and Composition (3) Oral comprehension of modern French literature, grammar, and pronunciation. Prerequisites: French 212, 218 or equivalent. These courses must be taken in sequence. Prerequisites: French 212, 218 or equivalent.

428 Advanced Conversation and Composition (3) Oral comprehension of modern French literature, grammar, and pronunciation. Prerequisites: French 212, 218 or equivalent. These courses must be taken in sequence. Prerequisites: French 212, 218 or equivalent.

429 Advanced Grammar (3) Improving one's own style of performance Languages. Prerequisite: French 212, 218 or equivalent. Can be applied to majors in the Department of Romance Languages.

430 Introduction to Economic Geography (3) Study of the economic characteristicsof Africa, with particular emphasis on the area to the south of the Sahara. (Same as Geography 374.)

431 Economic Geography of the United States and Canada (3) Economic geography of the United States and Canada. Must be taken in sequence. Prerequisites: Written and/or oral knowledge of French or a score of at least 25 on the ACT or a verbalscoreof520or better on the SAT; or consent of department. (Same as Geography 333.)

432 Economic Geography of Middle America (3) Physical, cultural, and economic characteristicsof Mexico, Central America, and the Caribbean. Prerequisites: Written and/or oral knowledge of French or a score of at least 25 on the ACT or a verbalscoreof520or better on the SAT; or consent of department. (Same as Geography 372.)

433 Literary Portraits of French Women (3) This course is designed to acquaint students with a variety of French literature and its major works of French literature from the 20th century. Prerequisites: French 212, 218 or equivalent. Can be applied to major. Writing-emphasis course.

434 Language of Quebec (3) For French literature consultant with the Quebec government. Reading the literature of Quebec city through the literature of Quebec. Prerequisites: French 212, 218 or equivalent. Can be applied to major. Writing-emphasis course.

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

436 French Literature of the 19th Century (3) French literature of the 19th century. Prerequisites: French 212, 218 or equivalent.

437 French Literature of the 20th Century (3) Evolution of contemporary French literature. Prerequisites: French 212, 218 or equivalent.

438 Introduction to French Literature (3) Selected topics and world regions, especially those with problems or solutions to contemporary problems, in African geography. Prerequisites: Written and/or oral knowledge of French. Writing-emphasis course.

439 Survey of Francophone Literature (3) Introduction to Francophone literature. Prerequisites: Written and/or oral knowledge of French.

440 Cultural Geography : Core Concepts (3) Concepts, theories, and practices in economic geography. Reading the literature of Quebec city through the literature of Quebec. Prerequisites: Written and/or oral knowledge of French. Writing-emphasis course.

441 Cultural Geography: Core Concepts (3) Back- ground and method of cultural geography; basic concepts and theories focusing on cultural landscape, cultural cognition, socialization, and world patterns of cultural place.
102 Earth, Life and Time (4) Fossils and evolution in ancient environments; plus a review of 4.5 billion years of earth history. Must be taken in sequence. 3 lecture hours and one 2-hour lab per field period.

107 The Earth in Environment (4) Contempory climates and solutions and rules related to human disturbances of the environment. Includes the study of nonrenewable resources (hydrocarbons, coal, and mineral resources). Pre-requisites: 101-102 or consent of instructor.

108 Honors: Earth, Life and Time (4) Laboratory and field emphasis on understanding fossils, evolution, and human-impact-evolved environmental anthropocenies. 3 million years of earth history, 3 lecture hours, 1-2 lecture hours, and 2 field trips. Prerequisite: Consent of the instructor for A in Geology 101; permission of the instructor. Students may not receive credit for both Geology 101 and 108.

192 Elements, Divisions, and Extinctions: An Introduction to Evolution (3) Theory and evidence of evolution presented in an non-technical manner with emphasis on its relevance to modern society. Topics include origin of life, mass extinctions, evolutionary trends. Opportunity to examine and collect fossils. May not be applied to the Geology major.

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

203 Geology of National Parks (3) Geologically specified spectacular landforms and geologic history of national parks of the world. Human attempts to preserve the Earth’s heritage. 3 lecture hours, one 2-hour lab. Must be taken in sequence. Prerequisition: Prerequisite: 101-102, Mathematics 141-142 or consent of instructor.

206 Water Resources (3) Global water resources and distribution of major plant communities of the world pattern of climates. Climatic change and modification, and interrelationships of climate and human activity. Prerequisites: 131-132 or 320 or consent of instructor.

207 Paleogeography and Palynology (3) Evolutionary energy, oil, and other petroleum reservoirs of the fossil record of macrobotanical remains, spores, and pollen. Emphasis on the significance of fossils in understanding global environmental problems. Prerequisite: Bio 210-210 or consent of instructor. 3 lecture hours and one 2-hour lab. (Same as Geology 201.)

212 Field Geology (3) Survey of the changing human geography of the United States during four centuries of settlement and development. Emphasis on examining population patterns, development of agricultural regions, and patterns of urban-industrial development. Field trips. Writing emphasis course.

213 The Land-Surface System (3) Characteristics of surface form, water, vegetation, and soil systems, with emphasis regional interrelationships. People and physical environment and agents of change. Prerequisite: 131-132 or consent of instructor.

214 Urban Geography (3) Concepts and theories in connection with urban growth and development. Emphasis on urbanization, urbanization, and significance of systems and urban morphology. Prerequisites: 101-102 or consent of instructor. 2 lecture hours and one 2-hour lab.

215 Geographical Aspects of RURAL AREAS (3) Geographical aspects of rural areas of the United States, including small towns and rural fringes. Problems and potentials of rural America. Prerequisites: 101-102 or consent of instructor. 12 or more credits in prerequisite coursework.

221 Fieldwork in Geophysics (2) Summer field course for advanced undergraduates or graduate students. Includes geological and environmental problems. Includes seismogenic and electrical exploration, with emphasis on application to resource development. Prerequisite: Geology 101-102. 2 lecture hours and one 2-hour lab. Must be taken in sequence. Prerequisites: Geology 101, 102, 120 or equivalent. 3 lecture hours and one 2-hour lab (Same as Geology 470.)

224 Paleobotany and Palynology (3) Evolutionary energy, oil, and other petroleum reservoirs of the fossil record of macrobotanical remains, spores, and pollen. Emphasis on the significance of fossils in understanding global environmental problems. Prerequisite: Bio 210-210 or consent of instructor. 3 lecture hours and one 2-hour lab. (Same as Geology 201.)

240 Resources and Energy Policies (3) Evolutionary energy, oil, and other petroleum reservoirs of the fossil record of macrobotanical remains, spores, and pollen. Emphasis on the significance of fossils in understanding global environmental problems. Prerequisite: Bio 210-210 or consent of instructor. 3 lecture hours and one 2-hour lab. (Same as Geology 201.)

241 Advanced Mineralogy (3) Crystal chemistry of the rock-forming minerals, with emphasis on crystal structure and physical properties. Prerequisite: Consent of instructor. 2 lecture hours and one 2-hour lab.
199 The German Language and World Business (1)

305 Readings in German (3) Topics in both literary and non-literary fields. Students or student groups are encouraged to suggest topics for future courses. May be repeated two times with approval of department. Prereq: 202 or equivalent.

311-312 Conversation and Composition (3,3) Prereq: 202 or equivalent.

321 German Film (3) A study of a German cinema from the earliest days to the present. Writing-empasis course. (Same as Cinema Studies 321.)

323 Modern German Novel in English Translation (3) 

426 Methods of Historical Linguistics (3) 

425 Introduction to Descriptive Linguistics (3) (Same as Linguistics 425.)

424 German Literary Movements (3) Major periods in the development of German literature since 1750, with an emphasis on the problems and pitfalls of periodization. (Same as Russian 424, French 424, Spanish 424, and Linguistics 424.)

423 German Grammar (3) Prereq: 6 hours of 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.

421 German Lyric Poetry (3) Prereq: 6 hours of 300 courses excluding 331-332 and courses in English translation, or equivalent.

411-412 Advanced Conversation and Composition (3,3) Prereq: 311-312 or equivalent or consent of department.

410 Selected Topics in German Literature from 1750 to the Present (4) A study of the development of German literature since the Enlightenment, with an emphasis on the problems and pitfalls of periodization. (Same as Russian 410, French 410, Spanish 410, and Linguistics 410.)

400 Consumer Health (3) Major consumer health care issues, including health physics, interpreting journal and research articles. Exercises and classroom projects to develop a research or grant proposal. (Same as Public Health 400.)

401 Greek Poetry (3) Epic, lyric, drama. Authors vary. Prereq: 201 or equivalent. F

402 Greek Prose (3) History, philosophy, and oratory. Prereq: 201 or equivalent. F

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. Upper-division credit. May be repeated for credit. Maximum 9 hours. Prereq: 461 or consent of instructor.

449 Health Education (449) 110 Personal Health and Wellness (3) Information and skills necessary for personal and family health and safety, and to develop confidence in judgments about personal health needs. Prereq: 449.

201 Seminar in Human Sexuality (3) Problems and responsibilities of being male and female as they relate to health and wellness. Fulfills upper-level Distribution Requirement for Foreign Language credit. A writing-emphasis course. Fulfills Upper-level Distribution Requirement for Foreign Language credit.

202 Seminar in Consumer Behavior (1) Social psychology of consumer behavior. The study of consumer behavior and the social factors influencing it. Emphasis on the problems and pitfalls of periodization. F

203 Seminar in Marketing (1) Social psychology of consumer behavior. The study of consumer behavior and the social factors influencing it. Emphasis on the problems and pitfalls of periodization. F

101-102 Elementary German (3,3) Language laboratory required. Must be taken in sequence: not available to students eligible for German 150.

110 Language Laboratory (0)

110 Personal Health and Wellness (3) Information and skills necessary for personal and family health and safety, and to develop confidence in judgments about personal health needs. Prereq: 449.

325 Modern German Novelin English Translation (3) (Same as Cinema Studies 325.)

260 Intermediate German: Grammar Review and Reading (3) Prereq: German 101 or 150 or appropriate placement test.

261-262 Introduction to German Literature (3,3) Prereq: 321 or equivalent. Not need be taken in sequence.

263 Intermediate First Aid and Emergency Care (3) Theory and practice of first aid and emergency care, including first aid and emergency techniques. May be repeated for credit. Maximum 24 hours.

264 Advanced First Aid and Emergency Care (3) Theory and practice of first aid and emergency care, including first aid and emergency techniques. May be repeated for credit. Maximum 24 hours.

265 Business German (3) (Same as Business German 465.)

275 Health Communications (3) Communication strategies for health educators in various settings. Emphasizes the importance of understanding the characteristics of audiences, determining research methods and grant writing techniques, and designing effective health materials, health curriculum, health communications, and health programs. F

280 Principles of Consumer Behavior (3) Prereq: 300 or equivalent.

281 Health Economics (3) The study of health services/products. (Same as Public Health 401.)

282 Principles of Consumer Behavior (3) Prereq: 300 or equivalent.

283 Health Law (3) (Same as Public Health 402.)

284 Consumer Health (3) Major consumer health care issues, including health physics, interpreting journal and research articles. Exercises and classroom projects to develop a research or grant proposal. (Same as Public Health 403.)

285 Health Education (3) Social psychology of consumer behavior. The study of consumer behavior and the social factors influencing it. Emphasis on the problems and pitfalls of periodization. F

286 Principles of Consumer Behavior (3) Prereq: 300 or equivalent.

287 Health Law (3) (Same as Public Health 401.)

288 Principles of Consumer Behavior (3) Prereq: 300 or equivalent.

289 Consumer Health (3) Major consumer health care issues, including health physics, interpreting journal and research articles. Exercises and classroom projects to develop a research or grant proposal. (Same as Public Health 403.)

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300 Consumer Health (3) Major consumer health care issues, including health physics, interpreting journal and research articles. Exercises and classroom projects to develop a research or grant proposal. (Same as Public Health 403.)

301 Interdisciplinary Studies in Consumer Behavior (3) Major consumer health care issues, including health physics, interpreting journal and research articles. Exercises and classroom projects to develop a research or grant proposal. (Same as Public Health 403.)

302 Consumer Health (3) Major consumer health care issues, including health physics, interpreting journal and research articles. Exercises and classroom projects to develop a research or grant proposal. (Same as Public Health 403.)

303 Consumer Health (3) Major consumer health care issues, including health physics, interpreting journal and research articles. Exercises and classroom projects to develop a research or grant proposal. (Same as Public Health 403.)

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308 Consumer Health (3) Major consumer health care issues, including health physics, interpreting journal and research articles. Exercises and classroom projects to develop a research or grant proposal. (Same as Public Health 403.)

309 Consumer Health (3) Major consumer health care issues, including health physics, interpreting journal and research articles. Exercises and classroom projects to develop a research or grant proposal. (Same as Public Health 403.)

310 Advanced Conversation and Composition (3,3) Prereq: 311-312 or equivalent or consent of department.

311 German Film (3) A study of a German cinema from the earliest days to the present. Writing-empasis course. (Same as Cinema Studies 321.)

312 Advanced Conversation and Composition (3,3) Prereq: 202 or equivalent.

313 Modern German Novel in English Translation (3) 

314 Advanced Conversation and Composition (3,3) Prereq: 202 or equivalent.

315 Business German (3) (Same as Business German 465.)

316 Beginning German (3) Must be taken in sequence.

317 Beginning German (3) Must be taken in sequence.

318 Intermediate German: Grammar Review and Reading (3) The systematic review of A1, A2, and B1 levels. For language examination, and upper-division students preparing for upper-division levels in the sequence. Prereq: 102 or 150 or appropriate placement test. Must be taken in sequence. Not available to students eligible for German 150.

319 Advanced Conversation and Composition (3,3) Prereq: 311-312 or equivalent or consent of department.
ExerciseSciencePracticumII(1-6)Supervised
EducationProgram.Coreq:450forteachereducation

4 Administration of Physical Education and Ath-lete

4 Ethics in Physical Education (3) Focus on ethical

415 Athletic Coaching Field Experience (1) Practical

440 ExercisePhysiology/FitnessInternship(12-15)

446 MotorDevelopmentLaboratory(3) Application of

400 Selected Interdisciplinary Cultural Topics (1-12)

380 Human Services Field Work (6)Practical field experiencesinappropriatelyorganized and
directedhuman services situations.Formajorsonly. Prereq:Progression to the major, 420, 440, Satisfactory/No

380,420,440.Satisfactory/NoCredit only.Sp

422 Applied Kinesiology (3) Study and emphasis of

139 Introduction to Social Work (3)Practical field ex-
periences in social work agencies.Satisfactory/No
Credit only.Sp

395 Information Interpretation and Assessment (3)
Information gathering and assessment for human
services workers on the provision of services to clients.
Prereq: Progression to the major.
Sp

400 CulturalstudiesconcentrationorminorexceptAfrican-Americanstudies.Registrationbyconsentofdirectorof

320 Introduction to Kinesiology (3) Focus on the
physical and social aspects of human movement.
Prereq: Placement test.
Sp

325 Philosophy of Sport (3) Comparison of different
versions of philosophy of sport, with emphasis on
Sp, Su

380 Introduction to Social Work (3)Practical field ex-
periences in social work agencies.Satisfactory/No
Credit only.Sp

380 Human Services Methodologies I (3) Basic
understanding of human services agencies, with
emphasis on the delivery of services to individuals
with special needs. Prereq: 380, 420, 440, Satisfactory/No
Credit only.Sp

380 Human Services Methodologies I (3) Basic
understanding of human services agencies, with
emphasis on the delivery of services to individuals
with special needs. Prereq: 380, 420, 440, Satisfactory/No
Credit only.Sp

380 Human Services Methodologies I (3) Basic
understanding of human services agencies, with
emphasis on the delivery of services to individuals
with special needs. Prereq: 380, 420, 440, Satisfactory/No
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380 Human Services Methodologies I (3) Basic
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with special needs. Prereq: 380, 420, 440, Satisfactory/No
Credit only.Sp

380 Human Services Methodologies I (3) Basic
understanding of human services agencies, with
emphasis on the delivery of services to individuals
with special needs. Prereq: 380, 420, 440, Satisfactory/No
Credit only.Sp
340 Intermediate Interior Design II (3) Studio problems of intermediate complexity with emphasis on interior design software and computer-aided design techniques. Prerequisites: Intermediate Interior Design. Corequisites: Fourth year standing in Interior Design. 3 hour lecture and three hour studio. Consent of instructor. F.

350 Intermediate Interior Design II (3) Studio problems of intermediate complexity with emphasis on interior design software and computer-aided design techniques. Prerequisites: Intermediate Interior Design. Corequisites: Fourth year standing in Interior Design. 3 hour lecture and three hour studio. Consent of instructor. F.

360 Business Principles and Practices (3) Interprofessional relationships, business communication, principles of management, financial accounting. Consent of instructor. F.

370 History of Interior Architecture II (4) Interior architecture, decoration and decorative arts with cultural context, nineteenth through twentieth centuries; design principles. Consent of instructor. F.

380 Business Principles and Practices II (3) Business ethics and professional practices. Consent of instructor. F.

390 Furniture Design (4) Human factors data applied to design of body support, task support, storage and decorative elements. Consent of instructor. F.

400 History of American Interior Architecture (3) Historical developments in interior architecture and decorative arts with cultural context, colonial era through nineteenth century. Consent of instructor. F.

410 Intermediate Italian (3,3) Sequence stresses reading, writing, listening and speaking in preparation for upper division courses in the language. Consent of instructor. F.

420 Practicum for Interior Design (12) Supervised experience in a professional design firm. Consent of instructor. F.

430 Intermediate Italian (3,3) Sequence stresses reading, writing, listening and speaking in preparation for upper division courses in the language. Consent of instructor. F.

440 Advanced Interior Design (3) Non-residential environment issues and design strategies, including presentation and design strategies for non-residential environments. Consent of instructor. F.

450 Lighting for Interior Designers (2) Application of light study principles and lighting equipment to design of visual environment. Consent of instructor. F.

460 Writing for Interior Designers (2) Organization and writing principles and practices that are applicable to professional writing and design documentation. Consent of instructor. F.

470 History of American Interior Architecture (3) Historical and cultural context of design and architecture, from ancient through nineteenth century. Consent of instructor. F.

480 History of American Interior Architecture (3) Historical and cultural context of design and architecture, from ancient through nineteenth century. Consent of instructor. F.

490 Internship (1-15) Career related experiences in the United States or abroad with permission of the Language & World Business Director. For Language & World Business majors only. Consent of instructor. F.

500 Advanced Interior Design (3) Advanced interior design research and design. Consent of instructor. F.

510 Survey of Interior Design (3) Planning and organizing interior spaces for residential and commercial settings, review of historical trends and current issues. Consent of instructor. F.

520 Survey of Interior Design (3) Planning and organizing interior spaces for residential and commercial settings, review of historical trends and current issues. Consent of instructor. F.

530 Survey of Interior Design (3) Planning and organizing interior spaces for residential and commercial settings, review of historical trends and current issues. Consent of instructor. F.

540 Advanced Interior Design (3) Comprehensive study of advanced complexity in design strategies, including presentation and design strategies for non-residential environments. Consent of instructor. F.

550 Advanced Interior Design (3) Comprehensive study of advanced complexity in design strategies, including presentation and design strategies for non-residential environments. Consent of instructor. F.

560 Advanced Interior Design (3) Comprehensive study of advanced complexity in design strategies, including presentation and design strategies for non-residential environments. Consent of instructor. F.

570 Advanced Interior Design (3) Comprehensive study of advanced complexity in design strategies, including presentation and design strategies for non-residential environments. Consent of instructor. F.

580 Advanced Interior Design (3) Comprehensive study of advanced complexity in design strategies, including presentation and design strategies for non-residential environments. Consent of instructor. F.

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680 Advanced Interior Design (3) Comprehensive study of advanced complexity in design strategies, including presentation and design strategies for non-residential environments. Consent of instructor. F.

690 Advanced Interior Design (3) Comprehensive study of advanced complexity in design strategies, including presentation and design strategies for non-residential environments. Consent of instructor. F.

700 Advanced Interior Design (3) Comprehensive study of advanced complexity in design strategies, including presentation and design strategies for non-residential environments. Consent of instructor. F.
water pollution, air pollution, atmospheric power, nuclear power, fossil fuel power, and other energy sources. Global problems ranging from food shortages to natural disasters have become increasingly evident in recent years.

1.3 Areas of Latin American Literature (3) (Same as Spanish 310)

1.4 Caribbean Cultures and Societies (3) (Same as Anthropology 310 and African-American Studies 310)

1.5 Latin American Government and Politics I (3) (Same as Political Science 310)

1.6 History of Latin America (3) (Same as History 310)

1.7 Geography of Middle America (3) (Same as Geography 312)

1.8 Geography of South America (3) (Same as Geography 313)

1.9 Social Protest Literature of Latin America (3) (Same as Spanish 313)

2 Library and Information Science (20)

2.1 Searching Information Resources and Strategies (3) Information as a critical resource for research and scholarly activity. Use of print and non-print resources, including databases, indexes, and other electronic tools. Prerequisites: Completion of Freshman English or equivalent.

2.2 Introduction to Latin American Studies (3,3) Introduction to Latin America and the Spanish-speaking world. Emphasis on history, culture, and societies of Latin America.

2.3 Introduction to Reading in Spanish Literature (3) Introduction to reading in Spanish literature. Prerequisites: Completion of Beginning Spanish or consent of instructor.

2.4 Beginning Spanish (3) Beginning Spanish language and culture. Emphasis on communication skills.

2.5 Intermediate Spanish (3) Intermediate level Spanish language and culture. Emphasis on communication skills.

2.6 Advanced Spanish Language and Culture (3) Advanced level Spanish language and culture. Emphasis on communication skills.

2.7 Introduction to Latin American Studies (3,3) Introduction to Latin America and the Spanish-speaking world. Emphasis on history, culture, and societies of Latin America. Prerequisites: Completion of Beginning Spanish or consent of instructor.

2.8 Beginning Latin (3,3) Must be taken in sequence. Not available to students eligible for Latin 150. Prerequisites: Completion of Beginning Latin or equivalent.

2.9 Intermediate Latin: Vergil's Aeneid (3) Introduction to Latin literature. Prerequisites: Completion of Beginning Latin or equivalent.

2.10 Advanced Latin Language and Culture (3) Advanced level Latin language and culture. Emphasis on communication skills.

2.11 Latin American Civilization (3) (Same as Spanish 312) Latin American civilization and its impact on the world. Prerequisites: Completion of Beginning Spanish or consent of instructor.

2.12 Aspects of Spanish American Literature (3) (Same as Spanish 313) Aspects of Spanish American literature. Prerequisites: Completion of Beginning Spanish or consent of instructor.

2.13 Caribbean Cultures and Societies (3) (Same as Anthropology 310 and African-American Studies 310) Caribbean cultures and societies.

2.14 Latin American Government and Politics I (3) (Same as Political Science 310) Latin American government and politics.

2.15 History of Latin America (3) (Same as History 310) History of Latin America.

2.16 Geography of Middle America (3) (Same as Geography 312) Geography of Middle America.

2.17 Geography of South America (3) (Same as Geography 313) Geography of South America.

2.18 Social Protest Literature of Latin America (3) (Same as Spanish 313) Social protest literature of Latin America.

3 Library and Information Science (20)

3.1 Searching Information Resources and Strategies (3) Information as a critical resource for research and scholarly activity. Use of print and non-print resources, including databases, indexes, and other electronic tools. Prerequisites: Completion of Freshman English or equivalent.

3.2 Introduction to Latin American Studies (3,3) Introduction to Latin America and the Spanish-speaking world. Emphasis on history, culture, and societies of Latin America. Prerequisites: Completion of Beginning Spanish or consent of instructor.

3.3 Introduction to Reading in Spanish Literature (3) Introduction to reading in Spanish literature. Prerequisites: Completion of Beginning Spanish or consent of instructor.

3.4 Beginning Spanish (3) Beginning Spanish language and culture. Emphasis on communication skills.

3.5 Intermediate Spanish (3) Intermediate level Spanish language and culture. Emphasis on communication skills.

3.6 Advanced Spanish Language and Culture (3) Advanced level Spanish language and culture. Emphasis on communication skills.

3.7 Latin American Civilization (3) (Same as Spanish 312) Latin American civilization and its impact on the world. Prerequisites: Completion of Beginning Spanish or consent of instructor.

3.8 Aspects of Spanish American Literature (3) (Same as Spanish 313) Aspects of Spanish American literature. Prerequisites: Completion of Beginning Spanish or consent of instructor.

3.9 Caribbean Cultures and Societies (3) (Same as Anthropology 310 and African-American Studies 310) Caribbean cultures and societies.

3.10 Latin American Government and Politics I (3) (Same as Political Science 310) Latin American government and politics.

3.11 History of Latin America (3) (Same as History 310) History of Latin America.

3.12 Geography of Middle America (3) (Same as Geography 312) Geography of Middle America.

3.13 Geography of South America (3) (Same as Geography 313) Geography of South America.

3.14 Social Protest Literature of Latin America (3) (Same as Spanish 313) Social protest literature of Latin America.

4 Library and Information Science (20)

4.1 Searching Information Resources and Strategies (3) Information as a critical resource for research and scholarly activity. Use of print and non-print resources, including databases, indexes, and other electronic tools. Prerequisites: Completion of Freshman English or equivalent.

4.2 Introduction to Latin American Studies (3,3) Introduction to Latin America and the Spanish-speaking world. Emphasis on history, culture, and societies of Latin America. Prerequisites: Completion of Beginning Spanish or consent of instructor.

4.3 Introduction to Reading in Spanish Literature (3) Introduction to reading in Spanish literature. Prerequisites: Completion of Beginning Spanish or consent of instructor.

4.4 Beginning Spanish (3) Beginning Spanish language and culture. Emphasis on communication skills.

4.5 Intermediate Spanish (3) Intermediate level Spanish language and culture. Emphasis on communication skills.

4.6 Advanced Spanish Language and Culture (3) Advanced level Spanish language and culture. Emphasis on communication skills.

4.7 Latin American Civilization (3) (Same as Spanish 312) Latin American civilization and its impact on the world. Prerequisites: Completion of Beginning Spanish or consent of instructor.

4.8 Aspects of Spanish American Literature (3) (Same as Spanish 313) Aspects of Spanish American literature. Prerequisites: Completion of Beginning Spanish or consent of instructor.

4.9 Caribbean Cultures and Societies (3) (Same as Anthropology 310 and African-American Studies 310) Caribbean cultures and societies.

4.10 Latin American Government and Politics I (3) (Same as Political Science 310) Latin American government and politics.

4.11 History of Latin America (3) (Same as History 310) History of Latin America.

4.12 Geography of Middle America (3) (Same as Geography 312) Geography of Middle America.

4.13 Geography of South America (3) (Same as Geography 313) Geography of South America.

4.14 Social Protest Literature of Latin America (3) (Same as Spanish 313) Social protest literature of Latin America.

5 Library and Information Science (20)

5.1 Searching Information Resources and Strategies (3) Information as a critical resource for research and scholarly activity. Use of print and non-print resources, including databases, indexes, and other electronic tools. Prerequisites: Completion of Freshman English or equivalent.

5.2 Introduction to Latin American Studies (3,3) Introduction to Latin America and the Spanish-speaking world. Emphasis on history, culture, and societies of Latin America. Prerequisites: Completion of Beginning Spanish or consent of instructor.

5.3 Introduction to Reading in Spanish Literature (3) Introduction to reading in Spanish literature. Prerequisites: Completion of Beginning Spanish or consent of instructor.

5.4 Beginning Spanish (3) Beginning Spanish language and culture. Emphasis on communication skills.

5.5 Intermediate Spanish (3) Intermediate level Spanish language and culture. Emphasis on communication skills.

5.6 Advanced Spanish Language and Culture (3) Advanced level Spanish language and culture. Emphasis on communication skills.

5.7 Latin American Civilization (3) (Same as Spanish 312) Latin American civilization and its impact on the world. Prerequisites: Completion of Beginning Spanish or consent of instructor.

5.8 Aspects of Spanish American Literature (3) (Same as Spanish 313) Aspects of Spanish American literature. Prerequisites: Completion of Beginning Spanish or consent of instructor.

5.9 Caribbean Cultures and Societies (3) (Same as Anthropology 310 and African-American Studies 310) Caribbean cultures and societies.

5.10 Latin American Government and Politics I (3) (Same as Political Science 310) Latin American government and politics.

5.11 History of Latin America (3) (Same as History 310) History of Latin America.

5.12 Geography of Middle America (3) (Same as Geography 312) Geography of Middle America.

5.13 Geography of South America (3) (Same as Geography 313) Geography of South America.

5.14 Social Protest Literature of Latin America (3) (Same as Spanish 313) Social protest literature of Latin America.

6 Library and Information Science (20)

6.1 Searching Information Resources and Strategies (3) Information as a critical resource for research and scholarly activity. Use of print and non-print resources, including databases, indexes, and other electronic tools. Prerequisites: Completion of Freshman English or equivalent.

6.2 Introduction to Latin American Studies (3,3) Introduction to Latin America and the Spanish-speaking world. Emphasis on history, culture, and societies of Latin America. Prerequisites: Completion of Beginning Spanish or consent of instructor.

6.3 Introduction to Reading in Spanish Literature (3) Introduction to reading in Spanish literature. Prerequisites: Completion of Beginning Spanish or consent of instructor.

6.4 Beginning Spanish (3) Beginning Spanish language and culture. Emphasis on communication skills.

6.5 Intermediate Spanish (3) Intermediate level Spanish language and culture. Emphasis on communication skills.

6.6 Advanced Spanish Language and Culture (3) Advanced level Spanish language and culture. Emphasis on communication skills.

6.7 Latin American Civilization (3) (Same as Spanish 312) Latin American civilization and its impact on the world. Prerequisites: Completion of Beginning Spanish or consent of instructor.

6.8 Aspects of Spanish American Literature (3) (Same as Spanish 313) Aspects of Spanish American literature. Prerequisites: Completion of Beginning Spanish or consent of instructor.

6.9 Caribbean Cultures and Societies (3) (Same as Anthropology 310 and African-American Studies 310) Caribbean cultures and societies.

6.10 Latin American Government and Politics I (3) (Same as Political Science 310) Latin American government and politics.

6.11 History of Latin America (3) (Same as History 310) History of Latin America.

6.12 Geography of Middle America (3) (Same as Geography 312) Geography of Middle America.

6.13 Geography of South America (3) (Same as Geography 313) Geography of South America.

6.14 Social Protest Literature of Latin America (3) (Same as Spanish 313) Social protest literature of Latin America.
400 Computer Information Systems Analysis and Design (3) Design of operational/logical information systems for organizations based on evolving microcom- puter hardware networks; data base design theory, procedural and standards language, subroutines. Analyze and design operational and decision support require- ments. Prereq: Management 303.


402 Transportation in Strategic Planning (3) Senior seminar in development of analysis and transportation management. Major writing requirement. Prereq: 301, 302 and senior standing.

470 Honors: Executive-in-Residence in Transportation and Logistics (3) Strategies and methodologies for resolving conflicts and transportation problems. Focus on the principles of strategic market planning. Prereq: Course in management.

MANAGEMENT (625)


302 Management Information Systems (3) Management information systems. Organizational information needs, management decision making, role of technology and systems development in organizations. Prereq: 301, 321, and senior standing.}


341 Personnel Management (3) Theory, methods and issues pertaining to successful personnel management. Prereq: 301, senior standing.


362 Marketing Research and Information Planning (3) Marketing Research process from the situation to consumer behavior techniques and then the analysis techniques so that the student can apply them in the development of a marketing project. Major writing requirement. Prereq: 301 and 321.

370 Promotion Management (3) Principles and practices of promotion management and their relationship to overall marketing planning. Managerial decisions emphasizing types of distribution continuously confronting the organization. Major writing requirement. Prereq: 301 and 321.


410 Management Information Systems (3) Management information systems. Organizational information needs, management decision making, role of technology and systems development in organizations. Prereq: 301, 321, and senior standing.

420 Promotion Management (3) Principles and practices of promotion management and their relationship to overall marketing planning. Managerial decisions emphasizing types of distribution continuously confronting the organization. Major writing requirement. Prereq: 301 and 321.

430 Marketing Analysis and Strategy (3) Approaches for finding markets and evaluating them for opportunity. Concepts, types of information and analysis techniques combined into a framework for strategic decision making. Major writing requirement. Prereq: 301 and 321.

450 Computer Information Systems Analysis and Design (3) Analysis and design of information systems for organizations. Involves the design of system architecture and problem solving. Prereq: Management 303.


470 Honors: Executive-in-Residence in Transportation and Logistics (3) Strategies and methodologies for resolving conflicts and transportation problems. Focus on the principles of strategic market planning. Prereq: Course in management.

MATHEMATICS (461)


121 Calculus I (4) Limits, continuity, differentiation, and antidifferentiation. Prereq: Three years of high school algebra and two years of college algebra. Prereq: Two years of college algebra.

122 Calculus II (4) Sequel to 121, including elementary logarithmic, exponential, and trigonometric functions, with applications. Prereq: 121.

141-142 Calculus I, II (4,4) First-year course in college mathematics tailored to the needs of students of science, engineering, mathematics, and computer science. Differential and integral calculus with applications. Prereq: Two years of algebra, a year of geometry, and half a year of trigonometry in high school. Students will receive credit for 121 and 122 in the senior year. Should not be taken by students who have already taken 143.

151-152 Biocalculus I, II (3,3) For students majoring in the life sciences. Topics from calculus of algebraic, exponential, and logarithmic functions, with applications to problems of growth and decay, and probability. Prereq: Two years of algebra, a year of geometry, and half a year of trigonometry in high school. Should not be taken by students who have already taken 143.

160 Calculus and Analytic Geometry (3) First-year course in college mathematics tailored to the needs of students of science, engineering, mathematics, and computer science. Differential and integral calculus with applications. Prereq: Two years of algebra, a year of geometry, and half a year of trigonometry in high school. Should not be taken by students who have already taken 143.

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


232 Calculus in Several Variables (3) Vectors in three-dimensional space, vector-valued functions, multiple integrals, line integrals, and Green's theorem. Prereq: 141.

241-242 Calculus of Several Variables (3,3) Vectors in three-dimensional space, vector-valued functions, multiple integrals, line integrals, and Green's theorem. Prereq: 141.

241-242 Calculus of Several Variables (3,3) Vectors in three-dimensional space, vector-valued functions, multiple integrals, line integrals, and Green's theorem. Prereq: 141.


404 Applied Vector Calculus (3) Topics from multivariate calculus to study concepts and problems in mathematics. Does not essay examination and 3000 words of writing. Prereq: 201 or 202.

399 Studies in Mathematics (3) May be repeated. Prereq: 231 or 237.

251 or 257 and 221.

414 Analysis I (3) First course in the algebra of simultaneous linear equations and matrices. Includes such topics as linear dependence and independence, determinants, vector spaces, linear transformations, eigenvalues and eigenvectors. Prereq: 141-142.

325 Computer Laboratory (1) Optional supplement to 214, featuring computer demonstrations and projects. Coreq: 251 or 257.

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

331 Probability I (3) Elementary concepts, discrete probability, probability spaces, conditional probability and stochastic independence, discrete and continuous random variables, including binomial, Poisson, uniform and normal distributions, expectation and variance, moment generating functions, moment inequality, central limit theorem, estimation, elementary theory of large numbers and the central limit problem. Prereq: 241 or 247, and 271.

241 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 271.

311 Algebra I (3) Introduction to abstract algebra, emphasizing integers and polynomial rings. Prereq: 251 or 257.

271 Numerical Algorithms (12) Selection of algorithms and associated library subroutines for problems selected from approximation, interpolation, numerical integration, and differential equations. Requires some background in analysis, linear algebra, and computer programming. Prereq: 201 or 202, and 241 or 247, and 251 or 257, and 271 and knowledge of a high level programming language such as FORTRAN. (Same as Computer Science 371) 390 Studies In Mathematics (5) May be repeated. Max/min 9 hours. Prereq: Consent of Instructor.

400 History of Mathematics (2) Development of major ideas in mathematics from ancient to modern times and the influence of these ideas in science, technology, philosophy, art, and other areas. Prereq: 141-142 or consent of instructor. 401-402 History of Mathematics I, II Lecture course extending over entire clinical year. Prereq: 321 or 322 and consent of instructor.

410-411 Microbiology (4, 4) Laboratory work in bacteriology, virology, parasitology, and mycology. Writing emphasis on a B.B. or B.S. in Medical technology. Prereq: 231 or 237.

412 Mathematics and Microcomputers (3) Primarily for students seeking certification as math teachers. Use of microcomputers to create student notebooks and programs for classroom use. Prereq: 251 or 257.

413 Mathematical Modeling (3) Construction and analysis of mathematical models used in science and industry. Prereq. Optional: 251, 254, or 257. Writing emphasis course.

414 Combinatorics I (3) Introduction to problems of construction and enumeration for discrete structures such as sequences, partitions, graphs, finite fields and combinatorial designs. Prereq: 321 or consent of instructor.

405 Probability II (3) Advanced topics in probability such as sequences, series, convergence, and measure. Prereq: 311 or consent of instructor.

450 Clinical Serology and Immunology (2) Performance of standard to efficient bloodbank. Includes bloodgas analysis, including radioimmunoassay which utilizes radioisotopes. Components for transfusion. Safety control methods and the significance and correlation of laboratory data. Includes blood serum components for transfusion. Safety control methods.
330 Music Methods for the Elementary School (3) Methods and materials for teaching music in the elementary grades. Primarily intended for music education majors. Prerequisite: Consent of instructor and admission to Teacher Education Program. Letter grade only. Satisfactory/No Credit only. Sp, Su

350 Field Experience in Music Education (1) Prerequisite: Consent of instructor and admission to Teacher Education Program. May be repeated. Minimum 9 hours. Satisfactory/No Credit only. F, Sp

410 Pre-Internship Seminar (0) Objectives and policies of the internship program. Must be completed the term immediately preceding the internship. Prerequisite: Admission to Teacher Education Program and consent of instructor. Letter grade only. F

440 Mastering Band Techniques (1) Theory, organization, and direction of a school marching band. Letter grade only.

410 Internship I: Grades K-12 (4) Methods and theories of teaching internships in a complex in local public schools. Application for internship should be made upon admission to the Teacher Education Program. Prerequisite: 410 and admission to Teacher Education Program. Letter grade only. F

420 Music Methods for High School (4) Methods and materials for teaching vocal and instrumental music at the high-school level, including charting for the marching band. Prerequisite: Admission to Teacher Education Program and consent of instructor. Letter grade only. F

440 Mastering Band Techniques (1) Theory, organization, and direction of a school marching band. Letter grade only.

560 Studio Orchestra (1,1) May be repeated. Maximum 12 hours.

564 Steel Band (1,1) May be repeated.

565 Jazz Ensemble (1,1) May be repeated.

566 Small Jazz Ensemble (1,1) May be repeated. Maximum 12 hours.

568 Concert Band (1,1) May be repeated.

569 Wind Ensemble (1,1) May be repeated.

570 Symphony Orchestra (1,1) May be repeated.

575 Concert Band (1,1) May be repeated.

576 Marching Band (1,1) May be repeated.

577 Lab Band (1,1) May be repeated.

580 Concert Choir (1,1) May be repeated.

582 University Chorus (1,1) May be repeated.

584 Wind Ensemble (1,1) May be repeated.

585 Wind Ensemble (1,1) May be repeated.

589 Wind Ensemble (1,1) May be repeated.

590 Accompanying (1,1) May be repeated.

MUSIC ENSEMBLE (708)

301-302 Wind Ensemble (1,1) May be repeated. Minimum 12 hours.

304-304 Jazz Ensemble (1,1) May be repeated.

306-306 Studio Orchestra (1,1) May be repeated. Minimum 12 hours.

306-306 Trombone Ensemble (1,1) May be repeated.

310-310 Percussion Ensemble (1,1) May be repeated.

311-311 Marimba Choir (1,1) May be repeated.

312-312 Baroque Ensemble (1,1) May be repeated.

314-314 Brass Choir (1,1) May be repeated.

315-315 Chamber Music Ensemble (1,1) May be repeated. Minimum 12 hours.

316-316 String Ensemble (1,1) May be repeated.

320-320 UT Singers (1,1) May be repeated.

320-320 Chamber Singers (1,1) May be repeated.

322-322 Collegium (1,1) May be repeated.

324-324 Saxophone Choir (1,1) May be repeated.

340-340 Opera Theatre (1,1) May be repeated.

MUSIC GENERAL (698)

100 Fundamentals of Music (3) Theory and practice of basic elements of music. Writing-emphasis core. Fall, Spring, Summer

110 Appreciation (3) Developing listening skills and understanding of Western music from the ancient world through the 20th century. For non-music majors. Writing-emphasis core.

120 History of Rock (3) Study of a period in the development of popular music, its origins, influence, and role in social commentary and cultural dimensions to the present. Writing-emphasis core.

120 History of Jazz (3) Individual course of study centered around a particular historical jazz artist. Prerequisite: Consent of instructor. May be repeated once for credit. Requires: Payment of Applied Music fee. Fall, Spring, Summer

145 Fundamentals of Performance (2) Private instrumental or vocal study, one or two half-hours per week. 1 hour credit - advanced, secondary or minor; 2 hours credit - major; 3 hours credit - pre-professional. May be taken for a maximum of 4 credit hours per quarter. Prerequisite: Admission by audition. A, B, C, NC. Performance concert with Applied Music fee, F, Sp.

202 Solo Class (0)

301 Junior Recital (0)

302 Senior Recital (0)

311 Lecture Recital (0)

311 Special Topics in Performance (1-3) Prerequisite: Consent of department head. May be repeated. Maximum 9 hours.

311 Special Topics in Performance (1-3) Prerequisite: Consent of department head. May be repeated. Maximum 9 hours.

330 History of Jazz (3) Development of jazz music, its styles, and its influence. May be repeated for credit. Maximum 9 hours.

382 Women's Chorale (1,1) May be repeated.

382 Women's Chorale (1,1) May be repeated.

384 Women's Chorale (1,1) May be repeated.

386 Women's Chorale (1,1) May be repeated.
MUSIC KEYBOARD (712)

110-120 Class Piano III, IV (3, 3) Development of keyboard techniques in reading, technique, repertoire, harmonization, and improvisation. Must be taken in sequence.

210-220 Class Piano III, IV (3, 4) Continuation of 110-120. Completes piano competency requirement; must be taken in sequence.

230-240 History of Western Music (3, 3) Historical overview of Western music; the study of the history of music. A, B, C, NC grading. Should be taken concurrently with 120.

250 Composition (2) Writing short vocal and instrumental works. Includes computer lab. Should be taken concurrently with 120. A, B, C, NC grading.


295 Keyboard Harmony (3) Analysis of basic harmonic and rhythmic models. Includes computer lab. Should be taken concurrently with 120. A, B, C, NC grading.

296 Sight Reading at the Keyboard (1) Prerequisite: Consent of instructor.

300 Sight Reading of the Keyboard (1) Prerequisite: Consent of instructor.

305-310 Piano Pedagogy I, II (3, 3) Conducts and examines. This course has no prerequisites and is open to all UT, Knoxville undergraduate students.

320 Instrumentation (3) Basic techniques in scoring for voice, brass, woodwind and string choirs and percussion. To be taken by theory and composition majors. A, B, C, NC grading.

330 Opera Production (1-3) Supervised work on opera production. Prerequisite: Consent of instructor. Maximum 12 hours.

340 Introduction to Computer Music Transmission (1) An introduction to the history of music notation systems and the development of music-related programming in electronic music and sound writing systems. Prerequisite: Consent of instructor.

345 Sound Synthesis Techniques (3) Sound synthesis techniques in electronic music and sound reinforcement systems. Topics include sound synthesis, audio measurements, microphones, stereo engineering and maintenance.

350 Advanced Improvisation (3) Development of individuals' skills and solving individual problems in jazz improvisation. Prerequisite: Consent of instructor.

355-365 Choral Conducting (3, 3) Conducts and examines. This course has no prerequisites and is open to all UT, Knoxville undergraduate students.

360 J. S. Bach Organ (1-4) May be repeated. A, B, C, NC grading. Admission by audition only. Prerequisite: Music 240 or equivalent.

365-375-385-395-495 Advanced Organ Literature (1-5) Prerequisite: Consent of instructor. May be repeated. A, B, C, NC grading.


325 Nursing of Children and Adults Theory (2) Theoretical component of 322. For RN's only. Prereq: 301, 304, 305, 306. Sp, Coreq: 316. Sp

533 Nursing of Children and Adults Theory (2) Theoretical component of 322. For RN's only. Prereq: 301, 304, 305, 306. Coreq: 316. Sp

539 Family Health Nursing (8) Nursing needs of family in health and illness. Care of families during all stages of the disease process. Interdisciplinary approach recommended. Prereq: 411 or 412 or consent of instructor.

497 Special Topics (1-12) Depth study of selected nursing topics, problems, or issues not covered in other student or professional school programs and of student and instructor interest. Prereq: Consent of instructor.

411 Food Principles (2) Food selection, safety, preparation, evaluation, meal planning, special diets 2 hours and 1 lab. F, Sp

390 Physiological Chemistry (4) Metabolism of carbohydrates, lipids, proteins; mono-, oligo- and polynucleotides, amino acids, essential fatty acids, vitamins, vitamins, and minerals as co-enzymes and prosthetic groups. Prereq: Chemistry 110 or equivalent.

401 Food and Clinical Analysis (4) Principles, procedures, instrumentation for analysis of foods and body fluids. Prereq: 200 with a grade of C or better for NTR majors. 2 hours and 2 labs. F, Sp

501 Fundamentals of Nutrition (3) Nutrition in normal and abnormal states during life cycle; nutritional analysis of diet. Prereq: Chemistry 110 or equivalent. Zoology 107 or 110. 3 hours. 2 labs. F, Sp

502 Family Health Nursing Theory (3) Theoretical component of 401. For RN's only. Prereq: 411. F, Sp

402 Family Health Nursing Theory (3) Theoretical component of 401. For RN's only. Prereq: 312. F, Sp

405 Professional Nursing Seminar (2) Critical examination of legislative, legal, ethical, social, and educational issues and trends that have immediate or long-range implications for professional nursing practice. Prereq: Senior standing. For nursing majors only. F

412 Psychosocial Long-Term Nursing (3) Theoretical component of 411. For RN's only. Prereq: 312. F, Sp

413 Experimental Food Science (3) Individual and group laboratory experimentation into food science; microcomputer applications. Prereq: 312, PSSc 471. 3 hours and 2 labs. F, Sp

414 Nutrient-Drug Interactions (2) Nutritional effects on efficacy and toxicity of drugs; drug effects on absorption and metabolism of nutrients. Prereq: 500 or equivalents. A, F

415 Family/Community Health Nursing (6) Application of the nursing process to individuals, families, groups or communities. Prereq: 411 or 412 or consent of instructor. Prereq: 411. F, Sp


396 Health Deviation Concepts (4) Corequisite PRN 304 with emphasis on physiological deviations underlymg the major disorders and health problems of acutely ill and chronically ill clients. Consideration of health problems related to lifestyle, psychological, involuntary, and involuntary functions. F, Sp

539 Family Health Nursing (8) Nursing needs of family in health and illness. Care of families during all stages of the disease process. Interdisciplinary approach recommended. Prereq: 411 or 412 or consent of instructor.

100 Introductory Nutrition (3) Nutritional concepts and current student issues in nutrition. For non-nurse students who have been referred for credit for this course. F, Sp

411 Nutrition in Disease (3) Metabolic processes of diseased organs and tissues; dietary modifications required. Prereq: 312, 313, F

412 Food and Nutrition Resources Management (3) Individuals and groups; public and private agencies; community and public health nurses. Prereq: 312, F

396 Health Deviation Concepts (4) Corequisite PRN 304 with emphasis on physiological deviations underlymg the major disorders and health problems of acutely ill and chronically ill clients. Consideration of health problems related to lifestyle, psychological, involuntary, and involuntary functions. F, Sp

539 Family Health Nursing (8) Nursing needs of family in health and illness. Care of families during all stages of the disease process. Interdisciplinary approach recommended. Prereq: 411 or 412 or consent of instructor.

100 Introductory Nutrition (3) Nutritional concepts and current student issues in nutrition. For non-nurse students who have been referred for credit for this course. F, Sp
110 Environmental Horticulture (3) Basic plant sciences and their relationship to ornamental horticulture. Introduction to awareness and appreciation of ornamental plant material and garden design and management of home landscapes, basic principles of soil care, and care of wildflowers and turfgrasses. 2 hours lecture, 3 hours lab.

200 Basic Landscape Plants (3) Identification, cultivation, care, design, application, and propagation of selected turf and ornamental plants. Introduction to ornamental plant management. 2 hours lecture, 2 hours lab.

260 Landscape Design (2) History of landscape design and its relation to contemporary applications. Awareness and critical understanding of landscape design fundamentals, landscape design and planning, practical landscape design planning, and design implementation. Prereq: 110. Two 2-hour labs. 2 hours lecture.


330 Turfgrass Science (3) Physiology, management, and environmental requirements for propagation. Prereq: 110 and 4 hours of biology or consent of instructor. 2 hours lecture, 2 hours lab.

340 Turfgrass Management (3) Practical turfgrass management including plant establishment, topdressing, fertilization, irrigation, disease and pest management, and related research practices. Prereq: 240. 3 hours.

345 Medical Ethics (3) Ethical issues in medicine such as research, health care, end of life decisions, and organ transplantation. Prereq: 100. 3 hours.

400 Special Topics (3) When content varies, may be repeated. Maximum of 9 hours.

411 Modern Religious Philosophies (3) (Same as Religious Studies 411.) Western philosophy, including monotheistic, Buddhist, Hindu, and Jewish thought from ancient times to the present. Prereq: 6 hours of philosophy or consent of instructor. 3 hours lecture and 3 hours discussion. May be repeated. Maximum of 6 credits. 4 hours.

412 Classical Indian Systems of Philosophy: The Moksha Tradition (3) (Same as Religious Studies 412.) The philosophical systems of the Vedas, Upanishads, and the Bhagavad Gita. Prereq: 6 hours of philosophy or consent of instructor. When content varies, may be repeated. Maximum of 6 credits.

413 Medieval Religious Philosophies (3) (Same as Religious Studies 413.) Medieval thought, including scholasticism, the scholastics, Roman Catholicism, and Eastern Orthodoxy, from the 10th-14th centuries. Prereq: 6 hours of philosophy or consent of instructor. When content varies, may be repeated. Maximum of 6 credits.

414 Nineteenth and Twentieth-Century Philosophy (3) (Same as Religious Studies 414.) Nineteenth and twentieth-century philosophy, including pragmatism, existentialism, phenomenology, critical theory, and analytic philosophy. Prereq: 6 hours of philosophy or consent of instructor. When content varies, may be repeated. Maximum of 6 credits.

416 Ethics (3) Theories of ethical values. Writing-emphasis course. Prereq: 100. 3 hours.

417 Social and Political Philosophy (3) Basic problems and concepts of social and political philosophy. Prereq: 110 or consent of instructor. 3 hours.

418 Ancient Western Philosophy (3) (Same as Religious Studies 418.) The place of mind in a material universe and the nature and possibilities of human knowledge. May be taken before 110. Writing-emphasis course. 3 hours.

419 Early Modern Philosophy (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. 3 hours.

420 Topics in History of Philosophy (3) One or more advanced seminars on selected topics in the history of philosophy. Special topics may be repeated. Maximum of 6 credits.

421 Foundations of Western Thought: 1600 through 1800 (3) The idea of civilization and the modern world. Prereq: 310. 3 hours.

422 Medieval Philosophy (3) Development of medieval thought from antiquity through the early twelfth century. Prereq: 320. 3 hours.

423 Ancient Greek Philosophy (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. 3 hours.

424 Philosophy of Science (3) General principles of research in the physical sciences, economics, and social sciences. Prereq: 320. 3 hours.

425 Formal Logic (3) Introduction to formal deductive systems: propositional and predicate logic. Prereq: 320 or consent of instructor. 3 hours.

426 Philosophy of Feminism (3) Various feminist theories and their application to social issues of concern to women. Prereq: 320. 3 hours.

427 Philosophy of Religion and Science (3) The relationship between science and religious thought. Prereq: 320. 3 hours.

430 Social and Political Philosophy (3) Basic problems and concepts of social and political philosophy. Prereq: 110 or consent of instructor. 3 hours.

431 Intermediate Formal Logic (3) Mastery of formal logic and symbolic logic. Prereq: 125 or consent of instructor. 3 hours.

432 Business Ethics (3) Ethical problems as they can be found in business. Prereq: 110. 3 hours.

434 Professional Responsibility (3) Critical examination of selected cases from philosophy, business ethics, and social science disciplines with particular emphasis on: ethical decision-making and the nature of professional responsibility. Thematic principles and analytical skills applied to selected classic and contemporary cases. Prereq: 320. 3 hours.

436 Medical Ethics (3) Ethical issues in medicine such as abortion, euthanasia, human experimentation, ter- ribility in Nazi camps, and the death penalty. Prereq: 320. 3 hours.

440 Advanced Turfgrass Landscape Design (3) Design of turfgrass landscapes. Prereq: 340 or consent of instructor. 2 hours lecture, 2 hours lab.

450 Plant Tissue Culture (3) (Same as Botany 451.) Growth and development of plants in tissue culture. Prereq: 340. 2 hours lecture, 2 hours lab.

451 Plant Tissue Culture (3) (Same as Botany 451.) Growth and development of plants in tissue culture. Prereq: 340. 2 hours lecture, 2 hours lab.

500 Philosophy of Language (3) The formal and informal aspects of language. Prereq: 320. 3 hours.

501 Philosophy of Religion (3) Analytical philosophical study of questions and issues in the philosophy of religion. Prereq: 320. 3 hours.

502 Philosophy of Science (3) General principles of research in the physical sciences, economics, and social sciences. Prereq: 320. 3 hours.

503 Philosophy and Literature (3) Nature of literature, philosophical assumptions in literary works. Writing-emphasis course.

504 Introduction to Philosophy of Science (3) Stan- dard topics in philosophy of science: scientific method, nature of theories, problem of induction, expla- nation, measurement, no background in logic is presup- posed.

505 Conceptual History of Science (3) Historical evolu- tion of thought within the scientific community, including the development of the scientific method and the role of experiment. Prereq: 320. 3 hours.

507 Aesthetics (3) (Same as Religious Studies 507.) Theoretical principles and analytical skills applied to selected classic and contemporary cases. Prereq: 320. 3 hours.

508 Philosophy of Religion (3) Analytical philosophical study of questions and issues in the philosophy of religion. Prereq: 320. 3 hours.

509 Philosophy and India (3) (Same as Religious Studies 574.)

510 Social and Political Philosophy (3) Basic problems and concepts of social and political philosophy. Prereq: 110 or consent of instructor. 3 hours.

511 The Human Condition: Knowledge and Reality (3) The nature of knowledge and the nature of reality. Prereq: 110. Writing-emphasis course. 3 hours.

512 History of Western Thought: 1600 through 1800 (3) The idea of civilization and the modern world. Prereq: 310. 3 hours.

513 Philosophy of Social Science (3) The nature and possibilities of human knowledge. May be taken before 110. Writing-emphasis course. 3 hours.

518 Ancient Greek Philosophy (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. 3 hours.

520 Social and Political Philosophy (3) Basic problems and concepts of social and political philosophy. Prereq: 110 or consent of instructor. 3 hours.

523 Ethics (3) Theories of ethical values. Writing-emphasis course. Prereq: 100. 3 hours.

524 Philosophy of Science (3) General principles of research in the physical sciences, economics, and social sciences. Prereq: 320. 3 hours.

526 Philosophy of Feminism (3) Various feminist theories and their application to social issues of concern to women. Prereq: 320. 3 hours.

527 Philosophy of Religion and Science (3) The relationship between science and religious thought. Prereq: 320. 3 hours.

528 Philosophy and India (3) (Same as Religious Studies 574.)

529 Religion and Philosophy in China (3) (Same as Religious Studies 576.)

530 The Concept of Woman (2) The nature of woman as it has been conceived by major western philosophers from Plato to Simone de Beauvoir. (Same as Women's Studies 326.) Prereq: 320. 2 hours.

532 Philosophy of Feminism (3) Various feminist theories and their application to social issues of concern to women today. (Same as Women's Studies 360.) Prereq: 320. 3 hours.

533 Psychological Foundations of Democracy (3) Philosophical problems relating to the nature and justifi- cation of the central values, principles, and concepts of democratic society. Writing-emphasis course. 3 hours.

534 Marxism (3) Basic philosophical issues in Marxist thought: strategy, class struggle, the Hegelian dialectic, and Historical Materialism. (Same as Russian and East European Studies 393.)

535 Aesthetics (3) Basic philosophical issues in Aesthetics: the nature of experience, the nature of beauty, and the nature of art. Writing-emphasis course. Prereq: 320. 3 hours.

540 Special Topics (3) When content varies, may be repeated. Maximum of 6 hours.

541 Modern Religious Philosophies (3) (Same as Religious Studies 413.) Western philosophy, including monotheistic, Buddhist, Hindu, and Jewish thought from ancient times to the present. Prereq: 6 hours of philosophy or consent of instructor. When content varies, may be repeated. Maximum of 6 hours.

542 Classical Indian Systems of Philosophy: The Moksha Tradition (3) (Same as Religious Studies 412.) The philosophical systems of the Vedas, Upanishads, and the Bhagavad Gita. Prereq: 6 hours of philosophy or consent of instructor. When content varies, may be repeated. Maximum of 6 hours.

543 Intermediate Formal Logic (3) Mastery of formal logic and symbolic logic. Prereq: 125 or consent of instructor. 3 hours.
210 Introduction to Soil Science (4) Differences in soils, soil genesis, physical, chemical and biological properties of soils. Examination of soils to land use and management. Soil fertility, soil test and fertilizer use, water relations, soil structure, soil texture, soil fertility, and soil plant nutrition. Introduction to soil chemistry and physics. Prereq: Chemistry 120 or equivalent. 2 hours and 1 lab. F

215 Introduction to Crop Science (2) Fundamental structure, cultivation, growth, reproduction and agronomic, biochemical and physiological characteristics of major crops used for food and fiber production. Prereq: one of these courses: Botany 100, 120, 125; Biology 110, 115; or Chemistry 125. 2 hours and 2 labs.

220 Soil Morphology (1) Intensive course involving soil profile mapping, landing and mapping of soil horizons in preparation for regional and national soil judging contests. Prereq: 210 and consent of instructor. May be repeated. Maximum 4 hours. 1 hour and 1 lab. F

230 Soil Fertility (3) Influence of soil properties on nutrient availability and uptake. Principles of fertilizer use and their reaction in soils. Prereq: 210, 2 hours and 1 lab. Sp

312 Soil and Water Conservation (3) Hydrologic, agroecologic, and engineering principles applied to soil and water conservation. Emphasis on erosion control, drainage and water quality. Prereq: 210, 2 hours and 1 lab. F

313 Soil and Water Conservation Laboratory (1) Lab exercises on topics covered in 312. Coreq: 312.

412 Soil Genesis, Classification and Mapping (3) Soil as a resource in development planning. The relationship of soil properties to the processes of soil formation. Prereq: Chemistry 110 or 350 or consent of instructor. 2 hours and 1 lab. F

414 Soil-Land Use and the Environment (3) Soil as a resource in development planning. Soil as a resource in development planning. Prereq: 210 and consent of instructor. May be repeated. 3 hours and 1 lab. Sp

415 Soil Fertility (3) Influence of soil properties on nutrient availability and uptake. Principles of fertilizer use and their reaction in soils. Prereq: 210, 2 hours and 1 lab. Sp

416 Soil-Water Relations (3) Physical relationships among solid, liquid, and gaseous phases of the soil. Determination of soil property changes as it relates to exchange, chemical equilibria, water relations. Water relations. Prereq: 210 and consent of instructor. 2 hours and 1 lab. F

417 Soil Chemistry (3) Structure and chemical properties of soils. Chemical reactions in soils. Use of soil analysis to evaluate plant nutrition. Soil analysis to evaluate plant nutrition. Prereq: 210 and consent of instructor. 2 hours and 1 lab. Sp

451-452 Techniques of Theoretical Physics (3) Methods and general results in potential theory, spec- tral analysis, wave mechanics, specific functions, systems and chain methods and solutions of other classical problems of potential theory. Must be taken in sequence. Prereq: 210 or 138 and Mathematics 241. Coreq: Mathematics 251.

453 Principles of Plant Breeding (3) Genetic principles and techniques used in crop improvement. Prereq: Biology 220 or equivalent. 3 hours and 1 lab. Sp

471-472 Health Physics (3) Radiation safety, interaction of electromagnetic radiation with matter, radiation quantification and measurement; health hazards of ionizing and nonionizing radiation. Prereq: 210 and either 342 or 413. 2 hours and 1 lab. F-A, Sp.

491 Foreign Study (3-15) May be repeated Maximum 6 hours.
Communicable and Noncommunicable Diseases

300 Introduction to Public Health (3)

A. Principles of Disease Etiology, Pathogenesis, and Control

301 Environmental Management and Control (3)

B. Principles of Prevention

310 Environmental Management and Control (3)

C. Principles of Therapeutic Recreation

C. Principles of Therapeutic Recreation

210 Dynamics of Recreation Leadership (3)

Principles of therapeutic recreation including activity analysis, activity and program selection, and client assessment; introduction to treatment planning, health and safety. (Same as Sport Management 415.)
373 African Religions (3) Religion of the indigenous and practices of religious traditions, Asian and Western. Writing emphasis course.

371 Eastern Religions and Western Thought (3) Comparativestudy of selected movements, thinkers, and ideas from ancient to modern periods. Prerequisite: 351 or consent of instructor. May be repeated. Maximum 6 hours. Writing emphasis course.

370 Philosophy of Religion (3) (Same as Philosophy 370.) Same as Philosophy 370. (Same as American Studies 355.) Course. (Same as Philosophy 370.) Writing emphasis course.

355 Religion and Culture in the United States (3) Selected figures, movements, and problems in the history of American religion and culture. Prerequisite: 351 or consent of instructor. May be repeated. Maximum 6 hours. Writing emphasis course. (Same as History 355.)

353 Religion and Culture in the United States (3) Selected figures, movements, and problems in the history of American religion and culture. Prerequisite: 351 or consent of instructor. May be repeated. Maximum 6 hours. Writing emphasis course.

352 African-American Religion in the United States (3) Organized around selected themes of religious and cultural significance to African Americans in the United States. Prerequisite: 351 or consent of instructor. May be repeated. Maximum 6 hours. Writing emphasis course.

351 Islam (3) Comprehensive introduction to the origin and development of Islam, its spread as a missionary religion, and its impact on the world. Prerequisite: 351 or consent of instructor. May be repeated. Maximum 6 hours. Writing emphasis course.

210 The Retail Environment (3) Development and overview of retailing, related businesses and industries, and the activities involved in the delivery of goods and services to the consumer. Prerequisite: 201. Fall, Spring

316 Topics in Religion and Literature (3) Selected themes that suggest points of intersection between literary art and the religious imagination. Variable content. May be repeated. Maximum 6 hours. Writing emphasis course.
RURAL SOCIOLOGY (880)

389 Rural Sociology (3) Topics include cultural variability, the evolution of social stratification, major social institutions, demographic changes, and social mobility and community change. Prerequisites: Consent of instructor. F, S.

390 Introduction to Rural Sociology (3) Emphasizes the application of sociological research techniques. Prerequisites: Consent of instructor. F.

401-402 Advanced Rural Sociology, Research and Community Practice (3, 3) Writing emphasis course. Prerequisites: Consent of instructor. F, S.

410 Directed Study (1-3) Prerequisites: Consent of instructor. F, S.

491 Directed Study in Rural Sociology (1-15) Prerequisites: Consent of instructor. F, S.

492 Internship in Rural Sociology (1-6) Prerequisites: Consent of instructor. F, S.

493 Independent Study (1-15) Prerequisites: Consent of instructor. F, S.

SOCIETY (915)

110 Social Problems and Social Change (3) Increasingly acute and intense problems such as alcoholism, violence, crime, racism, homelessness, and poverty. Emphasis on understanding the causes and consequences of these problems. Prerequisites: Consent of instructor. F, S.

187 Sociology/Courses of Instruction
414 Sociology of Ageing (3) How roles and status change with age in the life cycle of major social institutions, the impact that the rapidly increasing numbers of older people have on society, the effect of society on older people.

422 Comparative Poverty and Development (3) A critical examination of patterns of poverty and inequality in different societies, with a review of major sociological theories which attempt to explain social stratification in a global perspective. (Same as African-American Studies 422.)

430 The Modern World System (3) Critical examination of the capitalistic world system and its components. What are the basic internal contradictions between the core, semi-periphery, and periphery in the global political economy. (Same as African-American Studies 442.)

431 Criminal Justice (3) A critical examination of the criminal justice apparatus and its components. What are the basic internal contradictions between the core, semi-periphery, and periphery in the global political economy. Focus on international legal questions related to social strata and social justice. Writing emphasis course.

441 Administrative and Corporate Crime (3) Crime and deviance committed by organizations. Case studies of corporate and organizational crime, the organizational dynamics of crime, and theories of corporate criminality and organizational responses to this type of crime by governments and regulatory agencies.

442 Comparative Poverty and Development (3) Acritical examination of patterns of poverty and inequality in different societies, with a review of major sociological theories which attempt to explain social stratification in a global perspective. Writing emphasis course.

445 Spanish for Business (3) Contemporary Spanish language as it applies to business transactions. Undergraduate level. (Same as Spanish 445; Business 445.)

450 Sociology of Occupations (3) Occupations and professions, their historical development, and current organizational and social contexts.

451 Social Psychology (3) Social psychological analysis of life in cities into communities, neighborhoods, and other territories. Urban planning and problems. (Same as Psychology 451.)

519 Spanish Transition (3) Development of linguistic skills necessary for satisfactory work in courses above 300. May be repeated. Maximum 12 hours. Recommended for students who would benefit from additional training beyond 300 in the skillsof speaking, reading and writing Spanish. Particular attention for preparation to read Hispanic literature and other advanced level material.

519 Spanish for Students of Other Romance Languages (3) Review of grammar, reading, speaking, and writing of Spanish. Introduction to grammar, reading, and culture in Spanish and Spanish-American literature. Prerequisite: 1 hour in another Romance language or equivalent.

521 Intermediate Spanish Transition (3) Transition course for students with a special interest in Spanish. Introduction to Spanish-American literature, with emphasis on contemporary works. Genres may vary. May be repeated. 1 hour in another Romance language or equivalent.

523 Advanced Grammar (3) Further grammatical structures. Requisite: satisfaction of major requirements. Prerequisite: 3 hours in another Romance language or equivalent.

524 Advanced Conversation and Composition (3) Designed to improve proficiency in oral and written communication in Spanish. Prerequisite: 3 hours in another Romance language or equivalent.

525 Spanish for Business (3) Contemporary Spanish for business and industry. Emphasis on oral communication and professional vocabulary. Prerequisite: 3 hours in another Romance language or equivalent.

535 Introduction to Descriptive Linguistics (3) (Same as French 425, German 425, Russian 425 and Linguistics 425.)

542 Methods of Historical Linguistics (3) (Same as French 425, German 425, Italian 425 and Linguistics 425.)

546 Romance Literature (3) (Same as French 425, German 425 and Linguistics 425.)

681 Social Context of Language (3) Social meaning, organization, and processes of speech. Prerequisite: 391 or consent of instructor. Prerequisite: 391 or consent of instructor.
Language Development for the Hearing Impaired (3) Developmental and remedial systems of teaching language to hearing impaired children. Comprehension and evaluation alternatives, elimination, and figurative structures. Prerequisite: 416.

Speech Development of the Hearing Impaired (3) Trends of speech development, approaches in treating vocal and language impediments. Emphasis on articulation of speech, and vocal habilitation. Prerequisite: 416.

Psychology and Education of Students with Mild Disabilities (3) Nature and organization of personnel and procedures. Prerequisite: 310, 312, Educational Curriculum and Instruction 422 and Admission to Teacher Education Program. Coreq: 420. Prerequisite: 310, 312 or equivalent.

Field Experience in Modified Programs (3) Practicum in teaching modified programs: planning, implementing, and evaluating. Prerequisite: 310, 312, Educational Curriculum and Instruction 422 and Admission to Teacher Education Program. Coreq: 420. Prerequisite: 310, 312 or equivalent.

Communication Processes for the Hearing Impaired (3) Experience in personalizing communication systems for the hearing impaired. Communicating and integrating the deaf and hard of hearing. Prerequisite: 310, 312 or equivalent.

Nature of Hearing Impairments (3) Anatomy and physiology of hearing, causes and causes of hearing loss; methods and instrumentation for assessment of hearing loss; interpretation of audiologic tests; and other rehabilitative disciplines. Prerequisite: 310, 312 or equivalent.

Introduction to the Psychology and Education of the Hearing Impaired (3) Introduction to the psychology of hearing impaired. Prerequisite: 310, 312 or equivalent. Prerequisite: 310, 312 or equivalent.

Psychology of the Gifted and Talented Children (3) Psychometric and behavioral studies of giftedness. Prerequisite: 310, 312 or equivalent. Prerequisite: 310, 312 or equivalent.

Attendance to Speech Communication/Sociology 320 or consent of instructor. (Same as Sociology 320.)

Interpersonal Communication Processes (3) Social/communication and social psychological processes. Prerequisite: 310, 312 or equivalent. Prerequisite: 310, 312 or equivalent.

Nonverbal Communication (3) Exploration of non-verbal communication from human communication perspective. Prerequisite: Admission to Teacher Education Program. Prerequisite: Admission to Teacher Education Program. Coreq: 420. Prerequisite: 310, 312 or equivalent.

Introduction to Oral Interpretation (3) Art of interpreting spoken text into sign language. Emphasis on linguistic, auditory, and public communication. Prerequisite: 310, 312 or equivalent. Prerequisite: 310, 312 or equivalent.

Communication and Society (3) Study of communication theories and public opinion, with emphasis on communication in mass media, films, songs, demonstrations, and political campaigns. Prerequisite: 310, 312 or equivalent. Prerequisite: 310, 312 or equivalent.

Argumentation and Debate (3) Reasoned decision-making with emphasis on analysis, evidence, reasoning, counterarguments, and refuting arguments. Prerequisite: 310, 312 or equivalent. Prerequisite: 310, 312 or equivalent.

Business and Professional Speaking (3) Speeches for professional audiences. Emphasis on organization, development, and delivery. Prerequisite: 310, 312 or equivalent. Prerequisite: 310, 312 or equivalent.

Introduction to Public Speaking (3) Preparation and delivery of informative and persuasive speeches. Topics include preparation, planning, and techniques for coping with apprehension about communicating. Recommended for students who are concurrently taking 300 level speech course and desire additional work in dealing with their anxiety about public speaking. Prerequisite: 310, 312 or equivalent. Prerequisite: 310, 312 or equivalent.

Developing Speech Confidence (1) Principles and techniques for coping with apprehension about communicating. Recommended for students who are concurrently taking 300 level speech course and desire additional work in dealing with their anxiety about public speaking. Prerequisite: 310, 312 or equivalent. Prerequisite: 310, 312 or equivalent.

Developing Speech Confidence (1) Principles and techniques for coping with apprehension about communicating. Recommended for students who are concurrently taking 300 level speech course and desire additional work in dealing with their anxiety about public speaking. Prerequisite: 310, 312 or equivalent. Prerequisite: 310, 312 or equivalent.

Communication and Society (3) Study of communication theories and public opinion, with emphasis on communication in mass media, films, songs, demonstrations, and political campaigns. Prerequisite: 310, 312 or equivalent. Prerequisite: 310, 312 or equivalent.
330 Group Communication (3) Small group decision-making, group dynamics, group leadership, roles, and norms as they affect critical thinking in groups.

331 Communication Theory (3) Survey of social science approaches to communication, including the role of communication in human social behavior.

332 Topics in Communication and Society (2) Current trends. Studies in social function of such communicative forms as speeches, songs, plays, debates, and ceremonies. May be repeated with consent of department. Maximum 6 hours.


296 Advanced Oral Interpretation (3) Individual and group performances of prose, poetry, dramatic monologues. May be repeated with consent of department. Maximum 6 hours.

350 Rhetoric of the Contemporary Feminist Movement (3) Emphasis on a particular period, such as Greek, eighteenth century, or contemporary. May be repeated. Maximum 6 hours. Major writing emphasis required.

278 Freedom of Speech (3) Historical and philosophical perspectives on freedom of expression; legal issues concerning the campaign for women's rights in the United States. Writing-emphasis course.

492 Internship (1-6) Supervised off-campus experience approved by the chairperson of the speech communication department. Each hour of credit requires 40 clock hours per semester. For Sport Management majors only. S/NC only. Prerequisite: SP 290. May be repeated. Maximum 2 hours.

261 Introduction to Statistical Software (3) Use of VAX System or Coreq: 261. Sp

251 Probability and Statistics for Scientists and Engineers (3) Probability and statistics. Estimation, confidence intervals and hypothesis testing. Prereq: Mathematics 121. E

390 Practicum I (3) Supervised practicum experience approved by the speech communication department. Each hour of credit requires 40 clock hours per semester. For Sport Management majors only. S/NC only. Prerequisite: SP 290. May be repeated. Maximum 6 hours.


290 Practicum I (3) Supervised practicum experience approved by the chairperson of the speech communication department. Each hour of credit requires 40 clock hours per semester. For Sport Management majors only. S/NC only. Prerequisite: SP 290. May be repeated. Maximum 6 hours. Major writing emphasis required.

334 Historical and Philosophical Perspectives (3) Writing-emphasis course. May be repeated with consent of department. Maximum 6 hours. Major writing emphasis required.

370 Event Management (1-3) Study of the various principles involved in the organization, promotion, and management of special events. Students will continue to practice and refine their experiences with designated special events. O, S, SP

381 Special Topics (1-3) Study in selected disciplinary or professional areas of Sport Management. May be repeated. Maximum 6 hours.


252 Statistics (3) Sampling distributions; process improvement; estimation of parameters. Prereq: 251 or graduate status and consent of instructor. F, Sp


385 Principles of Statistical Process Management (1) Statistical quality control, reliability, regression, selection of variables, use of dummy variables, analysis of data. May be repeated. Maximum 6 hours.

383 Special Topics in Statistics (1-3) Topics vary. May be repeated. Maximum 6 hours.

483 Special Topics in Probability (1-3) Topics in probability and stochastic process. Prerequisite: Consent of the instructor. May be repeated. Maximum 6 hours.

190 Courses of Instruction/Sport Management

268 General Education Requirement in Computer Science

264 Programming and Computer Science

267 Logic and Computer Science

271 Introduction to Programming

263 Introduction to Computer Science

261 Introduction to Programming

262 Introduction to Computer Science

265 Programming and Computer Science

269 General Education Requirement in Computer Science

201 or 251 E

262 Introduction to Programming

263 Introduction to Computer Science

265 Programming and Computer Science

269 General Education Requirement in Computer Science

201 or 251 E

262 Introduction to Programming

263 Introduction to Computer Science

265 Programming and Computer Science

269 General Education Requirement in Computer Science

201 or 251 E

262 Introduction to Programming

263 Introduction to Computer Science

265 Programming and Computer Science

269 General Education Requirement in Computer Science

201 or 251 E

262 Introduction to Programming

263 Introduction to Computer Science

265 Programming and Computer Science

269 General Education Requirement in Computer Science

201 or 251 E

262 Introduction to Programming

263 Introduction to Computer Science

265 Programming and Computer Science

269 General Education Requirement in Computer Science

201 or 251 E

262 Introduction to Programming

263 Introduction to Computer Science

265 Programming and Computer Science

269 General Education Requirement in Computer Science

201 or 251 E

262 Introduction to Programming

263 Introduction to Computer Science

265 Programming and Computer Science

269 General Education Requirement in Computer Science

201 or 251 E

262 Introduction to Programming

263 Introduction to Computer Science

265 Programming and Computer Science

269 General Education Requirement in Computer Science

201 or 251 E

262 Introduction to Programming

263 Introduction to Computer Science

265 Programming and Computer Science

269 General Education Requirement in Computer Science

201 or 251 E

262 Introduction to Programming

263 Introduction to Computer Science

265 Programming and Computer Science

269 General Education Requirement in Computer Science

201 or 251 E

262 Introduction to Programming

263 Introduction to Computer Science

265 Programming and Computer Science

269 General Education Requirement in Computer Science

201 or 251 E

262 Introduction to Programming

263 Introduction to Computer Science

265 Programming and Computer Science

269 General Education Requirement in Computer Science

201 or 251 E

262 Introduction to Programming
454 Cities and Urban American History (3) (Same as History 454.)

350 Practicum in Urban Studies (3-6) Student and senior status. Student may not take 460 prior to senior year. May be repeated. Maximum 8 hours. Satisfactory/No Credit grading only.

358-368 Chancellor's Scholars Seminar (1,1) Sequence. Each semester a different topic. 128 concentrates on a specific issue; and collaborative teaching involving a specific issue. 118 concentrates on contemporary issues. Limited to and required of all Whittle Scholars in their freshman year. 118 concentrates on contemporary issues. Limited to and required of all Whittle Scholars in their freshman year.

410-420 Advanced Topics in University Studies (3,3) Interdisciplinary approaches to issues transcending the boundaries of a single discipline. Topics may be initiated by faculty or students through arrangements with the University Studies Program. Taught by faculty from throughout the University (other than Light). Extensive use of field, field, student discussion. May be repeated. Maximum 8 hours.

411 Freshman University Seminar (3) Introduction to university education as an adventure in personal growth and professional development. A/B/C grading. Open only to freshmen, transfer students, and re-entry students, or by permission of instructor.

491 Honors: Foreign Study (3-15) Open to any undergraduate honors student. Proposals must be approved in advance. See the Director of University Honors for further information.

493 Honors: Independent Study (3-15) Open to any undergraduate honors student. Must be used by all University Honors Scholars preparing their senior projects. Proposals must be approved in advance. See the Dean of University Honors for further information. Letter grade only.

41 Freshman University Seminar (3) Introduction to university education as an adventure in personal growth and professional development. A/B/C grading. Open only to freshmen, transfer students, and re-entry students, or by permission of instructor.

210-201 Case Studies (4) Varies content using case studies and problem-solving approaches to explore aspects of the modern city.

208 Open-Door Laboratory (1-15) Open only to students enrolled in a University Learning Community.

311-330 Special Topics in Urban Studies (3,3,3) Interdisciplinary approaches to issues transcending the boundaries of a single discipline. Topics may be initiated by faculty or students through arrangements with the University Studies Program. Taught by faculty from throughout the University (other than Light). Extensive use of field, field, student discussion. May be repeated. Maximum 8 hours.

300 Human-Environment Systems (3) (Same as Interior Design 200.)

460 Senior Seminar (3) Variety of disciplines used to study a specific issue; and collaborative teaching involving a specific issue. 128 concentrates on a specific issue; and collaborativeteachinginvolvinga specific issue. 118 concentrates on contemporary issues. Limited to and required of all Whittle Scholars in their freshman year. 118 concentrates on contemporary issues. Limited to and required of all Whittle Scholars in their freshman year.
310 Emergence of the Modern American Woman (3)
Role of women in the development of American civilization.

311-320 Human Biology (2)
Three-quarter sequence of 2-credit classes covering human biology from a molecular level to the organ level. Emphasis on the theoretical and practical aspects of human biology.

311 Emergence of the Modern American Woman (3)
Role of women in the development of American civilization. Topics may include women's roles in the workplace, women's rights, and women's contributions to society. Prerequisite: BSHS 101.

312 Women and Religion (3)
Religion's role in shaping women's roles in society. Prerequisite: BSHS 101.

321 Women in American Literature (3)
Literary analysis of women's roles in American literature. Prerequisite: BSHS 101.

322 Women, Politics, and the Law (3)
An examination of women's rights in the legal system. Prerequisite: BSHS 101.

323 Women in Music (3)
Study of women composers and performers in classical music. Prerequisite: BSHS 101.

324 Women in French Culture (3)
Study of women's roles in French literature and culture. Prerequisite: BSHS 101.

325 Women in the Greek and Roman World (3)
Study of women's roles in ancient Greece and Rome. Prerequisite: BSHS 101.

326 Philosophy of Feminism (3)
Philosophical analysis of feminist theory and its impact on society. Prerequisite: BSHS 101.

327 Philosophy of Science (3)
Philosophical analysis of the role of science in society. Prerequisite: BSHS 101.

328 Women in European History (3)
Study of women's roles in European history. Prerequisite: BSHS 101.

329 Women in Art (3)
Study of women's roles in the visual arts. Prerequisite: BSHS 101.

330 Animal Development and Embryology (3)
Study of the development of animals, with an emphasis on human development. Prerequisite: BSHS 101.

331 Animal Development and Embryology Laboratory (3)
Practical laboratory work in animal development and embryology. Prerequisite: BSHS 101.

332 Animal Physiology (3)
Study of the physiological processes of animals. Prerequisite: BSHS 101.

333 Comparative Animal Physiology (3)
Comparative study of the physiological processes of various animal species. Prerequisite: BSHS 101.

334 Comparative Animal Anatomy (3)
Comparative study of the anatomical structures of various animal species. Prerequisite: BSHS 101.

335 Animal Behavior (3)
Study of animal behavior, with an emphasis on the role of behaviors in survival and reproduction. Prerequisite: BSHS 101.

336 Animal Ethics (3)
Study of the ethical considerations of animal use in research and agriculture. Prerequisite: BSHS 101.

337 Animal Ecology (3)
Study of the ecological interactions of animals in their environments. Prerequisite: BSHS 101.

338 Animal Genetics (3)
Study of the genetic basis of animal traits. Prerequisite: BSHS 101.

339 Animal Breeding (3)
Study of the principles and practices of animal breeding. Prerequisite: BSHS 101.

340 Animal Reproduction and Development (3)
Study of the reproductive processes and development of animals. Prerequisite: BSHS 101.

341 Animal Nutrition (3)
Study of the nutritional needs of animals. Prerequisite: BSHS 101.

342 Animal Health (3)
Study of the health and disease of animals. Prerequisite: BSHS 101.

343 Animal Behavior and Cognition (3)
Study of the cognitive abilities of animals. Prerequisite: BSHS 101.

344 Animal Communication (3)
Study of the communication signals used by animals. Prerequisite: BSHS 101.

345 Animal Welfare (3)
Study of the welfare of animals in captivity and in the wild. Prerequisite: BSHS 101.

346 Animal Conservation (3)
Study of the conservation of animal species. Prerequisite: BSHS 101.

347 Animal Policy (3)
Study of the policy implications of animal use. Prerequisite: BSHS 101.

348 Animal Ethics (3)
Study of the ethical considerations of animal use. Prerequisite: BSHS 101.

349 Animal Law (3)
Study of the legal aspects of animal use. Prerequisite: BSHS 101.

350 Animal Policy (3)
Study of the policy implications of animal use. Prerequisite: BSHS 101.

351 Animal Behavior (3)
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