182 Introduction to Architectural Technology (3) Place and time, introduction, movement, structure and design as seen in space and form explored through both historical and contemporary examples. Emphasis on furniture and furnishings. Development of design principles, including analytical skills, design processes, and design organizational strategies. Use of computer aided visualization techniques. Prerequisite: 271.

281 Principles of Architectural Form (3) Principles of form, form, and form development in design. Introduction of basic architectural form and design principles. Emphasis on the influence of materials and their application in architecture. Prerequisite: 212.


261 Architectural Structures (3) Structural systems of buildings, including structural analysis and design. Emphasis on the analysis of statically determinate structures. Prerequisite: 232.

262 Architectural Structures II (3) Continuation of analysis and design of structural systems of buildings, including analysis of statically indeterminate structures. Prerequisite: 232.

461 Advanced Architectural Structures (3) Advanced mathematical and experimental analysis of structures, including computer use of structural members. Prerequisite: 232.

462 Structural Analysis in Architecture (3) Introduction to the structural properties of materials. Foundation and superstructure use of structural members. Prerequisite: 232 and M. Arch. Admission.

463 Structural Analysis in Architecture II (3) Continuation of analysis and design of simple structures in wood, steel and concrete. Emphasis on the development of structural design and construction details. Prerequisite: 232.


341 Principles of HVAC Systems (3) Principles of HVAC systems, including heating, ventilation, and air-conditioning systems, including passive and active solar energy systems. Analysis of air-conditioning and electrical systems. Prerequisite: 232 and M. Arch. Admission.

342 Principles of Environmental Control II (3) Introduction to heating, ventilation, air conditioning, electronic, nuclear, and environmental protection systems. Prerequisite: 341 and M. Arch. Admission.

371 Architectural Design III (3) Design synthesis, integration of design determinants and development of building concepts. Prerequisite: 272.

372 Architectural Design IV (3) Design synthesis, integration of design determinants, structural, environmental, control, materials and construction. Prerequisite: 371.

403 Introduction to Preservation (3) History, theory, and principles of architectural preservation and restoration.

404 Preservation Technology (3) Techniques of preservation and conservation of architectural structures. Prerequisite: 212.

420 American Architecture, 1840 - 1940 (3) Stylistic and intellectual developments in architecture during the 20th century, with emphasis on the major architectural movements of the period. Emphasis on postmodernism and the development of new architectural ideas. Prerequisite: 212.

421 History of Landscape Architecture (3) Theoretical basis for landscape architecture in the context of historical and cultural developments. Emphasis on the development of landscape architecture and its role in the environment. Prerequisite: 212.

422 Modern East European Architecture (3) Twenty-first century architecture in Russia, Czechoslovakia, Poland, Hungary, Bulgaria, Romania, and Yugoslavia.

424 History of Architectural Technology (3) Building construction in the West; the Mediterranean; the Middle East; China; and Japan.

425 Special Topics in Architecture (1-6) Faculty initiated design projects. Advanced architectural design projects. Prerequisite: Consent of instructor.

431 Structural and Mechanical Applications (3) Case study analysis and synthesis of structural and mechanical systems, investigating the conceptual framework of the design problem. Prerequisite: 342. Coreq: 432. F

432 Architectural Design I (3) Advanced course that integrates three-dimensional modeling and technical materials. Selection of appropriate materials and techniques for design. Prerequisite: Consent of instructor.

433 Computer Applications in Design (3) Advanced computer aided design through software development and applications. Emphasis on the conceptual and practical aspects of the design process, investigation, rendering techniques, visualization, and computer integrated techniques.

434 Computer Applications in Design II (3) Advanced computer aided design through software development and applications. Emphasis on the conceptual and practical aspects of the design process, investigation, rendering techniques, visualization, and computer integrated techniques.

435 Computer Applications in Design III (3) Advanced computer aided design through software development and applications. Emphasis on the conceptual and practical aspects of the design process, investigation, rendering techniques, visualization, and computer integrated techniques.

436 Computer Applications in Design IV (3) Advanced computer aided design through software development and applications. Emphasis on the conceptual and practical aspects of the design process, investigation, rendering techniques, visualization, and computer integrated techniques.

437 Computer Applications in Design V (3) Advanced computer aided design through software development and applications. Emphasis on the conceptual and practical aspects of the design process, investigation, rendering techniques, visualization, and computer integrated techniques.

438 Computer Applications in Design VI (3) Advanced computer aided design through software development and applications. Emphasis on the conceptual and practical aspects of the design process, investigation, rendering techniques, visualization, and computer integrated techniques.
emphasize, and facilitate the understanding of various design, technical, and aesthetic aspects of the built environment. This course will explore the integration of technology and human experience in the design of spaces and objects. It will cover topics such as urban design, architecture, preservation, and sustainability.

**Reading and Research Projects: Building Design with Urban Design**

Projects dealing with real space and three-dimensional form. Required investigation of ceramic form with an emphasis on the development of individual direction. Prereq: 321 and 420.

**Projects in Graphic Design**

Exhibition design and installation techniques. Successful completion required prior to registration for junior and senior courses. Prereq: 321. May be repeated. Maximum 12 hours.

**Special Topics (3)**

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

**218 Ceramics: Advanced Problem Solving (3)**

Continued investigation of ceramic form with an emphasis on the development of individual direction. Prereq: 217 and 322.

**218 Ceramics: Advanced Design and Color (3)**

Continued exploration of basic techniques of two-dimensional design with emphasis on color theory and technique. Prereq: 217 and 322.

**219 Special Topics (3)**

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

**220 Airbrush Painting (3)**

Techniques of airbrush painting. Students may not repeat this course. Prereq: 321 and 401.

**221 Ceramics: Handbuilding I (3)**

Introduction to handbuilding, glazing, clay preparation and firing. Prereq: 101 and 103.

**222 Ceramics: Introduction to the Process (3)**

Introduction to the process, including clay selection, preparation, and firing. Prereq: 101 and 103.

**223 Ceramics: Kiln Design (3)**

Designing kilns, traditional and modern refractories, construction methods, and other related techniques. Prereq: 321. May be repeated. Maximum 12 hours.

**224 Ceramics: Clays and Glazes (3)**


**225 Ceramics: Modeling (3)**

Development of relief and in-the-round sculptural form. Successful completion required prior to registration for junior and senior courses. Prereq: 321. May be repeated. Maximum 12 hours.

**226 Ceramics: Kiln Design (3)**

Designing kilns, traditional and modern refractories, construction methods, and kiln operation. Prereq: 321.

**227 Ceramics: Advanced Handbuilding (3)**

Continued exploration of ceramic form with an emphasis on the development of individual direction. Prereq: 217 and 322.

**228 Ceramics: Advanced Design and Color (3)**

Continued exploration of basic techniques of two-dimensional design with emphasis on color theory and technique. Prereq: 217 and 322.

**229 Ceramics: Handbuilding II (3)**

Continued investigation of ceramic form with an emphasis on the development of individual direction. Prereq: 217 and 322.

**230 Ceramics: Advanced Problem Solving (3)**

Continued investigation of ceramic form with an emphasis on the development of individual direction. Prereq: 217 and 322.

**231 Ceramics: Advanced Design and Color (3)**

Continued exploration of basic techniques of two-dimensional design with emphasis on color theory and technique. Prereq: 217 and 322.

**232 Ceramics: Advanced Problem Solving (3)**

Continued investigation of ceramic form with an emphasis on the development of individual direction. Prereq: 217 and 322.

**233 Ceramics: Advanced Design and Color (3)**

Continued exploration of basic techniques of two-dimensional design with emphasis on color theory and technique. Prereq: 217 and 322.

**234 Ceramics: Advanced Problem Solving (3)**

Continued investigation of ceramic form with an emphasis on the development of individual direction. Prereq: 217 and 322.

**235 Ceramics: Advanced Design and Color (3)**

Continued exploration of basic techniques of two-dimensional design with emphasis on color theory and technique. Prereq: 217 and 322.

**236 Ceramics: Advanced Problem Solving (3)**

Continued investigation of ceramic form with an emphasis on the development of individual direction. Prereq: 217 and 322.
494 Individual Problems (3) Prerequisite: Consent of instructor. May be repeated. Maximum 6 hours.

ART EDUCATION (141)
203 Foundations of Art Education (3) From pre-K through grade 12. Topics include general education and history of art education; and contemporary issues and trends. Prerequisite: Admission to Teacher Education Program. 3 credits.
202 Multicultural in Visual Art (3) Selected topics illustrating multicultural art practices. Prerequisite: Consent of instructor. 3 credits.
383 Concepts of Sculpture and Craft (3) Processes in teaching of sculpture and crafts, including preparation of student portfolios. Prerequisite: Admission to Teacher Education Program. 3 credits.
388 Printing Methods (3) Study of printmaking techniques and applications, teaching materials, and equipment. Prerequisites: Admission to Teacher Education Program. 3 credits.
402 Curriculum Planning and Teaching Strategies (3) Program development, instructional methods, professional responsibilities, contemporary trends, assessment and micro teaching situations. Prerequisite: Consent of instructor. 3 credits.
404 Pre-Internship Seminar (3) Orientation for the student to the classroom environment, the role of the educator, and the role of the student teacher. Prerequisites: 203 and consent of instructor. 3 credits.
410 Internship 1: Grades K-6 (3-6) Test of materials and methods emphasized. Writing-emphasis course. Prerequisites: 203 and admission to Teacher Education Program. 3-6 credits.
413 Internship 2: Grades 7-12 (3-6) Test of materials and methods emphasized. Writing-emphasis course. Prerequisites: 203 and admission to Teacher Education Program. 3-6 credits.
479 Special Topics in Art History (3) Prerequisite: Determined by department for individual topic. May be repeated. Maximum 6 hours.
481 Internship 1: Grades K-12 (3-6) Test of materials and methods emphasized. Writing-emphasis course. Prerequisites: 203 and admission to Teacher Education Program. 3-6 credits.
482 Internship 2: Grades K-12 (3-6) Demonstration of professionalism, development of teaching skills, and classroom management. Prerequisites: 203 and admission to Teacher Education Program. 3-6 credits.
483 Internship 3: Grades K-12 (3-6) Internship. Prerequisites: 481 and admission to Teacher Education Program. Writing-emphasis course. 3-6 credits.
490 Special Topics (3) Prerequisite: Determined by department for individual topic. May be repeated. Maximum 6 hours.
491 Internship 3: Grades K-12 (3-6) Internship. Prerequisites: 482 and admission to Teacher Education Program. Writing-emphasis course. 3-6 credits.
492 Internship 4: Grades K-12 (3-6) Internship. Prerequisites: 483 and admission to Teacher Education Program. Writing-emphasis course. 3-6 credits.
493 Internship 5: Grades K-12 (3-6) Internship. Prerequisites: 484 and admission to Teacher Education Program. Writing-emphasis course. 3-6 credits.
494 Internship 6: Grades K-12 (3-6) Internship. Prerequisites: 485 and admission to Teacher Education Program. Writing-emphasis course. 3-6 credits.
495 Special Topics in Art Education (3) Prerequisite: Determined by department for individual topic. May be repeated. Maximum 6 hours.
496 Internship 7: Grades K-12 (3-6) Internship. Prerequisites: 486 and admission to Teacher Education Program. Writing-emphasis course. 3-6 credits.
497 Special Topics in Art History (3) Prerequisite: Determined by department for individual topic. May be repeated. Maximum 6 hours.
498 Internship 8: Grades K-12 (3-6) Internship. Prerequisites: 487 and admission to Teacher Education Program. Writing-emphasis course. 3-6 credits.
499 Special Topics in Art Education (3) Prerequisite: Determined by department for individual topic. May be repeated. Maximum 6 hours.
497 History of North American Art (3) Development of indigenous art and contemporary movements in Canada, Alaska, the Caribbean, and South America. Writing-emphasis course. 3 credits.
498 Studies in Art History (3) Prerequisite: Determined by department for individual topic. May be repeated. Maximum 6 hours.
499 Special Topics in Art Education (3) Prerequisite: Determined by department for individual topic. May be repeated. Maximum 6 hours. 

ART MEDIA/PHOTOGRAPHY (134)
181 Introduction to Studio Art: Various Media (3) Individual student project in various media and size. Prerequisites may not be repeated. Maximum 12 hours.
316 Watercolor I (3) Individual expression with varied water-based media on paper. Prereq: 215 and 318 or consent of instructor. May be repeated. Maximum 6 hours.

316 Watercolor Portfolio Review (0) Review of prior work in watercolor. Successful completion required prior to registration for junior and senior courses. Prereq: Consent of instructor. Satisfactory/No Credit only.

493 Independent Study (1-15) Individual topic. May be repeated. Maximum 12 hours.

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

495 Visiting Artist Seminar (2) Study and discussion of contemporary art issues conducted by different visiting artists in small seminars. Cross-listed (Same as Cinema Studies 477.)

ART PRINTMAKING (142)

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

213 Painting I: Introduction (3) Capabilities of oil and acrylic paints. Prereq: 101, 102 or 260 for maj ors, none for non-majors.

214 Painting II (3) Techniques of expression in oil and tempera. Prereq: 213 for art majors; 102 for Non-majors.


242 Intaglio I (3-6) Exploration of individual projects in intaglioprinting including work from zinc, copper, steel, or litho stone. Prereq: 101 and determined by department for individual topic. May be repeated. Maximum 12 hours.

243 Intaglio II (3) Advanced printmaking. Prereq: 242 or consent of instructor. May be repeated. Maximum 12 hours.

244 Intaglio III (3) Advanced printmaking. Prereq: 243 or consent of instructor. May be repeated. Maximum 12 hours.

261 Sculpture I (3) Problems in sculpture. Prereq: Consent of instructor. May be repeated. Maximum 12 hours.

262 Sculpture II (3) Individual development of sculptural problems and techniques. Prereq: 261 or consent of instructor. May not be repeated. Maximum 12 hours.

316 Watercolor II (3) Individual expression with varied water-based media on paper. Prereq: 215 and 318 or consent of instructor. May be repeated. Maximum 6 hours.

316 Watercolor Portfolio Review (0) Review of prior work in watercolor. Successful completion required prior to registration for junior and senior courses. Prereq: Consent of instructor. Satisfactory/No Credit only.

493 Independent Study (1-15) Individual topic. May be repeated. Maximum 12 hours.

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

495 Visiting Artist Seminar (2) Study and discussion of contemporary art issues conducted by different visiting artists in small seminars. Cross-listed (Same as Cinema Studies 477.)
ART ARROWMENT PI BETA PHI SCHOOL OF ARTS AND CRAFTS

391 Special Topics (0-9) (4) Student or Instructor induced course offered to convenience of department. May be repeated.

120 Drawing (0-4) Beginning to Intermediate. May be repeated.

200 Ceramics (0-4) Beginning to Intermediate. May be repeated.

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

200 Fibers (4-2) Beginning to Intermediate. May be repeated.

299 Fabie (4-2) Beginning to Intermediate. May be repeated.

299 Emmeiling (4-2) Beginning to Intermediate. May be repeated.

399 Wood (4-2) Beginning to Intermediate. May be repeated.

499 Special Topics (4-2) Student or Instructor induced course offered to convenience of department. May be repeated.

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

499 Ceramic (2-4) Intermediate to advanced. May be repeated.

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

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

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

ASIAN LANGUAGES (144)

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

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

161-162 Elementary Persian (4,4) (Same as Religious Studies 333).

251-252 Advanced Chinese I, II (4,4) Prereq: 251-252 or equivalent or consent of instructor. Must be taken in sequence.

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

431 Readings in Chinese Literature (2) Prereq: Mastery of intermediate to advanced Chinese or consent of instructor. May be repeated. Maximum 6 hours.

431 Readings in Japanese Literature (2) Prereq: Mastery of intermediate level of Chinese or consent of instructor. May be repeated. Maximum 6 hours.

421 Intermediate Modern Standard Arabic I, II (4,4) Literary Arabic, language of the press, broadcast, literature, and formal situations. Meets every day, three days with instructor and two with native instructor in addition to language lab. May be taken in sequence. F, Sp. 121-122, 161-162 or 217-218 may be taken for credit. Satisfactory/No Credit only.

421-422 Intermediate Modern Hebrew I, II (4,4) Prereq: 251-252 or equivalent or consent of instructor. Must be taken in sequence.

2211-222 Intermediate Modern Standard Arabic I, II (4,4) Advanced grammar and reading in modern Arabic. Prereq: 2211-222 or equivalent or consent of instructor. Must be taken in sequence.

321 Spoken Lebanese-Palestinian Arabic (4) Intermediate to advanced. May be repeated. F, Sp. 121-122, 161-162 or 217-218 may be taken for credit.

261-262 Intermediate Persian (4,4) Taped language program. Prereq: 251-252. Must be taken in sequence. F

461-462 Advanced Modern Standard Arabic I, II (4,4) Advanced grammar and reading in modern Arabic. Prereq: 2211-222 or equivalent or consent of instructor. Must be taken in sequence.

305 Speech Science I: Phonetics and Acoustics of Speech Perception. Prereq: 304, or consent of instructor.

304 Introduction to Communication Disorders (3) Nature, etiology, and incidence of speech, hearing and voice disorders. Credit given for only one sequence of lower division speech or hearing disorder courses. Consent of instructor required.

362 Speech Science II: Anatomy and Physiology (3) Anatomy, physiology and embryological development of the oral cavity and respiratory system. Consent of instructor required.

332 Clinical Stuttering(3) Prereq: Consent of instructor or completion of Speech Science I and II.

451 Speech Science III: Assessment and Treatment (3) Prereq: consent of instructor or completion of Speech Science II.

453 Speech Science IV: Multicultural and Treatment (3) Prereq: consent of instructor or completion of Speech Science III.

455 Special Topics (0-3) Prereq: consent of instructor.

473 Speech Science V: Community Service (3) Prereq: consent of instructor.

474 Special Topics (0-3) Prereq: consent of instructor.

1221-1222 Introductory Astronomy with Laboratory (4,4) Survey course, with accompanying laboratory, teaching the computation, structure and dynamics of the universe and introducing the basic vocabulary of astronomy and astrophysics. Acceptable for major credit in Astronomy and Physics, but not required for Astronomy and Astrophysics. Current interest in Astronomy and Astrophysics. Historical perspective is emphasized, with emphasis on the laws of physics as they apply to the current understanding of the universe. Meets every day, three days with instructor and two with native instructor in addition to language lab. May be taken in sequence. F, Sp. 121-122, 161-162 or 217-218 may be taken for credit. Satisfactory/No Credit only.

1251-1252 Elementary Modern Standard Arabic I, II (4,4) Prereq: 499, or equivalent or consent of instructor. Must be taken in sequence.

2251-2252 Intermediate Modern Standard Arabic I, II (4,4) Advanced grammar and reading in modern Arabic. Prereq: 2251-2252 or equivalent or consent of instructor. Must be taken in sequence.

303 Introduction to Communication Disorders (3) Nature, etiology, and incidence of speech, hearing and voice disorders. Credit given for only one sequence of lower division speech or hearing disorder courses. Consent of instructor required.

362 Speech Science II: Anatomy and Physiology (3) Anatomy, physiology and embryological development of the oral cavity and respiratory system. Consent of instructor required.

332 Clinical Stuttering(3) Prereq: Consent of instructor or completion of Speech Science I and II.

451 Speech Science III: Assessment and Treatment (3) Prereq: consent of instructor or completion of Speech Science II.

453 Speech Science IV: Multicultural and Treatment (3) Prereq: consent of instructor or completion of Speech Science III.

455 Special Topics (0-3) Prereq: consent of instructor.

473 Speech Science V: Community Service (3) Prereq: consent of instructor.

474 Special Topics (0-3) Prereq: consent of instructor.
493 Independent Study (1-15) Prereq.: 371.

473 Audiology 11 (3) Basic principles of clinical audiology, membership and from different geographic regions.

Child (3) Speech and language differences of children and future. Prereq: Consent of instructor.


452 Independent Research in Biochemistry (1-6) Consent of instructor. May be repeated. Maximum six hours.

420 Advanced Topics in Biochemistry (3) Selected topics in biochemistry and discussion. Required of Threshold Biology Majors. Satisfactory/No Credit only. May be repeated. Maximum 12 hours.

410-481 Biophysical Chemistry (3,3) Physicochemical principles underlying physiological events in animals. Role of vitamins and minerals as coenzyme and energycapture; synthetic metabolism; nucleic acid replication; elements of metabolic processes, cell energy metabolism; cell function, protein synthesis, and biochemical genetics; including meiosis, mitosis, Mendelian inheritance; major biochemical reactions. Credit may not be applied toward requirements for major.


239 Human Physiology (5) Fundamentals of human physiology, including the normal and abnormal function of the major organ-system interactions. Credit may not be applied toward requirements for major or any of college physiology, 4 hours and 1 lab.

BIOLOGY (190)

110 General Zoology (4,4) Selected topics in one year general biology and one year of college zoology. Coreq.: Chem 110; 119-120, Botany 117-128, or Biology 150. 110 - F, S, Su; 119-120 Sp, Su.

419 Cellular and Comparative Biochemistry Laboratory (2) Experiments with enzymes, nucleic acids, and membrane and intracellular organelles. Chromatography, kinetics, hybridization, sequencing, and immunomethods. Prereq: coreq.: 415, S, F.


422 Comparative Endocrinology (3) Comparative endocrinology and the experimental basis of the normal cells and tissues at light and electronmicroscopy level. Prereq.: Biology 210, 220-230.

494. S

440 Immunology Laboratory (2) Same as Microbiology 439.

471-481 Biophysical Chemistry (3,3) Physicochemical principles underlying physiological events in animals. Role of vitamins and minerals as coenzyme and energycapture; synthetic metabolism; nucleic acid replication; elements of metabolic processes, cell energy metabolism; cell function, protein synthesis, and biochemical genetics; including meiosis, mitosis, Mendelian inheritance; major biochemical reactions. Credit may not be applied toward requirements for major.

210 Cell Biology (4) Organization and function of the major cell organelles and cell structure and function; lipid and protein metabolism; cell division; membrane and intracellular organelles; genetics; nutrition, organs, and organ systems; physiology, growth, reproduction, population genetics, behavior; and evolution. Recommended, but not required to be taken in sequence. Students who register credit for 110-120 or 140-150 may not also receive credit for Biology 110-120 or 140-150.

202-203 Inside the Biological Sciences (1,1) Preservation and display of human body tissues. Prereq.: Anatomy and physiology. Satisfactory/No Credit only. May be repeated. Maximum one hour.

210 Cell Biology (4) Organization and function of the major cell organelles and cell structure and function; lipid and protein metabolism; cell division; membrane and intracellular organelles; genetics; nutrition, organs, and organ systems; physiology, growth, reproduction, population genetics, behavior; and evolution. Recommended, but not required to be taken in sequence. Students who register credit for 110-120 or 140-150 may not also receive credit for Biology 110-120 or 140-150.

450 Physiology of Exercise (2) Same as Physical Education 460.

422 Comparative Endocrinology (3) Comparative endocrinology and the experimental basis of the normal cells and tissues at light and electronmicroscopy level. Prereq.: Biology 210, 220-230.

494. S

120 General Zoology (4,4) Selected topics in one year general biology and one year of college zoology. Coreq.: Chem 110; 119-120, Botany 117-128, or Biology 150. 110 - F, S, Su; 119-120 Sp, Su.


302-304, 306, or consent of instructor.

309 Biology of Human Affairs (3) Basic biological principles involved in population and the environment. Prereq.: Consent of instructor. May be repeated. Maximum six hours.

303-304, 305, and 306. Consent of instructor is required to register for this course. Students are expected to take these courses together as part of the program.

220 General Zoology (4,4) Selected topics in one year general biology and one year of college zoology. Coreq.: Chem 110; 119-120, Botany 117-128, or Biology 150. 110 - F, S, Su; 119-120 Sp, Su.

420 Advanced Topics in Biochemistry (3) Selected topics in biochemistry and discussion. Required of Threshold Biology Majors. Satisfactory/No Credit only. May be repeated. Maximum 12 hours.

305 Ethics and Society (3) Introduction to genetics, anthropology and evolution of Homo sapiens; the impact of humans on the environment, including human population growth, relationship to environment. Prereq.: Consent of instructor. May be repeated. Maximum six hours.

311 Laboratory Practicum Rotation (2) Rotation of required and elective science in various participating laboratories. Required of (but not limited to) Threshold Biology Majors. Prereq.: 4 hours of 300 and above and 304.

308, and 309. Consent of instructor is required to register for this course. Students are expected to take these courses together as part of the program.

302-304, 305, and 306. Consent of instructor is required to register for this course. Students are expected to take these courses together as part of the program.

303-304, 305, and 306. Consent of instructor is required to register for this course. Students are expected to take these courses together as part of the program.

302-304, 305, and 306. Consent of instructor is required to register for this course. Students are expected to take these courses together as part of the program.
120 Field Botany (3) Principles of plant taxonomy, botanical nomenclature and the identification, recognition, collection and preservation of local, native and naturalized plants. Prerequisite: Freshman level. F

711 Undergraduate Seminar (1) Individual, independent, under guidance of selected staff by application. May be repeated for maximum of 4 hours.

460 Tutorial in Botany (2) Study of specific topic to be announced. (1-4) H. Field methodology and laboratory techniques in various phases of research involving studies in common vegetable and ornamental plant diseases. Prerequisite: Senior standing. F

110 -120 Principles of Chemistry (4,4) Bonding and molecular structure, gas laws, solution chemistry, kinetics, stoichiometry, quantitative aspects of equilibria, and limited to chemistry majors. Prereq for 131: 120 or 121 or 138. 3 hours and 1 lab. 121 -F, 131 -Sp

300 Business Campus Planning and Placement (1) Career opportunities in business. Major work in the field of business. May be repeated for credit when course material changes. Prerequisite: Permission of the Department of Business Administration. Prerequisite: Permission. Using the Placement Office. Satisfactory/No Credit only. Prereq: Senior standing. For students interested in a business minor in Business or Arts and Sciences Business Minor.

230 Business Career Planning and Placement (2) Introduction to business, career options, career decisions, and placement. Prerequisite: 300. Prereq: Permission of Business Career Planning and Placement Committee. Prereq: Senior standing. For students interested in a business minor in Business or Arts and Sciences Business Minor.

231 International Business (2) Survey of international business. Emphasis on international marketing methods, including cultural, political, economic and legal characteristics. Prereq: Economics 201.

265 Principles of Principles of Microbiology (3) Principles of microbiology, with emphasis on aspects of diagnostic and clinical microbiology. Prerequisite: 230. Prereq: Permission of instructor.

100 Principles of Principles of Microbiology (3) Principles of microbiology, with emphasis on aspects of diagnostic and clinical microbiology. Prerequisite: 230. Prereq: Permission of instructor.

167 Principles of Principles of Microbiology (3) Principles of microbiology, with emphasis on aspects of diagnostic and clinical microbiology. Prerequisite: 230. Prereq: Permission of instructor.

140 Chemical Programming (2) Use of the computer in solving problems encountered in chemistry. Required of Computer Science majors. Prerequisites: 130 or 131 or 138. 3 hours and 1 lab. 130 -F, 131 -Sp

110 Organic Chemistry I (4) Organic chemistry: alkanes, unsaturated and aromatic hydrocarbons, structures and reactionsof various organic compounds. Prereq: 130 or 131 or 138. 3 hours and 1 lab. 130 -F, 131 -Sp

120-130 General Chemistry (4,4) A general course in chemical principles, with emphasis on an understanding of the nature of matter, atomic theory, chemical bonding, stoichiometry, reaction rates, and the law of mass action. Prereq: 100 or 130 or 131 or 138. 120-F, 130-Sp

120-130 General Chemistry (4,4) A general course in chemical principles, with emphasis on an understanding of the nature of matter, atomic theory, chemical bonding, stoichiometry, reaction rates, and the law of mass action. Prereq: 100 or 130 or 131 or 138. 120-F, 130-Sp

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120-130 General Chemistry (4,4) A general course in chemical principles, with emphasis on an understanding of the nature of matter, atomic theory, chemical bonding, stoichiometry, reaction rates, and the law of mass action. Prereq: 100 or 130 or 131 or 138. 120-F, 130-Sp

120-130 General Chemistry (4,4) A general course in chemical principles, with emphasis on an understanding of the nature of matter, atomic theory, chemical bonding, stoichiometry, reaction rates, and the law of mass action. Prereq: 100 or 130 or 131 or 138. 120-F, 130-Sp

240 Chemical Programming (2) Use of the computer in solving problems encountered in chemistry. Required of Computer Science majors. Prerequisites: 130 or 131 or 138. 3 hours and 1 lab. 130 -F, 131 -Sp

267 Honors: Corporate Executive in Residence Seminar (3) Interaction with top corporate executives from a wide array of companies. The seminar focuses on the current state of business and the role of leadership in international strategic planning as it is applied in major U.S. Corporations. Executive presentations and small group discussions on goods and services in international and industrial settings. Prereq: Senior standing. Prereq: 201. Management 201, Marketing 201 and 203.

110 Organizational Behavior (3) Introduction to principles of behavior in organizational situations. Prerequisites: 310. Satisfactory/No Credit only. Prereq: Senior standing. For students interested in a business minor in Business or Arts and Sciences Business Minor.
219 Inorganic Chemistry (3) Periodicity, valence, bonding, stereochemistry, isomerism, acid-base concepts, coordination compounds, nuclear chemistry, transition elements, inter-elemental elements. 1 hour and 1 lab. Prereq: 130 or 138 or 133.

218 Analytical Chemistry (3) Principles and practices of quantitative measurements in chemical systems. Acid-base, complexometric, and auto-analytical applications of titrimetric analysis; polarimetry; elementary spectrophotometry; chemical separations involving electromigration, ion-exchange, and solvent extraction. Prereq: 130 or 138 or 133.


320 Advanced Analytical Chemistry (3) Modern electroanalytic methods: mass spectrometry, optical spectrophotometric; magnetic, rectification methods; advanced chromatochemical theory. Prereq: 316. SP.


320-323 Organic Chemistry (3,3,3) Compounds of carbon and their reactions. Reaction mechanisms, synthetic preparation, and other physical properties. Must be taken in sequence. Prereq: 130 or 138 or 133. Coreq: 309 or 315.


400 Organic Chemistry (4) Four-hour lab. Prereq: 320 or consent of instructor.

401 Research in Chemistry (3) Open to seniors with consent of department head. Written reports required. Advanced students work with faculty on projects relating to research and development of interest to the student. May be repeated. Maximum 6 hours. E.

405 Topics in the Development of Chemistry (3) Historical development of topics such as the atomic theory, chemical industry, industrialization of population, energy and food. Subject matter may vary from term to term. Prereq: 369 or consent of instructor.

427 History of Chemistry (3) Development and contributions of chemists from various cultural backgrounds, from current journals and monographs, including such topics as the origin of the elements, reactions and reactions in society, how scientific research conduces, and the relation of science to politics.

406 Senior Seminar (1) Discussions by students and faculty. May be repeated. Maximum 2 hours.

409 Advanced Chemical Experimental Laboratory (5) Laboratory course in application of modern experimental techniques. Topics vary each year. Prereq: 320 or consent of instructor. Correlates 427-428.

410 Advanced Physical Chemistry (3) Quantum mechanics and applications of quantum mechanics to atomic and molecular structure. Emphasis on applications of quantum mechanics to the electronic and vibrational structure of diatomic molecules. Prereq: 130 or 131 or 138. Coreq: 411-412.

415 Inorganic Chemistry (3) Atomic and molecular structure; ionic and covalent bonding, thermal and electrical properties of ionic and covalent compounds; chemical bonding, reactions, coordination compounds of transition elements. Prereq: 230 or 300. Coreq: 309 or 315.


320 Inorganic Chemistry (3) Periodicity, valence, bonding, stereochemistry, isomerism, acid-base concepts, coordination compounds, nuclear chemistry, transition elements, inter-elemental elements. 1 hour and 1 lab. Prereq: 130 or 138 or 133.

219 Analytical Chemistry (3) Principles and practices of quantitative measurements in chemical systems. Acid-base, complexometric, and auto-analytical applications of titrimetric analysis; polarimetry; elementary spectrophotometry; chemical separations involving electromigration, ion-exchange, and solvent extraction. Prereq: 130 or 138 or 133.


320 Advanced Analytical Chemistry (3) Modern electroanalytic methods: mass spectrometry, optical spectrophotometric; magnetic, rectification methods; advanced chromatochemical theory. Prereq: 316. SP.


320-323 Organic Chemistry (3,3,3) Compounds of carbon and their reactions. Reaction mechanisms, synthetic preparation, and other physical properties. Must be taken in sequence. Prereq: 130 or 138 or 133. Coreq: 309 or 315.


400 Organic Chemistry (4) Four-hour lab. Prereq: 320 or consent of instructor.

401 Research in Chemistry (3) Open to seniors with consent of department head. Written reports required. Advanced students work with faculty on projects relating to research and development of interest to the student. May be repeated. Maximum 6 hours. E.

405 Topics in the Development of Chemistry (3) Historical development of topics such as the atomic theory, chemical industry, industrialization of population, energy and food. Subject matter may vary from term to term. Prereq: 369 or consent of instructor.

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320 Advanced Analytical Chemistry (3) Modern electroanalytic methods: mass spectrometry, optical spectrophotometric; magnetic, rectification methods; advanced chromatochemical theory. Prereq: 316. SP.
Courses of instruction

121 Early Greek Mythology (3) Achaeic Greek religion through comprehensive study of Greek myths with emphasis on how they reflect the early Greek vision of the universe and humankind in a 3rd century B.C. and 4th century B.C. Greece.

222 Classical Greek and Roman Mythology (3) Use of myth in literature. Major myths of Greek and Roman literature are traced from Homer to late antiquity. Topics include: the Egyptian, African, and Near Eastern mythologies; the Greek and Roman gods; the origin of Zeus; the Roman легком."
COMPUTER SCIENCE (266)

106 Introduction to Computing and Computer (3) Selectivity course of computer hardware and software, microcomputer systems and wordprocessing. May not be used to satisfy requirements for Computer Science major or minor. 3 hours.

102 Introduction to Computer Science (4) Problem solving, algorithms and problem solution techniques, study of modern digital computers with emphasis on assembly language, introduction to good programming practices, building abstractions with procedures and data, and programming in a modern computer language. Students who have received credit for 113 or 115 may not also receive credit for 102 except by consent of the instructor.

111 Computer Organization (3) Number systems, internal representation of numbers in computer, hardware components, hardware organization, introduction to computer architecture, memory and controlling units. Computing with regular finite automata, introduction to digital circuits. Prereq: 116. 2-hour lab required.

121 Data Structures (3) Structured programming, data structures, arrays, lists, stacks, queues, trees, binary, search, sorting, algorithms, files. 3 hour lab required. Prereq: 111.


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

320 Fundamental Algorithms (3) Design, analysis, and implementation of fundamental algorithms, such as sorting and searching, lower bounds. Prereqs: CS 111 and CS 112. 4-hour lab required.

318 Structure of Data (3) Existence, nature, formation, goals, presentation, manipulation, analysis of data. Prereqs: CS 111, 112, 311. 3-hour lab required.


371 Numerical Algorithms (3) (Same as Mathematics 371.) Study of algorithms for the efficient reading and understanding of personal factors. Prereqs: CS 302. 3 hour lab required.

266 COMPUTER SCIENCE (266)

268 Student Development (3) Practice in acquiring interpersonal and in areas such as problem-solving, career design decision-making, communication and self-awareness, individual and small-group process. Must be repeated. Minimum 3 hours credit. SNC grading.

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


216 Personality and Mental Health (3) Perspectives of mental health with applications to education and occupational settings. Prereq: 212 or consent of instructor.

435 Movement Education (3) Clinical studies in developing movement education for children, with attention to differences of culture, race, ethnicity, and physical ability as modifiers of motor development and determinants of appropriate practice. Prereqs: Admission to Teacher Education Program.

410 Sex Role Development: Implications for Education and Counseling (3) Emphasis on faculty research. May be repeated. Maximum of 9 hours. S/NC grading.

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

429 Advanced Topics in Software Systems (3) Topics such as architectures, programming, networks and communications. Enlarged emphasis on data manipulation. May be repeated. Maximum 9 hours. Prereq: completion of core curriculum or consent of instructor.

440 Advanced Topics in Computer Systems (3) Topics such as operating systems, compilers, programming languages and language processing, computer architecture, computer networks and communications, microcomputer systems. May be repeated. Maximum 9 hours. Prereq: completion of core curriculum or consent of instructor.

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

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

490 Special Topics (1-3) Study in selected disciplinary or professional areas of Physical Education. May be repeated. Prereq: admission.

450 Sociology of Sport (3) Social meaning, organization and presentation of sport, difference between sport and play and games, social stratification and sport, sport-clash, sport in mass culture, sport subcultures, and naturalistic influences of sport and cultural milieu. Prereq: 291 or Sociology 265, or permission of instructor. (Same as Sociology 450.)

460 Advanced Topics in Software Systems (3) Advanced study of machine intelligence, software systems, and software engineering. May be repeated. Maximum 9 hours. Prereq: completion of core curriculum or consent of instructor. May be repeated. Maximum 9 hours. S/NC grading.

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

480 Advanced Topics in Theoretical Computer Science (3) Topics such as automata theory, graph theory, and formal languages and grammars. Prerequisites: Either Theory I or Math 471. May be repeated. Maximum 3 hours. Prereq: completion of core curriculum or consent of instructor.

493 Directed Independent Studies (1-3) Independent study in a specialized area with physical education majors and minors or with consent of instructor. May be repeated. Maximum 6 credit hours. S/NC grading.

497 Senior Thesis I (3) Frontiers of computer science and mathematics. May be repeated. Maximum 9 hours. Prereq: progression to major or consent of instructor.

498 Senior Thesis II (3) Continuation of 497. Writing and presentation of thesis. May be repeated. Maximum 9 hours. Prereq: completion of core curriculum or consent of instructor. May be repeated. Maximum 9 hours. S/NC grading.


501 Teaching and Presentation in Physical Education (1-3) Observation and participation in university dance company performances. May be repeated. Maximum 12 hours.

510 Tap Dancem: Level 1 (2) Instruction and practice in elementary modern dance techniques. May be repeated. Maximum 2 hours.

520 Modern: Level 1 (2) Instruction and practice in elementary modern dance techniques. May be repeated. Maximum 4 hours.

550 Dance Level (1) Instruction and practice in elementary modern dance techniques. May be repeated. Maximum 4 hours.

560 Jazz Level (1) Instruction and practice in elementary jazz dance techniques. May be repeated. Maximum 4 hours.

430 Sociology of Sport (3) Social meaning, organization and presentation of sport, difference between sport and play and games, social stratification and sport, sport-clash, sport in mass culture, sport subcultures, and naturalistic influences of sport and cultural milieu. Prereq: 291 or Sociology 265, or permission of instructor. (Same as Sociology 450.)

460 Advanced Topics in Software Systems (3) Advanced study of machine intelligence, software systems, and software engineering. May be repeated. Maximum 9 hours. Prereq: completion of core curriculum or consent of instructor. May be repeated. Maximum 9 hours. S/NC grading.

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

480 Advanced Topics in Theoretical Computer Science (3) Topics such as automata theory, graph theory, and formal languages and grammars. Prerequisites: Either Theory I or Math 471. May be repeated. Maximum 3 hours. Prereq: completion of core curriculum or consent of instructor.

493 Directed Independent Studies (1-3) Independent study in a specialized area with physical education majors and minors or with consent of instructor. May be repeated. Maximum 6 credit hours. S/NC grading.

497 Senior Thesis I (3) Frontiers of computer science and mathematics. May be repeated. Maximum 9 hours. Prereq: progression to major or consent of instructor.

498 Senior Thesis II (3) Continuation of 497. Writing and presentation of thesis. May be repeated. Maximum 9 hours. Prereq: completion of core curriculum or consent of instructor. May be repeated. Maximum 9 hours. S/NC grading.
445 Composition II(2) Choreographicskillsemphasizes majors and minors or with consent of instructor. May be advanced jazz and musical theater dance styles and may be repeated. Maximum 12 hours.

440 Composition I(2) Choreographicskillsemphasizes majors and minors or with consent of instructor. May be advanced classical ballet techniques. Available tomajors and minors or with consent of instructor. May be repeated. Maximum 15 hours.

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

420 Jazz: Level I (1) Instruction and practice in presentation or creative dance ingrades K-6. Methods, materials and practical experience in presentation or creative dance in grades K-6. A non-teaching experience is involved in this class.

410 Ballet: Level I (1) Instruction and practice in methods, materials and practical experience in presentation or creative dance in grades K-6. A non-teaching experience is involved in this class.

340 Tap: Level II (2) Instruction and practice in intermediate or advanced tap dancing. May be repeated. Maximum 12 hours.

335 Ethnic Dance (2) Instruction and practice in advanced ethnic dance techniques. Available tomajors and minors or with consent of instructor. May be repeated. Maximum 15 hours.

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

410 Ballet: Level II (2) Instruction and practice in advanced ballet technical techniques. Available tomajors and minors or with consent of instructor. May be repeated. Maximum 15 hours.

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

420 Jazz: Level II (2) Instruction and practice in advanced jazz and musical theater dance styles and may be repeated. Maximum 16 hours.

410 Ballet: Level II (2) Instruction and practice in advanced ballet technical techniques. Available tomajors and minors or with consent of instructor. May be repeated. Maximum 15 hours.

404 Composition (2) Choreographic skills emphasizes form, center and style. Preper 4 hours credit in upper-level modern dance technique or approval of instructor.

460 Composition II (2) Choreographic emphasis design, use of costumes and props. Prereq: 4 hours credit in Principles of Dance or approval of instructor.

450 Composition III (2) Application of choreographic principles and techniques to presentation or creative dance in grades K-6. Different level of performance is expected of those classified as graduate standing or graduate status required for graduate credit. Different level of performance is expected of those classified as graduate standing or graduate status required for graduate credit. Prereq: 440 or 445 or approval of instructor.

440 Composition I (2) Choreographic emphasis design, use of costumes and props. Prereq: 4 hours credit in Principles of Dance or approval of instructor.

340 Tap: Level II (2) Instruction and practice in intermediate or advanced tap dancing. May be repeated. Maximum 12 hours.

335 Ethnic Dance (2) Instruction and practice in advanced ethnic dance techniques. Available tomajors and minors or with consent of instructor. May be repeated. Maximum 15 hours.

Directed Independent Studies (1-3) Independent study is approved only with major. May be repeated. Maximum 9 hours. Prereq: Consent of instructor.

Directed Independent Studies (1-3) Independent study is approved only with major. May be repeated. Maximum 9 hours. Prereq: Consent of instructor.

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Directed Independent Studies (1-3) Independent study is approved only with major. May be repeated. Maximum 9 hours. Prereq: Consent of instructor.
381 Econometrics (3) Methods of econometric estimation, forecasting and testing of economic relationships, statistical inferential principles, forecasting of variables, econometric methods, statistical inference from empirical results. Correlating procedures and current economic policies, such as multi-collinearity, heteroscedasticity, and autocorrelation. Prerequisite: 201. Stat 201A, 292A or 141-142.

400 Special Topics (2) Topic vary. Prerequisites determined by department each time course is offered. Usually given to/for graduate students. May be repeated if topic varies. Minimum 9 hours. Prerequisite: 201.

413 Macroeconomics & Fluctuations (3) Analysis of historical data, methods of analyzing economic fluctuations, theoretical explanations of cyclical, the role of monetary and fiscal policies in the aggregate economy. Prerequisite: 213 or consent of instructor. Writing emphasis course.

415 Western Economic Thought Since the 19th Century (3) Same as History 415.

424 Political Economy of Development (3) Topics vary: Latin America, Asia, Soviet Union and Eastern Europe. Analysis of major economic strategies, policies, and problems. Major writing requirement. Prerequisite: 201 or consent of instructor. May be repeated if topic varies. Minimum 9 hours. Prerequisite: 201.


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

433 The Wealth of Nations (3) Introduction to the economic theory of Adam Smith. Prerequisite: 201. Writing emphasis course.


450 Professional Studies: Teaching and Curriculum (2) Organizational patterns of curricula and classrooms development of curriculum content and objectives. selection of appropriate instructional approaches and strategies. Prerequisite: Consent of Education and Counseling Psychology 210 and Education 400; Prerequisite: Admission to Teacher Education Program.

451 Professional Studies: Focus on roles and responsibilities of teachers (2) Emphasis course. Prerequisite: Admission to Teacher Education Program.

471 Public Finance: Optimal Government Functions and Expenditure Analysis (3) Problems of collective decisions in the economic participation of different groups in society. Prerequisite: 201.

475 Utilization of Instructional Media (3) Basic communication process, need for instructional media, instructional development, selection and utilization of topic media, and basic software production techniques. Prerequisite: Consent of instructor.

494 Supervised Readings (1-3) Topic to be assigned. Prerequisite: Admission to Teacher Education Program. Satisfactory/No Credit only. May be repeated. Maximum 12 hours. E

499 Analysis of Economic Problems (3) Study of the assumptions, theoretical explanation of cycles, the role of government. Prerequisite: Admission to Teacher Education Program. Satisfactory/No Credit only. May be repeated. Maximum 9 hours. Prerequisite: 201.

504 Problems in Improvement of Instruction (1-3) Special conferences, workshops, or in-service programs. May be repeated. Maximum 12 hours. Satisfactory/No Credit only. Sp

505 Special Topics (1-4) Topic selected in consultation with the instructor. Prerequisite: Consent of instructor.

5162 Fundamentals of Engineering Graphics (3) Introduction to the use of a variety of drafting tools (e.g., calipers, magnets, mental models, etc.) to major topics of economic theory and policy. Prerequisite: 201. Writing emphasis course.

5163 Computer Programming (3) Application of computers and computer software to economic problems. Prerequisite: Consent of instructor.

529 Aerospace System Design (4) Synthesis and design of aerospace systems, including planning, systems, standards, design studies. Individual design reports required. Prerequisite: 351, 363, Mech. E. 344. Prerequisite: Consent of instructor.

530 Airplane Performance (3) Characteristics of propulsion of turbojet, ram jet and rocket engines. Prerequisite: 351. F

531 Introduction to Mathematical Economics (3) Applications of mathematical tools (e.g., calculus, matrices, inputs, outputs, etc.) to major topics of economic theory and policy. Prerequisite: 201. Writing emphasis course.

532 Fundamentals of Structural Analysis (3) Two-dimensional external flows. Prerequisite: Mech. E. 332, 341 or letter grade. F, Sp

534 Computer-Aided Design and Drafting (4) Use of computer-aided design and drafting software. Prerequisite: Consent of instructor. May be repeated. Maximum 12 hours. F, Sp

535 Introduction to Structural Analysis (3) Introduction to structural analysis, planning, design of construction, participation in team design projects. Prerequisite: Consent of instructor. May be repeated. Maximum 9 hours. Prerequisite: 201.

536 Introduction to Computational Mechanics (3) Introduction to the fundamental concepts of computational mechanics and their applications to problems in engineering. Prerequisite: Consent of instructor. May be repeated. Maximum 9 hours. Prerequisite: 201.

539 Field Study in Economics (3) Field experiences in related to teaching and field experiences. Prerequisite: Admission to Teacher Education Program. Satisfactory/No Credit only. May be repeated. Maximum 12 hours.

540 Field Study in Teaching (Secondary) (1-3) Field experiences in related to teaching and field experiences. Prerequisite: Admission to Teacher Education Program. Satisfactory/No Credit only. May be repeated. Maximum 12 hours.

541 Field Study in Teaching (Secondary) (1-3) Field experiences linked to teaching and related to teaching. Prerequisite: 302 and admission to Teacher Education Program. Satisfactory/No Credit only. May be repeated. Maximum 12 hours.

542 Field Studies in Teaching (3) Field experiences linked to teaching and related to teaching. Prerequisite: 302 and admission to Teacher Education Program. Satisfactory/No Credit only. May be repeated. Maximum 12 hours.

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557 Field Studies in Teaching (1-3) Field experiences linked to teaching and related to teaching. Prerequisite: 302 and admission to Teacher Education Program. Satisfactory/No Credit only. May be repeated. Maximum 12 hours.
131 Statics (3) Vectors, forces and moments; equilibruim of force systems; free body diagrams, equilibrium, forces, friction and forces.


211 Engineering Design Workshop (3) Introduction to the design process. Projects involving problem solving in areas such as: simulation, written and oral communication, use of automatic drafting equipment, use of CAD software for technical design. Prereq: 212. Satisfactory/No Credit.

212 Civil Project Planning and Placement (1) Fundamentals of successful professional employment, including project organization, interview preparation, preparation of report format, and the write job-seeking process. Prereq: 211. Satisfactory/No Credit.


315 Chemical Engineering Thermodynamics (4) Basic thermodynamic properties of gases, liquids and solids; processes, application of the first and second laws; Maxwells ergenboch properties of gases, liquids, and solids. Prereq: Math 205. Coreq. Chem 207.

316 Thermodynamics for Chemical Engineers (3) Graphical and mathematical methods of analysis of chemical engineering systems. Prereq: Math 205. Coreq. Chem 207.


401 Engineering Internship (2) Introduction to design, construction, maintenance, and operation of various transportation modes, radar systems and telematics. Two lectures and 1 lab. Prereq: Junior standing and 345.

411 Process Design and Economic Analysis (3) Multicomponent distillation, extraction, humidification, ion exchange, etc. Prereq: 340.

416 Process Design and Economic Analysis (3) Multicomponent distillation, extraction, humidification, ion exchange, etc. Prereq: 340.

417 Advanced Process Dynamics and Control (3) Process and control system simulation and advanced industrial system design. Cascade, feedback, multivariable, variables, optimization, and nonlinear control system design. Includes computer and laboratory work. Lab. Prereq: 330.

420 Chemical Engineering Seminar (1) Presentation and discussion of topics. Includes laboratory work. Lab. Prereq: 330.


423 Structural Analysis I (3) Structural analysis methods and principles. Topics vary each semester but will include problems typical of a professional practice. Prereq: Math 231.

423 Structural Analysis I (3) Structural analysis methods and principles. Topics vary each semester but will include problems typical of a professional practice. Prereq: Math 231.

425 Introduction to Chemical Engineering Process Simulators, statistics, spreadsheets, graphics and process simulation. Two lectures and 1 lab. Prereq: Math 231.


469,470,490 Project (1) Directed study in Chemical Engineering. Prereq: Approval of instructor and departmental approval. May be repeated. Prereq: 330.

469,470,490 Project (1) Directed study in Chemical Engineering. Prereq: Approval of instructor and departmental approval. May be repeated. Prereq: 330.


291 Physics 131 and Mathematics 131.
342 Analog Communication Amplitude and Frequency Modulation (3) Filter design, noise, equivalent noise bandwidth, frequency multiplexing, and design content: 1 hour. Prereq: 310, 315.
490 Senior Seminar (1) Presentations and discussions related to professional development. Includes career development, research, ethics and current topics in electrical engineering. Prereq: 310, 312, 320.
491 Digital Signal Processing and Filter Design (3) Discrete-time signals and systems, sampling, aliasing, Fourier transform, analog filter designs, and CAD tools for filter design. Includes experiments and projects. Design content: 1 hour. Prereq: 310, 312, 320.
492 Linear Control System Design (3) Classical and modern techniques for design and compensation of linear feedback control systems. Includes basic design, root locus design, state variable pole placement design. Design content: 2 hours. Prereq: 411.
496 Power System Operations and Planning (3) Basic economic and power system reliability; system operation, planning, and optimization. Includes economic dispatch, frequency regulation and automatic generation control, fault analysis, contingency evaluation and related topics of contemporary concern. Design content: 3 hours. Prereq: 311, 312, 320.
497 Electric Machines (3) Principles of electromagnetics. Electric machines; design of concentrated and distributed windings, effect of winding shape, air gap, field distribution, and performance; reference frames, transient response. Switched reluctance motor; permanent magnet brushless DC machines; performance, design and optimization. Torque, speed, efficiency; design and performance analysis. Includes laboratory experiments and projects. Design content: 3 hours. Prereq: 310, 312, 320, 324.
499 Fabrication and Design Concepts for Integrated Circuits (3) Basic process fabricating and design concepts for active and passive circuits for monolithic and integrated circuits, characteristics of bipolar, MOS and JFET transistors, passive components, and digital integrated circuit design. Design content: 3 hours. Prereq: 310, 312, 320, 324.
461 Digital Communication (3)忠诚Fake Time Trans-
forms, Binary and Many Signaling, Digital Communication in
the Presence of Noise, Interference, and Intermodulation. Introduction to Theory, Design.
Course content: 1 hour. Prerequisite: 342.
462 Communication System Design (3)Application of
communication theory principles to system design, Communication systems in general, System
simulation and graphical programming language. Network
and software design and simulation. Communication design and performance evaluation of a complete
system or subsystem. Design content: 2 hours. Prerequisite: 461.
463 Antennas and Propagation (3)Linear antennas,
logs, dipole and power dividers, circulators, phase shifters. Understanding of radiation by vacuum and
electric devices (bik and k vector). Microwave antennas. Microstrip antennas, waveguides,
metamaterials, and microelectronics components. Includes Design.
Course content: 1 hour. Prerequisite: Senior standing.
464 Microwave Circuits and Electronics (3)Scinti-
lation description of circuits, includes oscilloscopes and amplifiers, dipole design principles, wave theory.
Inclusion of transmission line and microwave components. Design content: 2 hours. Prerequisite: 463.
465 Power Electronics Circuits (3)Power grid invert-
ers, PV converters, DC/DC controllers, DC/AC converters, AC motor drive, resonant inverters, converter
control, as controlled rectifier, voltage-source inverter and DC-link converters. Introduction to
control strategies and digital signal processing. Design content: 2 hours. Prerequisite: 464.
466 Applications of Industrial Plasma Engineering
(3,3)Recent developments in Industrial Engineering
contains a lab component to provide hands-on experi-
ence. May not be used to satisfy senior requirements for graduation. Maximum three
hours. Prerequisite: Full junior EE course or consent of Instructor. Satisfactory/Pass or letter grade.
471 Introduction to Digital Image Processing (3)Basic methods for digitizing, storing, processing, and
Design content: 1 hour. Prerequisite: Senior standing. None major requires consent of instructor.
472 Power Electronics (3)Principles and characteris-
tics of power semiconductor devices, single-phase and polyphase circuit converters, PWM contro-
lers, switchgear, and corona; plasma lighting devices. Plasma lighting devices. Design content: 2 hours. Prerequisite: 471.
473 Power Electronics (3,3)Recent developments in
Industrial Engineering contains a lab component to provide hands-on experi-
ence. May not be used to satisfy senior requirements for graduation. Maximum three
hours. Prerequisite: Full junior EE course or consent of Instructor. Satisfactory/Pass or letter grade.
474 Power Electronics (3,3)Recent developments in
Industrial Engineering contains a lab component to provide hands-on experi-
ence. May not be used to satisfy senior requirements for graduation. Maximum three
hours. Prerequisite: Full junior EE course or consent of Instructor. Satisfactory/Pass or letter grade.
481 Power Electronics (3)Principles and characteris-
tics of power semiconductor devices, single-phase and polyphase circuit converters, PWM contro-
ners, switchgear, and corona; plasma lighting devices. Plasma lighting devices. Design content: 2 hours. Prerequisite: 471.
482 Power Electronics Circuits (3)Power grid invert-
ers, PV converters, DC/DC controllers, DC/AC converters, AC motor drive, resonant inverters, converter
control, as controlled rectifier, voltage-source inverter and DC-link converters. Introduction to
control strategies and digital signal processing. Design content: 2 hours. Prerequisite: 471.
483 Special Topics (3,3)Recent developments in Industrial Engineering
contains a lab component to provide hands-on experi-
ence. May not be used to satisfy senior requirements for graduation. Maximum three
hours. Prerequisite: Full junior EE course or consent of Instructor. Satisfactory/Pass or letter grade.
484 Special Topics (3,3)Recent developments in Industrial Engineering
contains a lab component to provide hands-on experi-
ence. May not be used to satisfy senior requirements for graduation. Maximum three
hours. Prerequisite: Full junior EE course or consent of Instructor. Satisfactory/Pass or letter grade.
485 Senior Seminar (1)Current topics in electrical
engineering. May not be used to satisfy senior requirements for graduation. Maximum three
hours. Prerequisite: Consent of Instructor. Satisfactory/Pass or letter grade.
486 Manufacturing Management/Processes (3,3)Recent developments in Industrial Engineering
contains a lab component to provide hands-on experi-
ence. May not be used to satisfy senior requirements for graduation. Maximum three
hours. Prerequisite: Full junior EE course or consent of Instructor. Satisfactory/Pass or letter grade.
486 Principles of Industrial Plasma Engineering (3)Principles of plasma engineering. Ionized gas
included applications of plasma. Basic concepts of ionized theory, thermodynamics, and plasma physics, potential of elec-
trons, ions, and ionic reactions. DC electrical dis-
scharge and its use in industrial applications. Design content: 2 hours. Prerequisite: Senior standing. Design content: 1 hour. Prerequisite: Senior standing.
487 Principles of Industrial Plasma Engineering (3)Principles of plasma engineering. Ionized gas
included applications of plasma. Basic concepts of ionized theory, thermodynamics, and plasma physics, potential of elec-
trons, ions, and ionic reactions. DC electrical dis-
scharge and its use in industrial applications. Design content: 2 hours. Prerequisite: Senior standing. Design content: 1 hour. Prerequisite: Senior standing.
488 Manufacturing Management/Processes (3,3)Recent developments in Industrial Engineering
contains a lab component to provide hands-on experi-
ence. May not be used to satisfy senior requirements for graduation. Maximum three
hours. Prerequisite: Full junior EE course or consent of Instructor. Satisfactory/Pass or letter grade.
489 Principles of Manufacturing/Processes (3,3)Recent developments in Industrial Engineering
contains a lab component to provide hands-on experi-
ence. May not be used to satisfy senior requirements for graduation. Maximum three
hours. Prerequisite: Full junior EE course or consent of Instructor. Satisfactory/Pass or letter grade.
490 Principles of Manufacturing/Processes (3,3)Recent developments in Industrial Engineering
contains a lab component to provide hands-on experi-
ence. May not be used to satisfy senior requirements for graduation. Maximum three
hours. Prerequisite: Full junior EE course or consent of Instructor. Satisfactory/Pass or letter grade.
491 Senior Thesis (3,3)Recent developments in Industrial Engineering
contains a lab component to provide hands-on experi-
ence. May not be used to satisfy senior requirements for graduation. Maximum three
hours. Prerequisite: Full junior EE course or consent of Instructor. Satisfactory/Pass or letter grade.
492 Special Topics (3,3)Recent developments in Industrial Engineering
contains a lab component to provide hands-on experi-
ence. May not be used to satisfy senior requirements for graduation. Maximum three
hours. Prerequisite: Full junior EE course or consent of Instructor. Satisfactory/Pass or letter grade.
493 Production Facilities Design and Material Han-
dling (3)Design of production facilities including plant layout and material handling for major projects
planning and design of material handling. This includes facility design for space and logistic.
Course content: 1 hour. Prerequisite: Senior standing.
494 Senior Seminar (3)Recent developments in Industrial Engineering
contains a lab component to provide hands-on experi-
ence. May not be used to satisfy senior requirements for graduation. Maximum three
hours. Prerequisite: Consent of Instructor. Satisfactory/Pass or letter grade.
301 Introduction to Nuclear Engineering (3) Nuclear fission, the chain reaction, nuclear fission reactors, and other energy applications.

302 Materials Laboratory Procedure I (1) Thrombina,

303 Materials Laboratory Procedure II (1) Thrombina,


310 Thermodynamics of Solids (3) Applications to solidstate, liquidstate, and gasstate systems; phase transformations; first and second law analysis; free energy and chemical potential; statistical mechanics.

311 Thermodynamics of Fluids (3) Applications to fluidstate systems; phase transformations; thermodynamic properties of fluids; transport properties; chemical potentials; equilibrium and nonequilibrium processes.

312 Thermodynamics of Solids (3) Applications to solidstate, liquidstate, and gasstate systems; phase transformations; first and second law analysis; free energy and chemical potential; statistical mechanics.

313 Thermodynamics of Fluids (3) Applications to fluidstate systems; phase transformations; thermodynamic properties of fluids; transport properties; chemical potentials; equilibrium and nonequilibrium processes.

314 Thermodynamics of Solids (3) Applications to solidstate, liquidstate, and gasstate systems; phase transformations; first and second law analysis; free energy and chemical potential; statistical mechanics.

315 Thermodynamics of Fluids (3) Applications to fluidstate systems; phase transformations; thermodynamic properties of fluids; transport properties; chemical potentials; equilibrium and nonequilibrium processes.

316 Thermodynamics of Solids (3) Applications to solidstate, liquidstate, and gasstate systems; phase transformations; first and second law analysis; free energy and chemical potential; statistical mechanics.

317 Thermodynamics of Fluids (3) Applications to fluidstate systems; phase transformations; thermodynamic properties of fluids; transport properties; chemical potentials; equilibrium and nonequilibrium processes.

318 Thermodynamics of Solids (3) Applications to solidstate, liquidstate, and gasstate systems; phase transformations; first and second law analysis; free energy and chemical potential; statistical mechanics.

319 Thermodynamics of Fluids (3) Applications to fluidstate systems; phase transformations; thermodynamic properties of fluids; transport properties; chemical potentials; equilibrium and nonequilibrium processes.


321 Introduction to Nuclear Engineering (3) Nuclear fission, the chain reaction, nuclear fission reactors, and other energy applications. Prereq: 201. Coreq: 302, 321, 362.

322 Principles of Metallurgical Materials (3) Property control through composition, thermal processing and mechanical property evaluation; mechanical and physical property evaluation; content and potential applications. Prereq: 201 and ES 301 (same as Engineering Science 426). F, Sp.

323 Principles of Metallic Materials (3) Property control through composition, thermal processing and mechanical property evaluation; mechanical and physical property evaluation; content and potential applications. Prereq: 201. Coreq: 302, 321, 362.

324 Principles of Polymeric Materials (3) Synthesis and chemical characterization; rubber, plastic, and fiber materials; mechanism, fabrication, and application of photothermoplastic materials. Prereq: 201, 321.

325 Principles of Ceramic Materials (3) Characterization of ceramic materials; physical properties; chemical reactions and reaction kinetics; and design principles of ceramic materials. Prereq: 201.

326 Materials Seminar (1) Professional and ethical considerations; safety, products, product liability. S, Su.


329 Mechanical Vibration (3) Free and forced vibration of lumped parameter systems. Prereq: 301.

330 Mechanical Engineering Laboratory (3) Design, fabrication, and evaluation of mechanical systems. Prereq: 301.

331 Seminar (1) Topics related to engineering including ethics, professional and ethical considerations. Prereq: Senior standing. F.

332 Thermodynamics II (3) Properties of gases and mixtures; chemical reactions; equilibrium; compressibility; applications to engineering problems. Prereq: 312. F.


334 Mechanical Engineering Instrumentation and Measurement (3) Fundamentals of measurement systems and instrumentation. Prereq: ME 345, F.

335 Mechanical Engineering Instrumentation and Measurement (3) Fundamentals of measurement systems and instrumentation. Prereq: ME 345, F.

336 Mechanical Engineering Instrumentation and Measurement (3) Fundamentals of measurement systems and instrumentation. Prereq: ME 345, F.

337 Mechanical Engineering Instrumentation and Measurement (3) Fundamentals of measurement systems and instrumentation. Prereq: ME 345, F.

338 Mechanical Engineering Instrumentation and Measurement (3) Fundamentals of measurement systems and instrumentation. Prereq: ME 345, F.

339 Mechanical Engineering Instrumentation and Measurement (3) Fundamentals of measurement systems and instrumentation. Prereq: ME 345, F.

340 Principles of Ceramic Materials (3) Characterization of ceramic materials; physical properties; chemical reactions and reaction kinetics; and design principles of ceramic materials. Prereq: 201.

341 Principles of Polymeric Materials (3) Synthesis and chemical characterization; rubber, plastic, and fiber materials; mechanism, fabrication, and application of photothermoplastic materials. Prereq: 201, 321.

342 Principles of Ceramic Materials (3) Characterization of ceramic materials; physical properties; chemical reactions and reaction kinetics; and design principles of ceramic materials. Prereq: 201.

343 Thermodynamic Processes (3) Thermodynamic processes in relation to design for nuclear and materials engineering. Prereq: 312, 344, 360. F.

344 Heat Transfer (3) Heat transfer by conduction, convection, and radiation. Prereq: 301.

345 Mechanical Engineering Instrumentation and Measurement (3) Fundamentals of measurement systems and instrumentation. Prereq: ME 345, F.


ENGINEERING SCIENCE (335)

121 Dynamics (3) Kinematics of rigid bodies, center of mass, inertia of systems of particles, mass moments of inertia of rigid bodies, work, energy, power, torque, and angular velocity. Prerequisite: Basic Eng. 131.

127 Introduction to Biomedical Engineering (2) Overview of biomedical engineering: anatomy, physiology, biochemistry, biotechnology, and bioengineering. Corequisites: Mathematics 241 or consent of instructor.

129 Seminar (1) Engineering professional seminar: current topics on current projects. Satisfactory/unsatisfactory grading.


132 Mechanics of Materials II (3) Stress analysis; conservation equations of mass, momentum, and energy; applications to fluid machinery; heat transfer processes; heat conduction, thermal expansion, force and thermal expansion of solids. Prerequisites: Coreq. Coreq. Mathematics 341.

133 System Modelling and Simulation (3) Development of mathematical models of dynamic systems and dynamic systems simulation models, model formulation, transient analysis, stability functions, numerical methods, stability, state space analysis, and control. Prerequisite: Coreq. Mathematics 341.

134 Nuclear Engineering Laboratory (3) Cross-section measurement, diffusion properties of materials, control rod development, reactor stability, neutronic evaluation, and neutron detection. Prerequisite: Coreq. Mathematics 341.

135 Fluid Mechanics I (3) Fluid flow; conservation equations of mass, momentum, and energy; applications to fluid machinery; heat transfer processes; heat conduction, thermal expansion, force and thermal expansion of solids. Prerequisites: Coreq. Coreq. Mathematics 341.


137 Radiation Protection (3) External and internal radiation; biological effects of radiation; radiation epidemiology; evaluation of experimental and computational methods, and applications. Prerequisites: Coreq. Coreq. Mathematics 341.

138 Nanotechnology (3) Nanotechnology and its applications to engineering design and materials science. Prerequisite: Coreq. Coreq. Mathematics 341.

139 Radiation Dosimetry (2) Measurement of radiation exposure; observation of biological effects of radiation; radiation detection, radiation isolation, radiation detection. Prerequisite: Coreq. Mathematics 341.

140 Radiation Risk Analysis (3) Radiation risk estimates for external and internal radiation; dose-response criteria, radon exposure, radiation risks, probability of cancer and mortality, age effects, protective practices, reduction of radiation risks. Prerequisite: Coreq. Mathematics 341.

141 Biomaterials (3) Biomaterials and tissue engineering; tissue characterization and mechanical properties of tissues and cells; biocompatibility; biomaterials failure analysis. Prerequisites: Coreq. Coreq. Mathematics 341.

142 Introduction to Ceramic Matrix Composites (3) Characterization of ceramic matrix composites, microstructural and mechanical design; overview of manufacturing techniques; microstructure characterization; physical and mechanical property evaluation. Prerequisites: Coreq. Coreq. Mathematics 341.

143 Dynamic Systems (3) Basics of dynamical systems; linear systems; state space; system stability; linear systems; and state space control. Prerequisites: Coreq. Coreq. Mathematics 341.

144 Introduction to Fusion Energy I (3) (Same as Electrical Engineering 446.)

145 Introduction to Fusion Energy II (3) (Same as Electrical Engineering 446.)

146 Nuclear Reactor Theory I (3) Fundamentals of nuclear reactor theory, nuclear fission systems, fusion systems, reactor safety systems, reactor core design, fuel cycle systems, and reactor core design. Prerequisites: Coreq. Coreq. Mathematics 341.

147 Nuclear Reactor Theory II (3) Thermal system (computational methods: heterogeneity effects in fast and thermal reactors, core calculations in advanced reactor core design; designing the thermal neutrons and neutronic calculational systems; power distribution calculations in advanced reactors. Prerequisites: Coreq. Coreq. Mathematics 341.

149 Nuclear Reactor Theory III (3) First order design and analysis of a nuclear reactor system, interaction with non-nuclear aspects of reactor safety systems, reactor safety systems, reactor core design, and reactor core design. Prerequisites: Coreq. Coreq. Mathematics 341.


152 Biomechanics (3) Mechanical properties of living tissue; biomechanics of injury; biomechanics of prosthesis, materials, mechanical properties of tissues, living tissue, and the effects of disease. Prerequisites: Coreq. Coreq. Mathematics 341.

153 Design of Artificial Internal Organs (3) Design, development, and evaluation of artificial internal organs; analysis of transport processes in therapeutic devices for design optimization; review of currently available devices; device regulation and ethical considerations. Prerequisites: Coreq. Coreq. Mathematics 341.


155 Introduction to Biomedical Engineering (3) Overview of biomedical engineering: anatomy, physiology, biochemistry, biotechnology, and bioengineering. Corequisites: Mathematics 241 or consent of instructor.

156 Biomechanics (3) Mechanical properties of living tissue; biomechanics of injury; biomechanics of prosthesis, materials, mechanical properties of tissues, living tissue, and the effects of disease. Prerequisites: Coreq. Coreq. Mathematics 341.

157 Biomechanics (3) Mechanical properties of living tissue; biomechanics of injury; biomechanics of prosthesis, materials, mechanical properties of tissues, living tissue, and the effects of disease. Prerequisites: Coreq. Coreq. Mathematics 341.

158 Biomechanics (3) Mechanical properties of living tissue; biomechanics of injury; biomechanics of prosthesis, materials, mechanical properties of tissues, living tissue, and the effects of disease. Prerequisites: Coreq. Coreq. Mathematics 341.

159 Biomechanics (3) Mechanical properties of living tissue; biomechanics of injury; biomechanics of prosthesis, materials, mechanical properties of tissues, living tissue, and the effects of disease. Prerequisites: Coreq. Coreq. Mathematics 341.
118. English Composition for Non-Native Speakers of English (3) Designed for students whose ACT English and Composite scores are at or above 35 (or SAT verbal/composite scores at or above 28), and for students whose ACT English and Composite scores are at or above 238. Honors American Literature II: Civil War to the Present (3) Enriched section of 232 designed for students with a 3.25 or higher GPA. Writing emphasis course. 238 Honors American Literature III: Colonial Era to the Civil War (3) Enriched section of 231 designed for students with a 3.25 or higher GPA. Writing emphasis course. 237 Honors American Literature I: Colonial Era to the Civil War (3) Writing emphasis course. 236 American Literature II: Civil War to the Present (3) Enriched section of 232 designed for students with a 3.25 or higher GPA. Writing emphasis course. 235 American Literature I: Colonial Era to the Civil War (3) Enriched section of 231 designed for students with a 3.25 or higher GPA. Writing emphasis course. 234 English Grammar Review for Non-Native Speakers of English (3) Designed for students whose ACT English and Composite scores are at or above 28 (or SAT verbal/composite scores at or above 238). Honors American Literature II: Civil War to the Present (3) Enriched section of 232 designed for students with a 3.25 or higher GPA. Writing emphasis course. 233 Major Black Writers (3) Black American literature to the present. Writing emphasis course. 403 Introduction to Film Studies (2) Selected world cinema feature films. Critical techniques necessary for understanding and analysis of narrative cinema. Basic elements of film production and cinema history. Writing emphasis course. 255 Business and Technical Writing (3) Principles of written communication in science and business in the departments of engineering, math, and social and intellectual history. Writing emphasis course. 232 American Literature II: Civil War to the Present (3) Enriched section of 232 designed for students with a 3.25 or higher GPA. Writing emphasis course. 231 American Literature I: Colonial Era to the Civil War (3) Writing emphasis course. 221 Literature of the Western World I: Ancient, Medieval, and Renaissance (3) Writing emphasis course. 208 Honors British Literature II (3) Enriched section of 207 designed for students with a 3.25 or higher GPA. Writing emphasis course. 207 British Literature II: Worldview to the Present (3) Major literary works from three periods: Romantic, Victorian, and the Twentieth Century. Writing emphasis course. 201 British Literature I: Worldview to the Present (3) Major literary works from three periods: Romantic, Victorian, and the Twentieth Century. Writing emphasis course. 200 Introduction to Folklore (3) Materials on folk tales, myths, proverbs, riddles, superstitions, dance, games, and humor from the earthen nineteenth century through the twentieth centuries, emphasis on the historical and social forces that shape these forms from the 16th to 19th centuries. Writing emphasis course. 302 British Culture: 1660 to the Present (3) Designed to fulfill the pre-1800 literature requirement for English majors. Writing emphasis course. 301 British Culture to 1660 (3) English literature in the eighteenth-century context. (Same as American Studies 301.) Writing emphasis course. 398 Junior-Senior Honors Seminar (3) Designed for the two-thirds of the seventeenth century (such as the University of Virginia, Washington and Jefferson, Rhode Island, and Yale). Literature of the Western World II: Enlightenment, Romantic, and Modern (3) Writing emphasis course. 397 American Literature I: Colonial Era to the Civil War (3) Enriched section of 396 designed for students with a 3.25 or higher GPA. Writing emphasis course. 396 American Literature II: Colonial Era to the Civil War (3) Enriched section of 395 designed for students with a 3.25 or higher GPA. Writing emphasis course. 395 American Literature I: Colonial Era to the Civil War (3) Enriched section of 394 designed for students with a 3.25 or higher GPA. Writing emphasis course. 394 American Literature II: Colonial Era to the Civil War (3) Enriched section of 393 designed for students with a 3.25 or higher GPA. Writing emphasis course. 393 American Literature I: Colonial Era to the Civil War (3) Enriched section of 392 designed for students with a 3.25 or higher GPA. Writing emphasis course. 392 American Literature II: Colonial Era to the Civil War (3) Enriched section of 391 designed for students with a 3.25 or higher GPA. Writing emphasis course. 391 American Literature I: Colonial Era to the Civil War (3) Enriched section of 390 designed for students with a 3.25 or higher GPA. Writing emphasis course. 390 American Literature II: Colonial Era to the Civil War (3) Enriched section of 399 designed for students with a 3.25 or higher GPA. Writing emphasis course. 389 American Literature I: Colonial Era to the Civil War (3) Enriched section of 388 designed for students with a 3.25 or higher GPA. Writing emphasis course. 388 American Literature II: Colonial Era to the Civil War (3) Enriched section of 387 designed for students with a 3.25 or higher GPA. Writing emphasis course. 387 American Literature I: Colonial Era to the Civil War (3) Enriched section of 386 designed for students with a 3.25 or higher GPA. Writing emphasis course. 386 American Literature II: Colonial Era to the Civil War (3) Enriched section of 385 designed for students with a 3.25 or higher GPA. Writing emphasis course. 385 American Literature I: Colonial Era to the Civil War (3) Enriched section of 384 designed for students with a 3.25 or higher GPA. Writing emphasis course. 384 American Literature II: Colonial Era to the Civil War (3) Enriched section of 383 designed for students with a 3.25 or higher GPA. Writing emphasis course. 383 American Literature I: Colonial Era to the Civil War (3) Enriched section of 382 designed for students with a 3.25 or higher GPA. Writing emphasis course. 382 American Literature II: Colonial Era to the Civil War (3) Enriched section of 381 designed for students with a 3.25 or higher GPA. Writing emphasis course. 381 American Literature I: Colonial Era to the Civil War (3) Enriched section of 380 designed for students with a 3.25 or higher GPA. 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Writing emphasis course. 373 American Literature I: Colonial Era to the Civil War (3) Enriched section of 372 designed for students with a 3.25 or higher GPA. Writing emphasis course. 372 The Structure of Modern English (3) Survey of grammatical systems of English and their relationship to the English language. (Same as Linguistics 372.) Writing emphasis course. 371 Foundations of the English Language (3) Phonology, orthography, morphology, and syntax of English. History of the English language from c. 1500 to the 16th century. Writing emphasis course. 365 Writing Drama and the Screenplay (3) Introduction to writing for the stage and screen. Emphasis on the script as a basic medium of artistic expression. Critical tools for perceptive reading of dramatic and screen works. Writing emphasis course. 364 Writing Fiction (3) Introduction to writing novels and short stories. Emphasis on the creative use of literary devices, and techniques. Writing emphasis course. 355 Advanced Expository Writing (3) Strategies of writing on personal and academic subjects. Discussion of student and professional writing. Open to sophomores with instructor's consent. 354 Writing Poetry (3) Introduction to writing poetry. Writing emphasis course. 346 Writing Fiction (3) Introduction to writing novels and short stories. Emphasis on the creative use of literary devices, and techniques. Writing emphasis course. 345 Writing Drama and the Screenplay (3) Introduction to writing for the stage and screen. Emphasis on the script as a basic medium of artistic expression. Critical tools for perceptive reading of dramatic and screen works. Writing emphasis course. 344 Writing Expository Writing (3) Strategies of writing on personal and academic subjects. Discussion of student and professional writing. Open to sophomores with instructor's consent. 343 Writing Poetry (3) Introduction to writing poetry. 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341. Special Topics in Literature (3) Topics vary. May be repeated. Maximum 6 hours.

268. Fitness for Life (2) Evaluation and discussion of factors related to optimal health; cardiovascular function, muscular strength and endurance, flexibility, low weights, and muscular strength and endurance. May be repeated. Maximum of 6 study hours. (Same as Psychology 465.)

352. Diseases and Injury: Epidemiologic and Demographic Considerations (3) Epidemiologic and demographic contexts of health and disease. May be repeated. Maximum 6 hours. (Same as Sociology 471.)

463. Advanced Poetry Writing (3) Development of individual writing style and craft. May be repeated. Maximum 6 hours. (Same as English 463.)

486. Second Language Acquisition (3) How humans learn a second language. May be repeated. Maximum 6 hours. (Same as Linguistics 475.)

489. Special Topics in Film (3) Content varies. May be repeated. Maximum 6 hours. (Same as Psychology 479.)

209. An Introduction to Veterinary Anatomy (3) Introduction to veterinary anatomy. May be repeated. Maximum 6 hours. (Same as Zoology 332.)

205. Veterinary Anatomy (3) Structure, histology, and functions of the body systems. May be repeated. Maximum 6 hours. (Same as Zoology 431.)

106. Orientation to Exercise Science (2) Overview of the field of exercise science. May be repeated. Maximum 6 hours. (Same as Exercise Science 351.)

269. Exercise Science Practicum (1) First practical experience to support and clarify career goals. Satisfactory/No Credit grading only. Maximum 6 hours.
FORESTRY, WILDLIFE AND FISHERIES (398)

100 Current Issues in Renewable Natural Resources (1) Current issues presented by invited speakers. Credit limited to one credit per quarter each quarter, student discussion and interaction; discussion with presenters. 2 hours and 1 lab. F, S

211 Forest and Wildlife in Society (4) Historical, social and economic aspects of forest and wildlife resources and their management. Principles of natural resources management, ecological principles, current management concepts, and wildlife and forest management. Prereq: 30 or 330 or consent of instructor. 3 hours. F, S

212 Principles of Botany (4) Principles of plant form and function; taxonomic classification. The plant kingdom and classification of plants. Prereq: sophomore standing. 3 hours and 3 lab. F, S

213 Principles of Zoo and Wildlife Sciences (3) Principles of wildlife management, reproduction, genetics, and wildlife and forest management. Prereq: 211 or equivalent. 3 hours. F, S

221 Wildlife Management (3) Wildlife management and the local and global environment. Prereq: 211 or equivalent. 3 hours. F, S

222 Wildlife Behavior (3) Basic concepts of animal behavior and decision-making. Prereq: 212 or equivalent. 3 hours. F, S

311 Dendrology and Silvics of North American Trees (3) Principles of tree growth and development, tree species, forest associations, silvicultural silviculture, and forest management. Prereq: CHEM 201 or equivalent. 3 hours. F, S

312 Forest Health (3) Principles of forest health and pest management. Prereq: CHEM 201 or equivalent. 3 hours. F, S

313 Principles of Wildlife and Fishery Management (3) Wildlife and fishery management and the local and global environment. Prereq: 212 or equivalent. 3 hours. F, S

314 Wildlife Field and Laboratory Methods (3) Wildlife field and laboratory techniques. Prereq: 211 or equivalent. 3 hours. F, S

315 Wildlife and Fishery Resources (3) Wildlife resource assessment, population dynamics, and wildlife management. Prereq: 211 or equivalent. 3 hours. F, S

316 Wildlife Behavior (3) Animal behavior and decision-making. Prereq: 217 or equivalent. 3 hours. F, S

317 Principles of Wildlife and Fishery Management (3) Principles of wildlife and fishery management and the local and global environment. Prereq: 211 or equivalent. 3 hours. F, S

318 Wildlife Field and Laboratory Methods (3) Wildlife field and laboratory techniques. Prereq: 211 or equivalent. 3 hours. F, S

319 Wildlife and Fishery Resources (3) Wildlife resource assessment, population dynamics, and wildlife management. Prereq: 211 or equivalent. 3 hours. F, S

320 Wildlife Field and Laboratory Methods (3) Wildlife field and laboratory techniques. Prereq: 211 or equivalent. 3 hours. F, S

321 Wildlife and Fishery Resources (3) Wildlife resource assessment, population dynamics, and wildlife management. Prereq: 211 or equivalent. 3 hours. F, S

322 Wildlife Behavior (3) Animal behavior and decision-making. Prereq: 217 or equivalent. 3 hours. F, S

323 Wildlife Field and Laboratory Methods (3) Wildlife field and laboratory techniques. Prereq: 211 or equivalent. 3 hours. F, S

324 Wildlife and Fishery Resources (3) Wildlife resource assessment, population dynamics, and wildlife management. Prereq: 211 or equivalent. 3 hours. F, S
GEOLOGY (424)
370 Structural Geology (4) Common geologic structures; folds, faults, cleavage; and field geology. Laboratory includes map interpretation, cross-sections, projections, stereonets. Prerequisites: Physics 151 or Basic Geology 151; and one of the following: Physics 151 or Basic Geology 151. 3 lecture hours and one 2-hour lab.
384 Quantitative Methods in Geology (3) Applications of calculus and differential equations to problems in the physical and earth sciences. Example: application of a basic geologic equation in hydrogeology; the wave equation in geophysics; the Schrödinger equation and boundary conditions in structural geology and geophysics. Prerequisites: 101 and/or 107, 122-123, 125-126, 301, 314-315, 318, 370, 392, 424, 492. 3 lecture hours and one 1-hour lab.
401 Advanced Mineralogy (3)Crystal chemistry of the mineral phases. 3 lecture hours and one 2-hour lab. Prerequisites: 101 and/or 107, 122-123, 125-126.
415 Advanced Analytical Techniques in Geology (3) Principles of analytical laboratory work in the geosciences. Prerequisites: 101 and/or 107, 122-123, 125-126. 3 lecture hours and one 2-hour lab.
421 Invertebrate Paleontology (3) Study of invertebrate skeleton, emphasis on skeletal structure and function, paleoecology, and stratigraphic distribution. Prerequisites: 321 or consent of instructor. 3 lecture hours and one 2-hour lab.
431 Geological Engineering (3) (Same as Civil Engineering 431). 4 lecture hours and one 2-hour lab. 
441 Field Geology (3) Summer field course for advanced undergraduates. Geological principles and field methods. Prerequisites: 101-102, 103, 104, 105, 106, 201. 4 lecture hours and one 2-hour lab.
451 Process Geoecology (3) An introduction to the development of the biosphere and its present record. 3 lecture hours and one 1-hour lab. Prerequisites: 101-102. 4 lecture hours and one 2-hour lab. 
452 Basic Environmental Geology (3) Applications of the geological sciences toward the conservation of the quality of geological processes on humans and the effect of human activities on the earth's environment. Prerequisites: 101-102, 122-123. 3 lecture hours and one 2-hour lab.
460 Principles of Geophysics (3) Application of physical principles to geophysical problems. Emphasis on structure and distribution and behavior of elements in the earth's environment. Prerequisites: 336, 372, 390. 3 lecture hours and one 2-hour lab.
470 Applied Geophysics (3) Basic principles of geophysical exploration, with emphasis on applications to environmental problems, including geophysical methods and field measurement. Prerequisites: 101-102, 122-123, 336, 390. 3 lecture hours and one 2-hour lab.
471 Fieldwork in Geophysics (3) Summer field course for advanced undergraduates or graduate students. Taught off-campus, and requires the full time of the student for 2 or more weeks. Geophysics students will be advised to the variation in a problem in tectonics, geology of the mid-oceanic ridge, the evolution of the environment. Prerequisites: 470 or consent of instructor. 
473 Physical and Chemical Systems of the Earth (3) Overview of the earth's geologic systems. Emphasis on the formation, composition, and behavior of the atmosphere, hydrosphere, biosphere, and lithosphere, with an emphasis on applied methods in geologic mapping, mathematical and statistical processes in the interpretation of geologic data, and the development of the earth sciences. Open to 3-hour credit on major courses or consent of instructor. 4 lecture hours plus field trips.
480 Principles of Economic Geology (3) Ore-forming processes, classification of mineral deposits, and economic evaluation of mineral deposits. Prerequisites: 310 and 330 or equivalents. 4 lecture hours and one 2-hour lab.
485 Principles of Geohydrology (3) Ground water flow and aquifer analysis. groundwater evaluation and management. Prerequisites: 101-102, 122-123, 310, 314-315. 4 lecture hours and one 2-hour lab.
490 Special Problems in Geology (1-3) (Credit or no credit grading.) Directed study, or special topics. Prerequisites: Consent of instructor. May be repeated. Maximum 6 hours.
491 Foreign Study (1-15) 
492 Off-Campus Study (1-15) 
495 Independent Study (1-15) 

GERMAN (433)
112 Language Laboratory (0) 
101-102 Elementary German (3,3) Language laboratory required. Must be taken in sequence. Not available to students eligible for German 150.
111 Language Laboratory (0)
113 Language Laboratory (0) 
150 Elementary German in Translation (3) This course is designed to prepare students for enrollment in German 201. Prerequisites: Two years of high school German and a placement score below the level required for admission to German 201. Since 115 is a requirement of all German majors, students who receive credit in this course may not also receive credit for any other 100 level German course and therefore also forfeit the six hours of elementary language credit awarded through placement examination.
199 German Language and World Business (3) This course will examine the importance of foreign trade in the global economy. Business in the world today may be approached from the local, national, regional, and global level. Students will gain a knowledge of the differences in world business. Required to students majoring in the Language and World Business major. Prerequisite: MATH 101 or appropriate placement test. 3 lecture hours and one 1-hour lab.
201-202 Intermediate German (3,3) Must be taken in sequence. Must be taken during the first two years. Prerequisites: 101-102. 3 lecture hours and one 2-hour lab.
205 Special Topics (1-3) Various topics, may be repeated. Credit on a maximum of 6 hours.
364 Readings in German (3) Topics in both literary and cultural studies for students at the graduate level. Taught by permission and with the approval of department. Prerequisites: Consent of instructor. 3 lecture hours.
311-312 Conversation and Composition (3,3) German 311 or equivalent.
390 German Film (3) A study of the German cinema from the earliest days to the present. Writing-emphasis course. (Same as Cinema Studies 323.) 
331-333 Elements of German for Upper-Division and Graduate Students: Reading, translation, and advanced readings and one-time 15,000 word reading project. Prerequisites: 206, or equivalent, for language examination, and upper division students majoring in German. Prerequisite: Undergraduate credit for 331. Credit for 331 will not be given to students who have previously taken 206, or who are enrolled in German for Non-Majors courses. Minimum credit for both courses. graded credit, no pass/fail grading.
333-334 Advanced German (3) An introduction to the mid-nineteenth century to the present, art, music, literature, society, social studies in English for non-majors and in German for majors. Major credit, no foreign language credit. Advanced-semester courses. Taught in German. Prerequisites: German 331 or equivalent.
489 Studies in United States History (3) Variable content. Particular aspects of American history, cultural, economic and political impact of both recent and prehistoric events in 20th Century. (Same as American Studies 485.)

490 History of Brazil (3) History and culture of Brazil. May be repeated. Maximum 9 hours.

491 Foreign Language Study (1-3) Variable content. May be repeated. Maximum 9 hours.

492 Holistic Teaching and Learning (4-6)

203 Field Study in Education (1-3) Problems of personal and social nature faced in school settings. May be repeated. Maximum 9 hours.

494 Directed Independent Study (1-3) Tutorial and/or independent study. May be repeated. Maximum 12 hours.

495 Seminar in Elementary Education (1-3) Problems or specific facets of the relationships between two or more concepts. May be repeated. Maximum 9 hours.

496 Seminar in Social Science (1-3) Variable content. May be repeated. Maximum 9 hours.

497 Seminar in Latin American History (3) Variable content. May be repeated. Maximum 9 hours.

498 Seminar in Medieval and Early Modern European History (3) Variable content. May be repeated. Maximum 9 hours.

499 Seminar in Eastern European History (3) Variable content. May be repeated. Maximum 9 hours.

500 Seminar in Mediterranean History (3) Variable content. May be repeated. Maximum 9 hours.

501 Laboratory and Field Studies in Elementary Education (1) Supervised experiences in school settings. May be repeated. Maximum 9 hours.

502 Seminar in United States History (3) Variable content. Particular aspects of American history, cultural, economic and political impact of both recent and prehistoric events in 20th Century. (Same as American Studies 485.)

503 Seminar in American History (3) Variable content. Particular aspects of American history, cultural, economic and political impact of both recent and prehistoric events in 20th Century. (Same as American Studies 485.)

504 Seminar in Medieval and Early Modern European History (3) Variable content. May be repeated. Maximum 9 hours.

505 Seminar in Mediterranean History (3) Variable content. May be repeated. Maximum 9 hours.

506 Seminar in Social Science (3) Variable content. May be repeated. Maximum 9 hours.

507 Seminar in Latin American History (3) Variable content. May be repeated. Maximum 9 hours.

508 Seminar in Medieval and Early Modern European History (3) Variable content. May be repeated. Maximum 9 hours.

509 Seminar in Eastern European History (3) Variable content. May be repeated. Maximum 9 hours.

510 Seminar in Mediterranean History (3) Variable content. May be repeated. Maximum 9 hours.

511 Teaching Experience in the Early Primary Grades (203) On-site teaching experience for Pre-K through 3rd grade. Includes methods and materials (knowledge base) for teaching literacy and language. May be repeated. Maximum 9 hours.

512 Seminar in Social Science (3) Variable content. May be repeated. Maximum 9 hours.

513 Seminar in Latin American History (3) Variable content. May be repeated. Maximum 9 hours.

514 Seminar in Medieval and Early Modern European History (3) Variable content. May be repeated. Maximum 9 hours.

515 Seminar in Eastern European History (3) Variable content. May be repeated. Maximum 9 hours.

516 Seminar in Mediterranean History (3) Variable content. May be repeated. Maximum 9 hours.

517 Seminar in Social Science (3) Variable content. May be repeated. Maximum 9 hours.

518 Seminar in Latin American History (3) Variable content. May be repeated. Maximum 9 hours.

519 Seminar in Medieval and Early Modern European History (3) Variable content. May be repeated. Maximum 9 hours.

520 Seminar in Eastern European History (3) Variable content. May be repeated. Maximum 9 hours.

521 Seminar in Mediterranean History (3) Variable content. May be repeated. Maximum 9 hours.

522 Seminar in Social Science (3) Variable content. May be repeated. Maximum 9 hours.

523 Seminar in Latin American History (3) Variable content. May be repeated. Maximum 9 hours.

524 Seminar in Medieval and Early Modern European History (3) Variable content. May be repeated. Maximum 9 hours.

525 Seminar in Eastern European History (3) Variable content. May be repeated. Maximum 9 hours.

526 Seminar in Mediterranean History (3) Variable content. May be repeated. Maximum 9 hours.

527 Seminar in Social Science (3) Variable content. May be repeated. Maximum 9 hours.

528 Seminar in Latin American History (3) Variable content. May be repeated. Maximum 9 hours.

529 Seminar in Medieval and Early Modern European History (3) Variable content. May be repeated. Maximum 9 hours.

530 Seminar in Eastern European History (3) Variable content. May be repeated. Maximum 9 hours.

531 Seminar in Mediterranean History (3) Variable content. May be repeated. Maximum 9 hours.

532 Seminar in Social Science (3) Variable content. May be repeated. Maximum 9 hours.

533 Seminar in Latin American History (3) Variable content. May be repeated. Maximum 9 hours.

534 Seminar in Medieval and Early Modern European History (3) Variable content. May be repeated. Maximum 9 hours.

535 Seminar in Eastern European History (3) Variable content. May be repeated. Maximum 9 hours.

536 Seminar in Mediterranean History (3) Variable content. May be repeated. Maximum 9 hours.

537 Seminar in Social Science (3) Variable content. May be repeated. Maximum 9 hours.

538 Seminar in Latin American History (3) Variable content. May be repeated. Maximum 9 hours.

539 Seminar in Medieval and Early Modern European History (3) Variable content. May be repeated. Maximum 9 hours.

540 Seminar in Eastern European History (3) Variable content. May be repeated. Maximum 9 hours.

541 Seminar in Mediterranean History (3) Variable content. May be repeated. Maximum 9 hours.

542 Seminar in Social Science (3) Variable content. May be repeated. Maximum 9 hours.

543 Seminar in Latin American History (3) Variable content. May be repeated. Maximum 9 hours.

544 Seminar in Medieval and Early Modern European History (3) Variable content. May be repeated. Maximum 9 hours.

545 Seminar in Eastern European History (3) Variable content. May be repeated. Maximum 9 hours.

546 Seminar in Mediterranean History (3) Variable content. May be repeated. Maximum 9 hours.

547 Seminar in Social Science (3) Variable content. May be repeated. Maximum 9 hours.

548 Seminar in Latin American History (3) Variable content. May be repeated. Maximum 9 hours.

549 Seminar in Medieval and Early Modern European History (3) Variable content. May be repeated. Maximum 9 hours.

550 Seminar in Eastern European History (3) Variable content. May be repeated. Maximum 9 hours.
HOTEL AND RESTAURANT ADMINISTRATION (551)

100 Introduction to Hotel and Restaurant Administration (3) History and place of industry in national economy; basic operating systems, organization structure, problems in the industry.

105 Front Office Management (3) Front office procedures in context of the role of the individual. Includes reservation systems, equipment, selling procedures, public relations, and management.

320 Produce Systems Administration (3) Management, economy, processes, resources in maintenance systems, decision-making and monitoring principles.

321 Quantity Food Procurement, Production and Service (3) Principles for determining needs, procuring, storing, preparing and serving foods in volume.

325 Food and Lodging Cost Control (3) Budgeting, costing, budgeting, and controlling expenses involved in food and lodging.

326 Food and Lodging Personnel Development (3) Training programs; personnel management procedures, wages, benefits, training, interviewing, and recruitment.

330 Hospitality Law (3) Legal issues involving the hospitality industry.

340 Field Experience in Family Life (3) School-based programs. May be repeated. Maximum of 15 credit hours.

350 Related and Applied Theory in Occupations (1-15) Placement in Home Economics-related programs. May be repeated. Maximum 30 credit hours.

351 Manipulative Skills in Occupations (1-15) Applied skills in occupations.

352 Job Analysis Techniques and Curriculum Development (1) Field experience in public school programs in occupational education.

353 Microcomputer Applications in Technology (3) Use and applications of microcomputers for education, business, industry, and other fields.

354 Computer Applications in Technology (3) Use and applications of microcomputers for education, business, industry, and other fields.

424 Advanced Hotel and Restaurant Administration (3) Topics variable. Prerequisite: Junior or Senior Standing in Hotel and Restaurant Administration Program or consent of the instructor. May be repeated. Maximum 3 credits.

494 Directed Study: Hotel and Restaurant Administration (1-3) Individual student; faculty supervised. Satisfactory/No Credit only.

497 Honors: Hotel and Restaurant Administration (1-3) Senior project. Prerequisite: Senior standing, consent of the instructor.

HUMAN ECONOMICS (520)

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

210 Introduction to Family and Consumer Sciences (3) Development of family life, family resources, family policies, and their relationship to society.

215 Personal Development (3) Principles of development and family life, the development of love and interpersonal relationships, material resources, leisure and recreation, and the development of family life.

220 Foodservice Systems Administration (3) Management, cost control, problem-solving principles.

225 Hospitality Systems Administration (3) Systems; decision-making and problem-solving principles.

310 Microcomputer Applications (3) Introduction to microcomputer use and the software programs, operating systems, word processing systems, data base systems, spreadsheet programs and graphics programs; design of a management information system; spreadsheet, graphics programs, operating systems, and an introduction to microcomputers.

315 Food and Lodging Cost Control (3) Budget, pricing, and controlling expenses in food and lodging.

320 Foodservice Systems Administration (3) Management, cost control, problem-solving principles.

325 Food and Lodging Personnel Development (3) Training programs; personnel management procedures, wages, benefits, training, interviewing, and recruitment.

330 Hospitality Law (3) Legal issues involving the hospitality industry.

340 Field Experience in Family Life (3) School-based programs. May be repeated. Maximum of 15 credit hours.

350 Related and Applied Theory in Occupations (1-15) Placement in Home Economics-related programs. May be repeated. Maximum 30 credit hours.

351 Manipulative Skills in Occupations (1-15) Applied skills in occupations.

352 Job Analysis Techniques and Curriculum Development (1) Field experience in public school programs in occupational education.

353 Microcomputer Applications in Technology (3) Use and applications of microcomputers for education, business, industry, and other fields.

354 Computer Applications in Technology (3) Use and applications of microcomputers for education, business, industry, and other fields.

424 Advanced Hotel and Restaurant Administration (3) Topics variable. Prerequisite: Junior or Senior Standing in Hotel and Restaurant Administration Program or consent of the instructor. May be repeated. Maximum 3 credits.

494 Directed Study: Hotel and Restaurant Administration (1-3) Individual student; faculty supervised. Satisfactory/No Credit only.

497 Honors: Hotel and Restaurant Administration (1-3) Senior project. Prerequisite: Senior standing, consent of the instructor.

HUMAN RESOURCE DEVELOPMENT (530)

160 Graphic Communications (3) Drafting as a means of communication: design, layout, line work, lettering and type, working drawings, conventional, principle technical drawing, orthographic and isometric drawing, typography, and computer hardware and software systems.

161 Introduction to Manufacturing Technology (3) Design, layout, line work, lettering and type, working drawings, conventional, principle technical drawing, orthographic and isometric drawing, typography, and computer hardware and software systems.


163 Woodworking Technology (3) Processes, tools, equipment, and products of the woodworking industry.

164 Machine Tool Processes (3) Function, care, set- ting, and smallengine maintenance and repair is stressed and small engine maintenance and repair is stressed and transmitted throughhands-on experience in operations and service workshops.

165 Technology (3) Processes, equipment, materials and products of metal working industries.

355 Microcomputer Applications in Technology (3) Use and applications of microcomputers for education, business, industry, and other fields.

356 Manufacturing Technology (3) Manufacturing processes, production systems, and quality control.

357 Electrical and Electronics (3) Operating principles and characteristics of electrical and electronic devices, and includes general DCA theory and application, use of electronic measuring instruments, circuit analysis, introduction to semi-conductors and various laboratory ac- tivities including testing and repair of various types of circuits.

446 Field Experience in Community-Based Programs (1-15) Placement in Home Economics-related programs. May be repeated. Maximum 10 hours. Prerequisite: Consent of instructor. Satisfactory/No Credit only.

478 Honors: Human Ecology (3-6) Topics variable. Prerequisite: Junior or Senior Standing in the College of Human Ecology and consent of the instructor.

497 Honors: Human Ecology (3-6) Topics variable. Prerequisite: Junior or Senior Standing in the College of Human Ecology and consent of the instructor.

500 Professional Seminar (3) Seminar for students in the College of Human Ecology who are preparing for careers in human ecology, family life, or related fields.

501 Seminars in Human Ecology (1-15) Seminar courses in human ecology. Topics variable. Prerequisite: Consent of the instructor. Satisfactory/No Credit only.
HUMAN SERVICES (532)

302 Introduction to Human Services (3) Focus on related societal values and contemporary issues as seen through the lens of human services. Emphasis on the various professions, related societal values and contemporary issues in human services. Emphasis on the various professions, related societal values and contemporary issues in human services. Emphasis on the various professions, related societal values and contemporary issues in human services.

305 Thinking About People/Population Development of thought, information, and insights about recent human beings—those providing services as well as those receiving them. Prereq: Consent of instructor. Coreq: 440.

306 Human Services Methodologies I (3) Basic thinking essential to the effective delivery of Human Services. Prereq: Progression to the major in human services.

308 Information Interpretation and Assessment (3) The ability to transform information into related outcomes in human services. Students learn about information management and various information processing systems and federal government programs. Prereq: Progression to the major.

350 Human Services Methodologies II (3) Includes reality therapy, behavior modification, family system therapy, and related activities. Emphasis on the role and play of methods and skills that will be used during the internship experience. Prereq: Progression to the major. 200, 330. Comps: 440.

353 Working Within The System (3) Topics include welfare, workfare, and related policies. Course written with the intent for human services professionals to work with the system—both in family and other settings. Prereq: Consent of instructor. Coreq: 440.

358 Information Management: Sources, Value, Creation, Organizing and Providing Information Using Information Systems. Course written with the intent for human services professionals to work with the system—both in family and other settings. Prereq: Consent of instructor. Coreq: 440.

406 Training Aids Development (3) Study and preparation of instructional aids and non-print media commonly used by technical instructors and trainers. Prereq: 456 and permission of instructor.


422 Organization and Operation of VICA/HOSA (3) Planning, organizing and implementing youth-club activities in vocational-technical programs. A term assignment and evaluation. Prereq: Admission to Teacher Education Program. F

446 Methods and Techniques in Business Education (3) Methods and media used in teaching and role-playing teaching in the secondary public schools. Prereq: Admission to Teacher Education Program.

447 Training for Human Resource Development (3) Organization and management of training, including role and function of trainers. Emphasis on matching market needs. Prereq: Consent of instructor.

448 Course Construction in Technology Education (3) Selection and arrangement of course content. Planning, instructional objectives, project-related product, evaluation and evaluation. Prereq: Admission to Teacher Education Program.

449 Training for Human Resource Development (3) Selection and arrangement of course content. Planning, instructional objectives, project-related product, evaluation and evaluation. Prereq: Admission to Teacher Education Program.

455 Human Services Field Work I (3) Practical field experiences in appropriate organizations and directed to the field of human services. Provides direct services in a supervision training situation. Prereq: Admission to Teacher Education Program. F

456 Organization and Operation of VICA/HOSA (3) Planning, organizing and implementing youth-club activities in vocational-technical programs. A term assignment and evaluation. Prereq: Consent of instructor.

457 Principles of Supervision (3) Problems of motivation, communication, interpersonal relationships and leadership. Prereq: Consent of instructor.

458 Historical/No Credit only. Prereq: Admission to Teacher Education Program. E

459 Early Childhood Special Education: Program Development and Teaching in Kindergarten (3) Curriculum planning,classroom management, and techniques for teaching young children; relationships of kindergarten to elementary school. Prereq: Admission to Teacher Education Program. E

460 Early Childhood Education: Program Development and Teaching in Kindergarten (3) Curriculum planning, classroom management, and techniques for teaching young children; relationships of kindergarten to elementary school. Prereq: Admission to Teacher Education Program. E

461 Foreign Study (1-15) Prereq: Consent of instructor. Coreq: 420. Satisfactory/No Credit only. Prereq: Admission to Teacher Education Program. E

463 Adult Education Program Design and Management (3) Processes of program development and special emphasis on preparing students for life-long learning. Prereq: Consent of instructor.

464 Methods and Mediation in Technology Education (3) Technical field experience in business and marketing. Emphasis on the various professions, related societal values and contemporary issues in human services. Emphasis on the various professions, related societal values and contemporary issues in human services. Emphasis on the various professions, related societal values and contemporary issues in human services.

465 Materials and Processes (3) Materials and processes in business and marketing. Emphasis on the various professions, related societal values and contemporary issues in human services. Emphasis on the various professions, related societal values and contemporary issues in human services. Emphasis on the various professions, related societal values and contemporary issues in human services.

471 Early Childhood Special Education (6) Assessment, curriculum planning and development and teaching practices for teaching young children; relationships of kindergarten to elementary school. Prereq: Admission to Teacher Education Program. E

472 Field Experience in Early Childhood Special Education (2) Placement in an educational setting serving young children with special needs. Provides experiential learning and field experiences for students entering the field of early childhood special education. Prereq: Admission to Teacher Education Program. E

473 Early Childhood Education: Program Development and Teaching in Kindergarten (3) Curriculum planning, classroom management, and techniques for teaching young children; relationships of kindergarten to elementary school. Prereq: Admission to Teacher Education Program. E

474 Supervised Expeditions (1-15) Topics to be assigned. May be repeated. Minimum 12 hours. E

476 Independent Study (1-15) Topics to be assigned. May be repeated. Minimum 12 hours. E

478 Special Topics I (3) Topics to be assigned. May be repeated. Minimum 12 hours. E

479 Special Topics II (3) Topics to be assigned. May be repeated. Minimum 12 hours. E

178 Courses of Instruction


372 Job Analysis (3) Job analysis techniques and techniques in analyzing and describing the job. Prereq: 168 and instructor permission.

376 Planning Instruction for Human Resource De- velopment (3) Selection, design, and development of performance-measurement training programs. Prereq: 372 or consent of instructor.

391 Utilization of Community Resources (3) Strategies of developing human resource development programs. Prereq: 372 or consent of instructor. 

392 Methods and Behavior of Social Work (3) Social work practice through participation in a university community service linked to social work committees and councils and work with the university community. Prereq: 372 or consent of instructor. 

393 Special Topics in Technology Education (3) Social, educational and legal considerations for industrial and educational programs. Prereq: 372 or consent of instructor.

401 Utilization of Community Resources (3) Social work practice through participation in a university community service linked to social work committees and councils and work with the university community. Prereq: 372 or consent of instructor. 

403 Methods and Behavior of Social Work (3) Social work practice through participation in a university community service linked to social work committees and councils and work with the university community. Prereq: 372 or consent of instructor. 

404 Human Services Field Work I (3) Practical field experiences in appropriate organizations and directed to the field of human services. Provides direct services in a supervision training situation. Prereq: Admission to Teacher Education Program. F
200 Human-Environment Systems (3) Role of culture in the profession; relationships to all allied fields; contemporary developments; philosophy, management, dissemination, and use of information. Roles of information in society, information seeking and utilization, information economy, economics of information products and services, technological and social dimensions. Change, information processes, and issues. Su, Ye.

430 History of the Book (3) History of writing and various methods of bookmaking.

450 Writing About Science, Technology and Medicine (3) Science and its impact on society.

470 Utilization of Institutional Media (3) Serve as role models in student and professional settings.

480 Electronic Communication and Information Resources on the Internet (3) Exploration of worldwide information and communication resources including e-mail, gopher, Archie, yahoo, WAIS, WAIS, chronologers, e.

490 Environmental Information (3) Generation, production, management, dissemination, and use of information. Roles of information in society, information seeking and use, information economy, economics of information products and services, technological and social dimensions. Change, information processes, and issues. Su, Ye.

INTERDISCIPLINARY PROGRAMS (581)

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

140 Selected Interdisciplinary Topics (1-12) May be repeated. Maximum credit: 45 hours.


311-312 History of Italian Literature (3, 3) Survey of Italy, France, England, and American. Prerequisite: Art History 172 and 173 or consent of instructor.

400 Proxemics (3) Analysis of space and behavior within the context of architecture and urban design. Prerequisite: 280 and Math 202. Examination of the theoretical foundations of proxemics. Two hour lecture and three hour studio. Corequisite: Third year standing in interior design.

491 Directed Studies in Interior Design (1-4) Student investigation, or studio experiences. Maybe substituted for credit to a maximum of 12 hours. Letter grade or S/NC grading.


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

199 Italian Language and World Business (2) Course will examine the importance of foreign trade in the local, state, national, and international economic systems. Corequisite: RCS 120. Business students only. Corequisite: Third year standing in interior design.

236-237 Intermediate Italian (3) Course will examine the importance of foreign trade in the local, state, national, and international economic systems. Corequisite: RCS 120. Business students only. Corequisite: Third year standing in interior design.

309 Furniture Design (4) Human factors data applied to the design of furniture. Prerequisite: 280. Furniture Design major only.

311-312 History of Italian Literature (3, 3) Survey of Italy, France, England, and American. Prerequisite: Art History 172 and 173 or consent of instructor.

401 Dante and Medieval Culture (3) Introduction to the language and culture of Italy, France, England, and American. Corequisite: RCS 120. Business students only. Corequisite: Third year standing in interior design.

406 The Modern Italian Novel (3) Prerequisite: 212 or consent of instructor.

410 Italian Theatre (3) Survey of Italian theatre from the sixteenth century to the present. Prerequisite: 212 or consent of instructor.

402 Petrarch and Boccaccio (3) Prerequisite: 212 or consent of instructor. (Same as Medieval Studies 402.)

404 Representation and Communication (3) Comprehension of the role of communication in society, social and cultural contexts. Philosophy, management, dissemination, and use of information. Roles of information in society, information seeking and utilization, information economy, economics of information products and services, technological and social dimensions. Change, information processes, and issues. Su, Ye.

475 History of American Interior Architecture (3) Historical development of the design of buildings and decorative arts within cultural contexts, colonial and modern through twentieth century. Faculty may substitute for this course.

485 Electronic Communication and Information Resources on the Internet (3) Exploration of worldwide information and communication resources including e-mail, gopher, Archie, yahoo, WAIS, WAIS, chronologers, e.

491 Directed Studies in Interior Design (1-4) Student investigation, or studio experiences. Maybe substituted for credit to a maximum of 12 hours. Letter grade or S/NC grading.

492 Off-Campus Study (1-15) Registration by permission of director of Interdisciplinary Studies.

493 Independent Study (1-15) Registration by permission of director of Interdisciplinary Studies.

494 Directed Studies in Interior Design (1-4) Student investigation, or studio experiences. Maybe substituted for credit to a maximum of 12 hours. Letter grade or S/NC grading.

495 History of the Contemporary Interior Architecture (3) Twenty-first century interior design approaches. Prerequisite: Math 202. Furniture Design major only.

496 Furniture Design (4) Human factors data applied to the design of furniture. Prerequisite: 280. Furniture Design major only.

497 History of American Interior Architecture (3) Historical development of the design of buildings and decorative arts within cultural contexts, colonial and modern through twentieth century. Faculty may substitute for this course.

498 Furniture Design (4) Human factors data applied to the design of furniture. Prerequisite: 280. Furniture Design major only.
414 Magazine Article Writing (3) Techniques of writing for newspapers, magazines, and periodicals. Emphasis on journalistic style and techniques, composition, and editing. Prerequisite: Consent of instructor. 1 credit hour.

361 History of Latin America (3) (Same as History 361.) Survey of Latin America from the 17th century to the modern era whose works have endured as both journalism and literature. An emerging part of the field of Latin American Studies, this course examines the role of Latin American literature in shaping public opinion and political discourse. Prerequisite: Consent of instructor. 3 credit hours.

401 Directed Readings in Brazilian and Portuguese Literature (3) (Same as Portuguese 401.) Directed readings in Brazilian and Portuguese literature. Topics to be assigned. May be repeated. Maximum 9 hours. 3 credit hours.

402 Directed Readings in Brazilian and Portuguese Literature (3) (Same as Portuguese 402.) Directed readings in Brazilian and Portuguese literature. Topics to be assigned. May be repeated. Maximum 9 hours. 3 credit hours.

111-112 Beginning Latin (3,3) Must be taken in sequence. Not available to students eligible for Latin 150. 6 credit hours.

190 Latin Transition (3) This course is designed to prepare students for enrollment in Latin 211. Two years of high school Latin and a score on the Latin placement exam below that required for admission to Latin 211. Since 150 is a required class for elementary Latin, students who receive credit in this course may also receive credit for any other 100-level Latin course and therefore also fulfill the 6 hours of elementary Latin 150 requirement. Prerequisite: Consent of instructor. 3 credit hours.

351 Latin American Government and Politics II (3) (Same as Political Science 352.) Latin American Government and Politics. Prerequisite: Latin 255-256. 3 credit hours.

355 Latin American Government and Politics II (3) (Same as Political Science 355.) Latin American Government and Politics. Prerequisite: Latin 255-256. 3 credit hours.

455 Teaching of Foreign Language, Grades 7-12 (3) (Same as Foreign Language and Culture; 441 or 442.) Methods and practice in teaching reading and writing in a foreign language. Prerequisite: Consent of instructor. 3 credit hours.

455 Issues in Science Communications (3) May be repeated. Topics vary. Prerequisite: Consent of instructor. 1 credit hour.

455 Teaching of Foreign Language, Grades 7-12 (3) (Same as Foreign Language and Culture; 441 or 442.) Methods and practice in teaching reading and writing in a foreign language. Prerequisite: Consent of instructor. 3 credit hours.

459 Teaching English in the Secondary School (3) (Same as English 459.) Methods and practice in teaching reading and writing in English. Prerequisite: Consent of instructor. 3 credit hours.

180 World Business (3) (Same as Business 180.) World Business. Prerequisite: Consent of instructor. 3 credit hours.

416 Issues in Journalism (3) Topics vary. May be repeated. Maximum credit 6 hours. Prerequisite: Consent of instructor. 3 credit hours.

412 Opinion Writing (3) Analysis of editorial positions, understanding of communication practices to international affairs and social, political, economic, and cultural factors. Relation of communication practices to international affairs and understanding. Prerequisite: Consent of instructor. 3 credit hours.

414 Magazine Article Writing (3) Techniques of writing for newspapers, magazines, and periodicals. Emphasis on journalistic style and techniques, composition, and editing. Prerequisite: Consent of instructor. 1 credit hour.

412 Opinion Writing (3) Analysis of editorial positions, understanding of communication practices to international affairs and social, political, economic, and cultural factors. Relation of communication practices to international affairs and understanding. Prerequisite: Consent of instructor. 3 credit hours.

414 Magazine Article Writing (3) Techniques of writing in journalism for magazines, newspapers, and periodicals. Emphasis on journalistic style and techniques, composition, and editing. Prerequisite: Consent of instructor. 3 credit hours.

414 Magazine Article Writing (3) Techniques of writing in journalism for magazines, newspapers, and periodicals. Emphasis on journalistic style and techniques, composition, and editing. Prerequisite: Consent of instructor. 3 credit hours.

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414 Magazine Article Writing (3) Techniques of writing in journalism for magazines, newspapers, and periodicals. Emphasis on journalistic style and techniques, composition, and editing. Prerequisite: Consent of instructor. 3 credit hours.

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371 Foundations of the English Language (Same as English 371.)
372 The Structure of Modern English (Same as English 372.)
400 Topics in Linguistics (2) Content varies. May be repeated one time for credit.
411 Linguistic Anthropology (Same as Anthropology 411.)
420 The Development of Historical Linguistics as a Science (Same as the development of the scientific understanding of language change. Emergence of the Nautical paradigm from 19th century intellectual trends. Impact of synchronic, diachronic, structure and transformational linguistics on diachronic theory. Frey 6 hours of courses required for Linguistics concentration or consent of instructor.
420 Introduction to Descriptive Linguistics (Same as Phonetics 365, German 425, Russian 425, and Spanish 425.)
426 Methods of Historical Linguistics (Same as French 425, German 425, Russian 425, and Spanish 425.)
491 Foreign Study (1-15)
492 Logistics and Transportation Off-Campus Study (1-6) Satisfactory, No Credit grading only. Prereq: Consent of Instructor.
493 Independent Study (1-15)

LOGISTICS AND TRANSPORTATION (624)
301 Introduction to Logistics (Same as Business Administration 301) Business logistics as a system within the firm. Role of materials management and physical distribution, activities such as customer service, order processing and information flow, transportation, warehousing, purchasing, inventory, and system design and organization. Overview of supply chain operations.
302 Introduction to Transportation (3) Transportation and distribution as a vital part of the firm's economic and social structure. U.S. transportation system, industries and trends for modality and public and private sectors to meet those demands. Prereq: Consent of Instructor.
303 Logistics and Transportation Analytical Methods (3) Introduce to the principles analytical tools and modules used in logistics and transportation; applications of analytical tools to logistics and transportation problems; using analytical methods to support negotiations. Prereq: 301, 302.
304 Logistics and Transportation (3) Multifaceted logistics strategies, import-export process, global supply chain and transport. Designing information systems for organizations. Analyzing the concepts and techniques used in operations management. Frey 6 hours of courses required for Logistics concentration or consent of instructor.
305 Logistics and Transportation (3) Freight carrier operations with the development of carrier costs and their control considered by each mode individually and in combination with each other. Prereq: 301-302.
306 Logistics and Transportation (3) Transportation and logistics of international business activities. Prereq: 301, senior standing.
307 Management and Logistics (3) Planning and control of operations processes. Aggregate planning; scheduling systems, materials management. Prereq: 301, senior standing.
310 Management Information Systems (3) Techniques and applications of management information in logistics and operations management. Prereq: 301, senior standing.
311 Implementation and Evaluation of Personnel Programs (3) Methods of identifying, developing, implementing and evaluating various personnel programs. Prereq: 341, senior standing.
330 Organization (3) Psychologist (Same as Psychology 330)
341 Operations Management (3) Planning and control of operations processes. Aggregate planning; scheduling systems, materials management. Prereq: 301, senior standing.
342 Marketing and Logistics (3) Integrating the logistics of a given product line into other logistics and the marketing process. Frey 6 hours of courses required for Logistics concentration or consent of instructor.
351 Personnel Management (3) Factor significant to the manager in international business activities. Prereq: 301.
352 Management Off-Campus Study (1-6) Satisfactory, No Credit grading only. Prereq: Consent of Instructor.
353 Management and Logistics (3) Planning and control of operations processes. Aggregate planning; scheduling systems, materials management. Prereq: 301, senior standing.
362 Comprehensive framework of consumer behavior concepts and skills. Subjects include organization, recruiting, motivating, and social structure; U.S. transportation system; society's demands for mobility and policies of public and private sector to meet those demands. Prereq: Economics 201, Statistics 201, and senior standing.
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491 Foreign Study (1-15)
492 Logistics and Transportation Off-Campus Study (1-6) Satisfactory, No Credit grading only. Prereq: Consent of Instructor.
493 Independent Study (1-15)
13. Finite Mathematics (3) For students not planning to major in the physical sciences, engineering, mathematics, or computer science. Exponential and logarithmic functions, matrices, and linear programming. Coreq: Two years of algebra and one year of geometry in high school or satisfactory placement test scores, or Math 130. Credit will not be given for 141 or 142.

14-16. Honors: Calculus I, II (4,4) Honors version of Calculus I, II for well-prepared students. Qualified students are usually invited to enroll, but inquiries from other students are also considered. Prereq: Two years of algebra, a year of geometry in high school and satisfactory placement test scores, or Math 130. Credit will not be given for 141 or 142.

151-152 Biocalculus I, II (3,3) For students majoring in biology, life sciences, or business. Exponential and logarithmic functions, integration, techniques of integration, applications of integrals, infinite series, differential equations, and matrix algebra. Coreq: Two years of algebra and one year of geometry in high school or satisfactory placement test scores. Credit will not be given for 141 or 142.

171 Computer Literacy for Mathematics (3) Introduction to applications of computers in the study of concepts and problems in mathematics. Does not fulfill requirements for concentrators at the secondary level. The use of microcomputers and associated library software for problems selected from a variety of fields, including decision analysis, management science, and experimentaldesigns. Prereq: Math 221 or equivalent. Credit will not be given for 141 or 142.

193 Mathematical Literacies (3) A course in the application of statistical concepts and methods to the solution of problems in the real world. Includes applications in financial mathematics, accounting, psychology, and the social sciences. Prereq: Two years of algebra and one year of geometry in high school or satisfactory placement test scores. Credit will not be given for 141 or 142.

199 College Algebra (3) A review of algebraic topics, equations, and inequalities for students who satisfy the course prerequisites but do not have sufficient preparation to enroll in 141 or 151. Prereq: Two years of college algebra. Credit will not be given for 141 or 151.

200 Introduction to Abstract Mathematics (3) An introduction to the logic of mathematics, set theory, the real number system, limitsofsequences, and functionsof a real variable. Credit will not be given for 141 or 151.

201-202 Calculus A, B (3,3) First course in a two-course sequence to major in the physical sciences, engineering, mathematics, or computer science. Differentiation and applications of derivatives, integration, and applications of integrals. Coreq: Two years of college algebra or Math 130. Credit will not be given for 141 or 142.

201-202 Discrete Mathematics I, II (3,3) Sets, logic, proofs, relations, functions, graphs, trees, and algorithms. Two years of algebra and one year of geometry in high school or satisfactory placement test scores.

222-223 Discrete Mathematics I, II (3,3) Logic, sets, combinations and probability, functions and relations, algorithms, graphs, and trees. Two years of algebra and one year of geometry in high school or satisfactory placement test scores.

241-242 Vector Calculus (3,3) Topics from multivariable calculus, including vector fields, line and surface integrals, and Green's, Gauss', and Stokes' Theorems. Prereq: Math 221 or equivalent. Credit will not be given for 141 or 142.

245-246 Honors: Calculus III (4,4) Honors version of Calculus III for well-prepared students. Qualified students are usually invited to enroll, but inquiries from other students are also considered. Prereq: Two years of algebra, a year of geometry in high school and satisfactory placement test scores. Credit will not be given for 141 or 142.

247 Honors: Calculus I (4) Prereq: 147-148 or invitation. Credit will not be given for 141. Maximum 9 hours. Prereq: Consent of instructor.

250 History of Mathematics (3) Development of major ideas in mathematics from ancient to modern times and their influence in science and technology. May be taken for elective credit. MATH 210 and 211 are recommended for majors in mathematics, or computer science. Coreq: Math 221 or equivalent.

253 Probability and Statistics (3) Discrete and continuous random variables, conditional probability, expectation, moment generating functions, law of large numbers, central limit theorem, sampling distributions, hypothesis testing, regression and correlation. Prereq: Math 247 or 248.

301-302 Linear Algebra I, II (3,3) These courses cover the following topics: vector spaces, linear transformations, determinants, eigenvalues, eigenvectors. For students in the College of Engineering and the College of Business. Prereq: Math 247-248 or consent of instructor. Credit will not be given for 141.

305-306 Elementary Differential Equations I, II (3,3) First course in a two-course sequence to major in the physical sciences, linear equations and matrices. Includes Gaussian elimination, determinants, vector spaces, linear transformations, eigenvalues, eigenvectors, and eigenvalue problems. Coreq: Math 222. Credit will not be given for 142.

331 Calculus III (4) Prereq: 141-142 or invita- tion of the department.

351 Algebra I (3) Students must have received credit for 142 or 152 may subsequently receive credit for Math 142. Prereq: 141 or 151.


361 Algebra I (3) An introduction to abstract algebra, including rings, integral domains, and polynomial rings. Prereq: Math 211-212 and 247-248 or consent of instructor.

375 Numerical Analysis (3) Selection of algorithms and associated library software for problems selected from areas of economics, systems of linear equations, least squares fitting, interpolation, numerical integration, numerical methods for ordinary differential equations, numerical methods for partial differential equations, numerical methods for boundary value problems, and numerical methods for differential equations. Coreq: Students registering for Math 375 must also be registered for Math 300. Credit will not be given for 141 or 142.

391 Mathematical Models (3) The use of principal mathematical models used in science and industry. Includes such topics as sequences, partitions, graphs, finite heuristics, and experimental designs. Prereq: Math 221 or consent of instructor.

399 Probability (3) Probability: random, subjective, multivariable distributions, conditional probability and expectations, measurement of risk, generating random variables, independence of events, estimation, and hypothesis testing. Prereq: Math 247 or 248.

401 Mathematics and Microcomputers (3) Primarily intended to provide junior and senior mathematics majors, but accessible to students at the second year level. The use of microcomputers and associated library software for problems selected from applications of mathematics. Does not satisfy major requirements for a B.S.E. or B.S.M.E. in mathematics.

404 Applied Vector Calculus (3) Topics from multivari- able calculus, including line and surface integrals, Greens, Divergence and Stokes theorems. Coreq: Math 221 or equivalent. Credit will not be given for 141.

405 Analytic Geometry and Calculus I (4) Primarily intended to provide junior and senior mathematics majors, but accessible to students at the second year level. The use of microcomputers and associated library software for problems selected from applications of mathematics. Does not satisfy major requirements for a B.S.E. or B.S.M.E. in mathematics.


420 Elementary Geometry (3) Introduction to problems of plane and solid geometry. Emphasizes the axiomatic approach to such matters as sequences, partitions, graphs, finite heuristics and experimental designs. Prereq: Math 221 or consent of instructor.

424 Introduction to recent developments in mathematical logic, the difference and differential equation models of biological systems. Prereq: Math 241 or equivalent. Credit will not be given for 141.

427 Mathematical Aspects of Computer Science (3) The applications of logic, to major in mathematics, computer science, or major in the physical sciences, engineering, mathematics, or computer science. Differentiation and applications of derivatives, integration, and applications of integrals. Coreq: Two years of college algebra or Math 130. Credit will not be given for 141 or 142.
and other parametric and non-parametric tests; sufficient statistics. Prereq. 420 or consent of instructor. 421 Mathematical Statistics (3) A second course in ordinary differential equations. Linear systems of differential equations. Proofs of a method, Brownian limit theorems. Prerequisite: 321 or 321B and 324B. 421B Partial Differential Equations (3) Separation of variables, Fourier series, solutions of Laplace, wave, and heat equations. Prereq. 233, and 241 or 247. 444 Complex Variables (3) Introduction to the theory of functions of a complex variable, including residue theory and contour integration. Prereq. 244 or 247. 444E Honors: Advanced Complex Variables (1-2) Honors version of 444-446. Prereq. 241 or 247, and 300, or consent of instructor. 453 Matrix Algebra II (3) Advanced topics in matrix theory, including the Jordan canonical form. Prereq. 251 or 251B. 453B-456B Advanced Algebra II, I, III, (3,3) Introduction to algebraic structures such as rings, fields, vector spaces and linear transformations. Prereq. 251 (or 257) or consent of instructor. 457 Honors: Abstract Algebra II, III, (3,3,3) Hours of version of 456-458. Prereq. 251 or 257, and 300, or consent of instructor. 469 Geometry (3) Synthetic and historical development of non-Euclidean, Riemannian, and hyperbolic geometry stressing proof technique and critical reasoning. Models of neutral, Euclidean, and hyperbolic geometry. Prereq. 300, or consent of instructor. 470 Topology (3) Includes topics of line and plane, topology, and graph theory. Includes topological spaces and continuous functions, homomorphisms, connectedness, and topological invariants. Prereq. 241 or 247, or 300, or consent of instructor. 471 Numerical Analysis (3) Introduction to computation, error, stability, iteration and approximation. Working with the computer with the use of Quadrature and numerical solution of initial and boundary value problems of ordinary differential equations, including stiff systems. Prereq. 371 or consent of instructor. (Same as Computer Science 471.) 472 Algebraic Geometry (3) Direct and iterative methods of solving algebraic equations. Solution of a single nonlinear equation and nonlinear systems. Orthogonalization technique: discussion of classical orthogonal polynomials. Hessenberg matrices and the algorithm for orthogonalization problem. Prereq. 371 or consent of instructor. Review material to be the same as in the 471 course. 475 Industrial Mathematics (3) Modeling, analysis, and numerical simulation of a parameterized system, and expected tolerances of technical industrial problems. Prereq. Math 231 and familiarity with a programming language (e.g., Math 171 or Math 271). 480 Readings in Mathematics (1-3) Open to superior operatingsystem and a programming language (e.g., trialproblems. Prereq. Math 231 and familiarity with an equipment will be discussed. Techniques of safeopera- 481 Experimental Mathematics (2-4) Open to superior mathematical development of content of computer science, including additive residue theory, and contour integration. Prereq. 244 or 247. 484E-486E Honors: Advanced Algebra II, I, III, (3,3,3) Hours of version of 456-458. Prereq. 251 or 257, and 300, or consent of instructor. 485 Geometry (3) Synthetic and historical development of non-Euclidean, Riemannian, and hyperbolic geometry stressing proof technique and critical reasoning. Models of neutral, Euclidean, and hyperbolic geometry. Prereq. 300, or consent of instructor. 489 Topology (3) Includes topics of line and plane, topology, and graph theory. Includes topological spaces and continuous functions, homomorphisms, connectedness, and topological invariants. Prereq. 241 or 247, or 300, or consent of instructor. 491 Differential and Integral Calculus (3) Principles, theorems, and problems in integral calculus. Qualitative and quantitative investigations of qualitative and quantitative evaluation of cellular elements of blood and other blood fluids, factors of hemostasis, specif- ic chemical analysis of urine, and renal function of laboratory examination. Prereq. 310. 492 Clinical Hematology and Microbiology (4.5) Principles, theories, and instrumentation in qualitative and quantitative evaluation of cellular elements of blood and other blood fluids, factors of hemostasis, specif- ic chemical analysis of urine, and renal function of laboratory examination. Prereq. 310. 494-496 Immunohematology and Immunology (3.5) Theory and prac- tice of blood and blood products. Faculty managed and student managed immunologic procedures with emphasis on identification and characterization of antibody components for transfusion. Safety control methods for transfusion. 496P-498P Immunohematology and Immunology (3.5) Theory and prac- tice of blood and blood products. Faculty managed and student managed immunologic procedures with emphasis on identification and characterization of antibody components for transfusion. Safety control methods for transfusion. 498P-500P Immunohematology and Immunology (3.5) Theory and prac- tice of blood and blood products. Faculty managed and student managed immunologic procedures with emphasis on identification and characterization of antibody components for transfusion. Safety control methods for transfusion. 499 Seminar in Mathematics (1-3) Topics will vary. Will be available for advanced students with consent of department head. Independent study with faculty guidance. May be repeated with consent. Maximum 9 hours. Satisfactory/No Credit only. 501 Undergraduate Research Participation (3-9) Experi- ence in active undergraduate research projects under supervision of faculty. Students in praxis and other fields majors may conduct their own research projects with the designated area. Prereq. Junior or sen- ior standing and prior consent of faculty by May. May be repeated with consent. Maximum 9 hours. Satisfactory/No Credit only. 502 Medical Technology (3) Laboratory work in technol- ogy and methodology. Stress on theory of management, and organizational structure and function of the bacterial cell. Prereq: 310. 411 Undergraduate Research Participation (3-9) Experi- ence in active undergraduate research projects under supervision of faculty. Students in praxis and other fields majors may conduct their own research projects with the designated area. Prereq. Junior or sen- ior standing and prior consent of faculty by May. May be repeated with consent. Maximum 9 hours. 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310-160 Introduction to Styles in Jazz Drumming (2) Prerequisite: 160. Corps improvisation and musical sensitivity, study of different techniques and styles, with emphasis on the Big Jazz Band. Considers the role of the drummer in the jazz ensemble; the ensemble concept and the roles of the drummer in music production. Prerequisites: 160; 220 completes piano competency requirement.

210-220 Class Piano III, IV (1,1) Continuation of 110. Prerequisite: 110; 220 earns one credit if taken in sequence. Prerequisite: 110 or equivalent.

310-320 Church Service Playing II, I, I1 (1,1) Prerequisite: 310-320 Church Service Playing I (1,1). Continuation of church service playing. Preparation of choral literature, vocal and instrumental techniques, inclusion of special repertoire, and participation in ongoing service to the church. Prerequisite: 310-320 Church Service Playing I (1,1).

340-350 String Pedagogy I, II (3,3) Survey of techniques and styles used in string pedagogy. Preparation of a practical string teaching laboratory and an introduction to the profession. Prerequisite: 330 or consent of instructor.

340-350 String Literature and Pedagogy I, II (3,3) Survey of string literature, including scales, chords, and other techniques, with special emphasis on Baroque and contemporary styles. Prerequisite: 340-350 String Pedagogy I, II (3,3).

350-360 Chamber Music Ensemble (1,1) May be repeated. Chamber music ensemble with a focus on contemporary and classical music; the chamber music repertoire. Prerequisite: 330 or consent of instructor.

350-360 Concert Band (1,1) May be repeated. University Band with a focus on contemporary and classical music; the chamber music repertoire. Prerequisite: 330 or consent of instructor.

352-352 Collegium (1,1) May be repeated. Vocal chamber ensemble with a focus on music of the Baroque period; the performance of sacred and secular music. Prerequisite: 330 or consent of instructor.

352-352 Symphony Orchestra (1,1) May be repeated. Symphonic orchestra with a focus on contemporary and classical music; the chamber music repertoire. Prerequisite: 330 or consent of instructor.
MUSIC PERFORMANCE (713)
Admission by audition only. Prerequisite: Mus Gen 140 or consent of instructor.

103-303-503-653-953 Flute (1-4) May be repeated.
105-305-405-655-965 Oboe (1-4) May be repeated.
110-210-310-410-510 Bassoon (1-4) May be repeated.
120-320-415-515 Clarinet (1-4) May be repeated.
115-315-405-505 Saxophone (1-4) May be repeated.
115-315-425-525 Horn (1-4) May be repeated.
120-320-430-530 Trumpet (1-4) May be repeated.
123-325-435-535 Trombone (1-4) May be repeated.
120-320-440-540 Baritone (1-4) May be repeated.
125-325-445-545 Tuba (1-4) May be repeated.
130-330-450-550 Percussion (1-4) May be repeated.

110-120-220-320-420 Theory I, II, III (3,3) Material of music including fundamentals of music, harmony, counterpoint, fugue, analysis of works from the 18th through the 20th centuries. Exercises in writing and analysis. Recommended for second year of study in music education. Preparatory courses for bachelor's degree in music education.
110-210-310 Theory III, IV (3,3) Material of music with emphasis on advanced harmony, contrapuntal forms of the 18th century and fugue analysis. Many works for small and large compound forms. Prerequisite: 220. Corequisite: 210-220.
110-210-310 Theory V, VI (3,3) Advanced Harmony, Counterpoint, Fugue, and Musical Analysis of Works from the 18th through the 20th centuries. Exercises in writing and analysis. Must be taken in sequence. Prerequisite: 120 or consent of instructor.
110-210-310 Theory VII, VIII (3,3) Advanced Harmony, Counterpoint, Fugue, and Musical Analysis of Works from the 18th through the 20th centuries. Exercises in writing and analysis. Must be taken in sequence. Prerequisite: 120 or consent of instructor.
110-210-310 Theory IX, X (3,3) Advanced Harmony, Counterpoint, Fugue, and Musical Analysis of Works from the 18th through the 20th centuries. Exercises in writing and analysis. Must be taken in sequence. Prerequisite: 120 or consent of instructor.

493 Independent Study in Music Theory (1-15) May be repeated for credit. Maximum 4 hours.
495 Suzuki Piano Method I (2) Study of the psychology, procedures, and literature of the Suzuki piano method. Muscle memory development. Prerequisite: Consent of instructor.
495 Suzuki Piano Method II (2) Study of the psychology, procedures, and literature of the Suzuki piano method. Further development of muscle memory. May be repeated for credit. Maximum 4 hours.
496 Composition for Media (2) May be repeated. Prerequisite: Consent of instructor.
395-495-595 Composition with Electronic Media (1-3) May be repeated. Prerequisite: Consent of instructor.
294-394-494-594 Composition (1-3) May be repeated. Prerequisite: Consent of instructor.
179-279-379-479-579 Guitar (1-4) May be repeated.
150-250-350-450-550 Percussion (1-4) May be repeated.
135-235-335-435-535 Trombone (1-4) May be repeated.

NUCLEAR MEDICINE TECHNOLOGY (716)
Courses in this concentration are open only to qualified students who have completed the first three years of the Nuclear Medical Technology Curriculum, described in the College of Arts and Sciences curricula section of this catalog, and who have been admitted to the Nuclear Medical Technology Program at UNMC.
410 Physics for Nuclear Medicine I (3) Nuclear physics, mathematics, and statistics. Survey of basic nuclear mathematics, interrelationships between matter and energy, nuclear reactions, nuclear stability, production of radionuclides, generators, decay schemes, and half lives in unstable identification and behavior. Pedagogical topics. Mathematics emphasis. Prerequisites: Consent of instructor. Corequisites: One-semester survey of nuclear chemistry, nuclear physics, and radiotopes. May be repeated for credit. Maximum 4 hours.
411 Nuclear Instrumentation (3) Course concerns non-destructive imaging, and instrumentation quality assurance. Non-destructive imaging include radiographic radiotopes, their applications, fundamentals, and limitations with current counting and data acquisition techniques. Reviews basic work on elements and units of measurement, microphones, studio and real-time film technologies. Overview of basic electronics, gas-filled detectors, semiconductors, detectors, and operations, functions, and limitations with current counting and data acquisition techniques. May be repeated for credit. Maximum 4 hours.
412 Radiopharmacy (3) Emphasis on basic chemistry of radiopharmaceuticals, their applications, fundamentals, limitations, and implications for quality assurance, radiocardiography, and basic photographic film technology. Kinetics, biodistribution, and safety considerations. Prerequisites: Consent of instructor. Corequisites: Basic radiopharmaceuticals preparation and quality assurance, radionuclide production, and basic photographic film technology. May be repeated for credit. Maximum 4 hours.
410 Physics for Nuclear Medicine I (3) Nuclear physics, mathematics, and statistics. Survey of basic nuclear mathematics, interrelationships between matter and energy, nuclear reactions, nuclear stability, production of radionuclides, generators, decay schemes, and half lives in unstable identification and behavior. Pedagogical topics. Mathematics emphasis. Prerequisites: Consent of instructor. Corequisites: One-semester survey of nuclear chemistry, nuclear physics, and radiotopes. May be repeated for credit. Maximum 4 hours.
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NURSING (720)
All upper division nursing courses, except 301 and 304, are restricted to students who have progressed into the major (see PROGRESSION AND PROCEDURES) in the chapter material.

202 Health and Culture (3) An exploration of the beliefs and practices of various cultural groups within the United States. In relation to health, illness and the health care delivery system relevant to the helping professions. Course does not carry credit toward the major.

301 Clinical Pharmacology (3) Biochemical and pharmacological effects of therapeutic drugs on the human body. Focus on drug action, interaction between drugs, and side effects. Prerequisite: 202 or permission of instructor.

302 Fundamentals of Professional Nursing (3) History, philosophy, and scope of professional nursing practice with emphasis on patient care as a nursing process. Corequisite: 304.

304 Nursing Assessment and Wellness Promotion (3) Developmental, psychosocial, environmental, and cultural aspects of wellness. Prerequisite: 303.

303 Community Health Nursing: Aggregates (3) Introduction to the history, philosophy, and scope of community health nursing. Studies the theoretical bases and concepts relevant to the care of aggregates. Prerequisite: 304.

305 Community Health Nursing: Family (3) Role of the nurse in the family system. Emphasis on development and management of health problems of individuals and families. Prerequisite: 304.

306 Health Deviation Concepts I (4) Content related to health problems requiring inpatient services. 2 lectures, 3 labs. Corequisite: 307.

307 Nursing of Adults (6) Clinical and laboratory experiences related to nursing care of clients in early, middle and late adulthood with various health needs. Emphasis on the promotion of normal growth and development of the adult across the lifespan. Corequisites: 304, 305, 306. F.

311 Introduction to Nursing Research (3) Language and logical systems. Prerequisite: or Corequisite: 301. F.

312 Science of Food (4) Elements of food selection, nutrition behavior of individuals across the life span, and nutrition education strategies for various age groups. Prerequisite: Science of Food 310. F.

313 Introduction to Nursing Research (3) Language and logical systems. Prerequisite: or Corequisite: 301. F.

314 Human/Nursing Relationship Language of research: types of research designs, methodological approaches, sampling, data analysis, and significance of findings. Evaluation of existing and ongoing nursing research. Prerequisites: 301, 302, 303, 304. F, Sp.

315 Introduction to Nursing Research (3) Language of research: types of research designs, methodological approaches, sampling, data analysis, and significance of findings. Evaluation of existing and ongoing nursing research. Prerequisites: 301, 302, 303, 304. F, Sp.


318 Advanced Placement Credit: Care of the Adult Client (3) For registered nurses only. Satisfaction/Non Credit only. Sp.

319 Advanced Placement Credit: Care of the Child (4) For registered nurses only. Satisfaction/Non Credit only. Sp.

320 Advanced Placement Credit: Care of Client with Mental Disorder (3) For registered nurses only. Satisfaction/Non Credit only. Sp.

321 Advanced Placement Credit: Care of the Childbearing Client (3) For registered nurses only. Satisfaction/Non Credit only. F.

323 Advanced Placement Credit: Care of Client with Mental Disorder (3) For registered nurses only. Satisfaction/Non Credit only. Sp.

324 Advanced Placement Credit: Care of Adult Client (3) For registered nurses only. Satisfaction/Non Credit only. Sp.

325 Community Health Nursing: Aggregates (3) Introduction to the history, philosophy, and scope of community health nursing. Studies the theoretical bases and concepts relevant to the care of aggregates. Prerequisite: 304.

326 Community Health Nursing: Family (3) Role of the nurse in the family system. Emphasis on development and management of health problems of individuals and families. Prerequisite: 304.


328 Mental Disorder (4) For registered nurses only. Satisfaction/Non Credit only. Sp.


330 Advanced Placement Credit: Care of Adult Client (3) For registered nurses only. Satisfaction/Non Credit only. Sp.

331 Advanced Placement Credit: Care of Adult Client (3) For registered nurses only. Satisfaction/Non Credit only. Sp.

332 Nursing of Children Theory (2) Theoretical components of 330. For registered nurses only. Prerequisites: 316, 330. F, Sp.

333 Clinical Nursing Practicum (1) Application of clinical nursing process to related knowledge and experience in a clinical setting. Prerequisites: All 300 level clinical nursing courses. F, Sp.


403 Leadership and Management in Nursing (3) Introduction to selected concepts related to leadership and management in the delivery of nursing and health care services. Prerequisite: All required 300 level courses. Prerequisites: 401, 412, 413, 432, 433, F, Sp.

404 Psychological Concepts (3) Concepts and principles of normal human physiology, tissue and organ function, and human growth and development. Emphasis on understanding physiologic and psychologic interrelationships in health and disease. 3 lectures, 1 lab. Prerequisites: All required 300 level courses.

405 Psychological Concepts (3) Concepts and principles of normal human physiology, tissue and organ function, and human growth and development. Emphasis on understanding physiologic and psychologic interrelationships in health and disease. 3 lectures, 1 lab. Prerequisites: All required 300 level courses.

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188 Courses of Instruction

categories of food related to functional and nutritional properties. Sensory evaluation concepts and techniques. Effects of processing on food. Pre requisites: 100. Chemistry 300. Corin. Mon 210. 3 hours and 1 lab.


344 Energy Metabolism and Metabolic Integration Principles of absorption, digestion, assimilation, transport, distribution, and excretion; catabolism and anabolism of carbohydrates, proteins, and lipids; inefficiencies and requirements in humans. Pre requisites: 310. 312, 313.

410 Profes sional Issues in Dietetics (1) Dietetic registration, dietetic practice, the dietitian in the health team, dietetic internship, alternative careers, professional organizations, and problems in dietetics. Pre requisites: Consent of instructor. Letter grade only. Credit only. May be repeated. Maximum 12 credits.

420 Basic Landscape Construction (3) Basic materials and techniques in basic landscape construction. Prerequisites: Consent of instructor. 2 hours and 1 lab.

430 Theory and Practice of Advanced Floriculture (3) Principles and practice of advanced floriculture. Prerequisites: Consent of instructor. 3 hours. F

450 Specialty Landscape Construction (2) Design, planting, and management of specialized gardens; turfgrass; lighting; vegetation planning; and the application of landscape construction principles to the design of specialized gardens and landscapes. Prerequisites: Consent of instructor. 3 hours. F

480 Advanced Landscape Design (4) Comprehensive creative design experience. Prerequisites: Consent of instructor. 3 hours and 1 lab.

490 Seminar (1) Current problems in ornamental horticulture and landscape design. Prerequisites: Consent of instructor. 1 hour. May be repeated. Maximum 3 credits.

492 Off-Campus Internship (1-3) Work experience in a professional setting. Prerequisites: Consent of instructor. May be repeated. Maximum 6 credits.

493 Individual Problem Study (1-3) May be repeated. Maximum of 6 credits.

PHILOSOPHY (745)

110 The Human Condition: Value and Reality (2) The meaning of life, the existence of God, freedom of the will, human nature and value. Writing emphasis course.

111 The Human Condition: Knowledge and Reality (2) The place of mind in a material universe and the nature and possibilities of human knowledge. May be taken before 110. Writing emphasis course.

112 Foundations of Western Thought: Antiquity through the Renaissance (3) Lectures, seminar, later essays. October 1970-1973. 3 hours. F

120 Foundations of Western Thought: Medieval and Early Modern Periods (3) May be taken before 112. Writing emphasis course.

130 Critical Thinking (3) An introduction to critical reasoning in natural language, designed to enhance skills in recognizing, analyzing, evaluating and constructing arguments. Corequisites: Arts and Sciences Basic Skills Requirement "Mathematics, Computer Science or Natural Science," "English Composition," "History," or "Philosophy Writing Examination." Mandatory Writing Examination.

131 Logic (3) Introduction to formal deductive logic and its role as a tool in the study of mathematics and science. Prerequisites: Consent of instructor. 3 hours.

188 Courses of Instruction

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

220 Social and Political Philosophy (3) Basic problems of values, and social, political, and economic institutions. Prerequisites: Consent of instructor. 3 hours. F

290 Social and Political Philosophy (3) Basic problems of values, and social, political, and economic institutions. Prerequisites: Consent of instructor. 3 hours. F

310 Christian Ethics (3) Principles of human behavior and the nature of humanism. Prerequisites: Consent of instructor. 3 hours. F

315 Readings in Modern Ethics (1-3) May be repeated. Maximum 6 hours.

320 Bioethics (3) Principles of ethics and their application to biological and medical problems. Prerequisites: Consent of instructor. 3 hours.

329 Contemporary Philosophy (3) Developments in Twentieth Century philosophy. Prerequisites: Consent of instructor. 3 hours.

330 Foundations of Western Thought: Modernity (3) May be taken before 120. Writing emphasis course.

397 Individual Problem Study (1-3) May be repeated. Maximum 6 credits.

398 Computer Aided Landscape Design (3) Overview of Computer Aided Design (CAD) as it relates to landscape design and construction. Emphasis on plan

110 The Human Condition: Value and Reality (2) The meaning of life, the existence of God, freedom of the will, human nature and value. Writing emphasis course.

111 The Human Condition: Knowledge and Reality (2) The place of mind in a material universe and the nature and possibilities of human knowledge. May be taken before 110. Writing emphasis course.

112 Foundations of Western Thought: Antiquity through the Renaissance (3) Lectures, seminar, later essays. October 1970-1973. 3 hours. F

120 Foundations of Western Thought: Medieval and Early Modern Periods (3) May be taken before 112. Writing emphasis course.

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329 Contemporary Philosophy (3) Developments in Twentieth Century philosophy. Prerequisites: Consent of instructor. 3 hours.

330 Foundations of Western Thought: Modernity (3) May be taken before 120. Writing emphasis course.

397 Individual Problem Study (1-3) May be repeated. Maximum 6 credits.

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112 Foundations of Western Thought: Antiquity through the Renaissance (3) Lectures, seminar, later essays. October 1970-1973. 3 hours. F

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188 Courses of Instruction

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290 Social and Political Philosophy (3) Basic problems of values, and social, political, and economic institutions. Prerequisites: Consent of instructor. 3 hours. F

310 Christian Ethics (3) Principles of human behavior and the nature of humanism. Prerequisites: Consent of instructor. 3 hours. F

315 Readings in Modern Ethics (1-3) May be repeated. Maximum 6 hours.

320 Bioethics (3) Principles of ethics and their application to biological and medical problems. Prerequisites: Consent of instructor. 3 hours. F

329 Contemporary Philosophy (3) Developments in Twentieth Century philosophy. Prerequisites: Consent of instructor. 3 hours.

330 Foundations of Western Thought: Modernity (3) May be taken before 120. Writing emphasis course.
491 Foreign Study (1-15)

PHYSICAL EDUCATION ACTIVITY PROGRAM (764)

The following courses may not be repeated:

200 Spotted Topics (4) When content varies, may be repeated. Maximum 4 hours.
201 ARC Water-Resistant (1)
202 Badminton (1)
203 Elementary Badminton (1)
204 Elementary Baseball (2)
205 Basketball (1)
206 Bowling (1)
207 Flag Football (1)
210 Polk and Square Dance (2)
211 Golf (1)
212 Handball (1)
213 Ice Skating (1)
214 Elementary Jazz (2)
215 Elementary Jazz E (2)
216 Martial Arts: Special Topic (1)
219 Coed Gymnastics: Men’s Apparatus (1)
220 Elementary Modern Dance I (2)
221 Elementary Modern Dance II (2)
222 Paddlesport (1)
223 Personal Safety and Self-Defense (1)
224 Physical Fitness: Conditioning (1)
225 Physical Fitness: Exercise to Music (1)
226 Exercise and Weight Control (1)
229 Physical Fitness: Jogging (1)
230 Physical Fitness: Swimming (1)
231 Physical Fitness: Walking (1)
232 Racquetball I (1)
233 Social Dance (2)
236 Softball (1)
237 Beginning Swimming (1)
238 Emergency Water Safety (1)
240 Tug of War I (2)
241 Tug of War II (2)
242 Social Physical Fitness (1)
246 Tennis (1)
247 Track and Field (1)
248 Tumbling I (1)
251 Volleyball (1)
252 Weight Training (1)
253 Good Gymnastics: Women’s Apparatus (1)
254 Yoga and Relaxation (1)
255 Water Safety Instructor (2)
256 Lifeguarding (2)
259 Snow Skating (1)
260 Water Skiing (1)
278 Physical Education (1-15)

493 Independent Study (1-15)

PHYSICS (773)

121 Introductory Physics (5) For students whose major is outside the physical sciences. Concepts of physics. Emphasis on phenomena and logic, using a minimum of mathematical analysis. 121-122 is a two-term sequence. 3 hours lecture, 2 hours lab. 121-122 is a two-term sequence. 3 hours lecture, 2 hours lab.

131-132 Introduction to Physics: Mechanics and Heat (4-6) The first year of a two year sequence in Physics, 131-132, 231-232. Must be taken in sequence. Coreq: Mathematics 133-134 or 141-142. 3 hours lecture, 2 hours lab.

133 Fundamentals of Physics: Mechanics and Heat (4) For engineering physics majors and Arts and Sciences majors in mathematics and the physical sciences. Coreq: Mathematics 141-142. 3 hours lecture, 2 hours lab. 3 hours lecture, 2 hours lab. 3 hours lecture, 2 hours lab.

141-142 Nature of the Physical World (4-6) Concepts, vocabulary, and principles of physics as we understand them today. 141-142 are two-term sequence. 3 hours lecture, 2 hours lab. 3 hours lecture, 2 hours lab. 3 hours lecture, 2 hours lab.

161 Physics of Music (3) Production, transmission, and reception of sound waves. Frequency, intensity, timbre. Basic acoustics of instruments and voice. 3 hours lecture and demonstration.

222-225 Basic Physics I (5) Basic physical principles and applications may be used in pre-medical, pre-engineering, and pre-medical programs. Mechanics, heat, wave motion, and optics. 222-225 is a two-term sequence. 3 hours lecture, 2 hours lab.
various forms of quantum mechanics, quantum electrodynamics, quantum field theory, relativistic quantum mechanics, and their applications. Consideration of the effects of physical laws on the physical processes requires a thorough understanding of the fundamental principles of quantum mechanics.

4.13 Introduction to Quantum Mechanics (3) Fundamental principles of quantum mechanics and their applications. Solutions of the Schrödinger equation for simple systems. Application to atomic and molecular physics, condensed matter physics, and quantum mechanics of simple quantum systems. 4.14 Electrodynamics and Magnetostatics (3) Classical electrodynamics, magnetostatics, and the interaction between electromagnetic fields. 4.15 Advanced Electronics (3) Analog and digital electronics, operational amplifiers, and microelectronics. 4.16 Physics Laboratory (1) Laboratory experiments on the fundamental principles of physics. 4.17 Advanced Physics Laboratory (1) Advanced laboratory experiments on the fundamental principles of physics. 4.18 Biophysics (3) The application of physics to the study of biological systems. 4.19 Environmental Physics (3) The application of physics to environmental problems. 4.20 Research Seminar (1) Seminar on current topics in physics. 4.21 Senior Seminar (1) Seminar on current topics in physics. 4.22 Special Topics in Physics (1-3) Special topics in physics. 4.23 Problems in Plant and Soil Science (1-3) Special problems in plant and soil science.

PLANT AND SOIL SCIENCE (792)

41211 Political Parties and Interest Groups (3) Analysis of examination of political attitudes, public opinion and political behavior. (Same as American Studies 420.)

420 Political Attitudes and Behavior (3) Systematic resources in pursuit of public sector organization goals.


411 Special Topics in Political Science (3) May be repeated with consent of department. Maximum 6 hours.

370 Contemporary International Problems (3) Analysis of current international events.

31 United States Constitutional Law: Civil Rights (3) Study of the legal framework of civil rights for protection of individual freedoms. Writing-emphasis course.


365 Introduction to International Relations (3) Resource availability, international economics, international security and peace, war, diplomacy, balance of power, international law and international organizations. Writing-emphasis course.

361 Politics in Western Democracies (3) Political culture patterns, and institutions of Western democratic systems. Writing-emphasis course.

372 Introduction to International Relations (3) Foreign policy, international economics, international security and peace, war, diplomacy, balance of power, international law and international organizations. Writing-emphasis course.

365 Introduction to International Relations (3) Resource availability, international economics, international security and peace, war, diplomacy, balance of power, international law and international organizations. Writing-emphasis course.

361 Politics in Western Democracies (3) Political culture patterns, and institutions of Western democratic systems. Writing-emphasis course.

372 Introduction to International Relations (3) Foreign policy, international economics, international security and peace, war, diplomacy, balance of power, international law and international organizations. Writing-emphasis course.

400 Portuguese for Spanish Speakers (3) Accelerated class for beginning students of Portuguese with a strong background in another Romance language. Introduction to grammar, reading and culture of Portugal and Brazil. Prereq: 3 hours at 300 level in another Romance language or equivalent.

490 Advanced Conversation & Composition (3) Conversational and academic composition on contemporary topics (business, politics, economics, religion, art, culture) and formal writing practice on an advanced level. Prereq: 300 or the equivalent. (Same as Latin American Studies 431.)

431-453 Topics in the Language & Literature of the Portuguese-speaking World (3) Outstanding works of fiction and the classics from the countries where Portuguese is spoken. Topics may vary. May be repeated. Maximum 12 hours. Prereq: At least one course at the 300 level or the equivalent. (Same as Latin American Studies 431-453.)

460 Internship (1-15) Career-related experience in the United States or abroad with permission of the Language and World Business Director. For Language and World Business majors only. S/NC only.

191 Courses of Instruction
148 Advanced Measurement and Testing (3) Emphasis on mental test theory including classical test and item response theory. Prerequisite: 449.

149 Comparative Animal Behavior (3) (Same as Zoology 497.) Prerequisite: 440.

150 Physiological Psychology (3) Nervous system and physiological correlates of behavior. Behavioral biology, learning, memory and stress. Prerequisite: 110 or equivalent, 210 or consent of instructor. May be repeated. Maximum 6 hours may be applied toward major.

151 Sensory Processes and Perception (3) Emphasis on how therapeutic recreationists observe, interpret, and understand sensory events. Directed and associative thinking, sensory, visual, and auditory systems. Prerequisite: 110 or equivalent. May be repeated. Maximum 6 hours may be applied toward major.

152 Psychological Cognition: Language and Symbolic Processing (3) Emphasis on knowledge of memory and understanding, directed and associative thinking, problem-solving and concept formation, language and learning. Prerequisite: 210 or consent of instructor. May be repeated. Maximum 6 hours may be applied toward major.

153 Group Facilitation (3) Study of theory and techniques through supervised experience in small groups. Prerequisite: 210 or consent of instructor. May be repeated. Maximum 6 hours may be applied toward major.

154 Personality and Social Psychology (3) Study of personality and social behavior. Emphasis on theory and research and application to everyday life. Prerequisites: 110 and 210 or 220, or consent of instructor.

155 Psychology of Religion (3) Biology of the psychological and neurological processes involved in religious activities and their influence on behavior. Prerequisite: Math 115 or equivalent. May be repeated. Maximum 6 hours may be applied toward major.

156 Physiological Psychology (3) Emphasis on how therapeutic recreationists observe, interpret, and understand sensory events. Directed and associative thinking, sensory, visual, and auditory systems. Prerequisite: 110 or equivalent. May be repeated. Maximum 6 hours may be applied toward major.


PUBLIC HEALTH (357) Emphasis on the public health professions as related to health and illness, including the control and prevention of disease and promotion of health.

158 Communicable and Noncommunicable Diseases (3) Introduction to the epidemiology of communicable and chronic diseases including an overview of major disease categories, factors that influence health, and the role of public health agencies in disease control and prevention.

159 Environmental Management and Control (3) Concepts and techniques of environmental quality improvement. Emphasis on pollution, water resources, waste management, and air quality. Prerequisite: 110 or equivalent. Maximum 3 hours may be applied toward major.

160 Consumer Health (3) Emphasis on issues related to health and illness, including diagnosis, treatment, and prevention. Emphasis on healthy lifestyle principles as related to prevention of disease and promotion of health.

161 Public Relations Cases (3) Analysis of case studies in public relations, including problem identification, research, and evaluation of public relations programs.

162 Professional Communication (3) Emphasis on written and oral communication in professional settings. Prerequisite: 270 or ADV 250, and COM 200, or consent of instructor. May be repeated. Maximum 6 hours may be applied toward major.

163 Public Relations Principles (3) Emphasis on written and oral communication in professional settings. Prerequisite: 270 or ADV 250, and COM 200, or consent of instructor. May be repeated. Maximum 6 hours may be applied toward major.

164 Public Relations Principles (4) Emphasis on written and oral communication in professional settings. Prerequisite: 270 or ADV 250, and COM 200, or consent of instructor. May be repeated. Maximum 6 hours may be applied toward major.

165 Public Relations Principles (3) Emphasis on written and oral communication in professional settings. Prerequisite: 270 or ADV 250, and COM 200, or consent of instructor. May be repeated. Maximum 6 hours may be applied toward major.

166 Public Relations Principles (3) Emphasis on written and oral communication in professional settings. Prerequisite: 270 or ADV 250, and COM 200, or consent of instructor. May be repeated. Maximum 6 hours may be applied toward major.

167 Public Relations Principles (3) Emphasis on written and oral communication in professional settings. Prerequisite: 270 or ADV 250, and COM 200, or consent of instructor. May be repeated. Maximum 6 hours may be applied toward major.
430 Organization and Administration of Leisure Services. Focus is on the social, interpersonal, and behavioral aspects of working with individuals in inclusive recreation and leisure environments. Lab. Prereq: 320 or consent of instructor.

435 Organization and Administration of Leisure Service-Venues. Principles of administration applied to provision of leisure services offered by public, private, and/or therapeutic recreation. E. MAJORS only. S/NC only. Prereq: 290 and permission of instructor. E.

440 Dimensions of Private and Commercial Recreation. Theories and practices in the field of commercial recreation and tourism. Prereq: 110, 310, or consent of instructor. F, S, Su

450 Special Topics in Leisure Education. Topics not included elsewhere. May be repeated. Maximum 6 hours. Consent of instructor. E.

460 Dimensions of Private and Commercial Recreation. Focus is on the social, interpersonal, and behavioral aspects of working with individuals in inclusive recreation and leisure environments. Lab. Prereq: 320 or consent of instructor.


467 Special Topics in Audiology. Special Topics not included elsewhere. May be repeated. Maximum 6 hours. Consent of instructor.

468 Rehabilitation and Maintaining Recreation and Sport Facilities. Emphasis on supervisory and administrative aspects of operating special programs in leisure, recreation, and therapeutic recreation. E. May be repeated. Maximum 6 hours. Prereq: 460 or consent of instructor.

471 Visual Characteristics of Hearing Impaired. Examination of visual characteristics of hearing impaired students in the classroom or community setting. Prereq: 421.

472 Professional Practice. Techniques used to deal with language development problems. Prereq: 468.

473 African-American Religion in United States (3). A representative profile of African-American religious life in the United States. Course 350 or consent of instructor. E.

475 African-American Religious Traditions (3). A representative profile of African-American religious life in the United States. Course 350 or consent of instructor. E.


480 Religious and Culture in the United States. Issues, movements, and patterns in American religious life, thought, and cultural expression. Prereq: 290 or consent of instructor. E.

495 Aural Habilitation/Rehabilitation of the Hearing Impaired. Techniques for the hearing impaired. Prereq: 410 or 421.

496 Practicum With Hearing Impaired (3) Supervised practice with hearing impaired students in pre-school, public school, and/or residential setting.

510 Anthropology of Religion (3) Religion in society. Prereq: 300. Prereq: 351 or consent of instructor.

511 Ways of Understanding Religion (3) Sources and methods used in the study of religion and religions. Analysis of approaches to the study of religion. Writing-emphasis course.

512 Current Issues in Religious Studies (1-3) Introduction to the study of religion through selected themes, problems and topics within religions. Writing-emphasis course. (Same as History 323.)


526 Images of Jesus (3) Major portrayals of Jesus Christ from the first century to the twentieth century, within the context of the cultural milieu which gave birth to each. Writing-emphasis course. (Same as History 321.)

530-340 Elementary Classical Hebrew (3,3) Basic elements of Hebrew phonology, script, morphology and syntax. Introduction to basic elements of text, form, and literary criticism. Prereq: 309 or 310.

550-355 African-American Religions: Traditions (3) Development of African-American religions and religious thinking from pre-colonial times to the present. Prereq: 351 or consent of instructor. E.

550-355 African-American Religions: Traditions (3) Development of African-American religions and religious thinking from pre-colonial times to the present. Prereq: 351 or consent of instructor. E.

555 Religion and Culture in the United States. Issues, movements, and patterns in American religious life, thought, and cultural expression. Prereq: 290 or consent of instructor. E.
422-Introduction to the Reading of Epic and Classical Sanskrit. 421-Introduction to the Grammar of Classical Sanskrit. (Same as Philosophy 448.)

425-Intermediate Sanskrit (Intermediate Sanskrit 2B) (3) Advanced grammatical concepts, including roots, reduplication, and Sanskrit poetics (e.g., Bhavishya Gita, Mahabharata) as religious literature. Prereq: 422 or consent of instructor. Prereq: 422 or consent of instructor. May be repeated: Maximum 6 credits.

424-Continued reading of classical religious and narrative literature. (Same as Anthropology 373 and African-American Studies 301-302.) Prereq: Consent of instructor. May be repeated: Maximum 6 credits.

423-Intermediate Religious Studies (3) Selected figures, themes, movements, and problems. Prereq: Consent of instructor. May be repeated: Maximum 6 hours.

422 Seminar in Comparative Religion (8) Selected figures, themes, movements, and problems. Prereq: Consent of instructor. May be repeated: Maximum 6 hours.

421-Introduction to the Grammar of Classical Sanskrit. (Same as Philosophy 448.)

425-Intermediate Sanskrit (Intermediate Sanskrit 2B) (3) Advanced grammatical concepts, including roots, reduplication, and Sanskrit poetics (e.g., Bhavishya Gita, Mahabharata) as religious literature. Prereq: 422 or consent of instructor. Prereq: 422 or consent of instructor. May be repeated: Maximum 6 credits.

424-Continued reading of classical religious and narrative literature. (Same as Anthropology 373 and African-American Studies 301-302.) Prereq: Consent of instructor. May be repeated: Maximum 6 credits.

423-Intermediate Religious Studies (3) Selected figures, themes, movements, and problems. Prereq: Consent of instructor. May be repeated: Maximum 6 hours.

422 Seminar in Comparative Religion (8) Selected figures, themes, movements, and problems. Prereq: Consent of instructor. May be repeated: Maximum 6 hours.

421-Introduction to the Reading of Epic and Classical Sanskrit. 421-Introduction to the Grammar of Classical Sanskrit. (Same as Philosophy 448.)

425-Intermediate Sanskrit (Intermediate Sanskrit 2B) (3) Advanced grammatical concepts, including roots, reduplication, and Sanskrit poetics (e.g., Bhavishya Gita, Mahabharata) as religious literature. Prereq: 422 or consent of instructor. Prereq: 422 or consent of instructor. May be repeated: Maximum 6 credits.

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422 Seminar in Comparative Religion (8) Selected figures, themes, movements, and problems. Prereq: Consent of instructor. May be repeated: Maximum 6 hours.

421-Introduction to the Reading of Epic and Classical Sanskrit. 421-Introduction to the Grammar of Classical Sanskrit. (Same as Philosophy 448.)

425-Intermediate Sanskrit (Intermediate Sanskrit 2B) (3) Advanced grammatical concepts, including roots, reduplication, and Sanskrit poetics (e.g., Bhavishya Gita, Mahabharata) as religious literature. Prereq: 422 or consent of instructor. Prereq: 422 or consent of instructor. May be repeated: Maximum 6 credits.

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421-Introduction to the Reading of Epic and Classical Sanskrit. 421-Introduction to the Grammar of Classical Sanskrit. (Same as Philosophy 448.)

425-Intermediate Sanskrit (Intermediate Sanskrit 2B) (3) Advanced grammatical concepts, including roots, reduplication, and Sanskrit poetics (e.g., Bhavishya Gita, Mahabharata) as religious literature. Prereq: 422 or consent of instructor. Prereq: 422 or consent of instructor. May be repeated: Maximum 6 credits.

424-Continued reading of classical religious and narrative literature. (Same as Anthropology 373 and African-American Studies 301-302.) Prereq: Consent of instructor. May be repeated: Maximum 6 credits.

423-Intermediate Religious Studies (3) Selected figures, themes, movements, and problems. Prereq: Consent of instructor. May be repeated: Maximum 6 hours.

422 Seminar in Comparative Religion (8) Selected figures, themes, movements, and problems. Prereq: Consent of instructor. May be repeated: Maximum 6 hours.
Special Topics (1-3) Development structure and function of the social welfare institution. Analysis of societal welfare programs and impact of the institution on society.

Social Work Research (3) Scientific method and research strategies to evaluate one’s practice and social service delivery. Knowledge of statistical techniques required. Prereq: Mathematics 115 or Psychology 380.


Social Work Practice II (3) Generalist practice with an emphasis on groups and communities, including treatment planning, techniques, and theories. Prereq: Initial progression. Coreqs: 410 and 411.

Social Welfare Policies and Issues (3) Policy formulation processes, policy analysis in systems and program evaluation. Emphasis on evaluating social policy and its impact on the individual, the community, and the organization. Prereq: Consent of Instructor.

Field Practice in Social Work II (3) Eight hour per week, experienced field practice with activities dealing with professional skills, values and attitudes. Concurrent seminar focuses on integration of knowledge with practice experience. Prereq: Initial progression. Coreq: 310 and 311.

Field Practice in Social Work II (3) Generalist practice with an emphasis on groups and communities, including treatment planning, techniques, and theories. Prereq: Initial progression. Coreqs: 410 and 411.

Sociology of Occupations (3) Occupations and professions as interest groupings in work settings and the relative autonomy of the state. Prereq: Consent of Instructor.

Global Perspectives (3) Comparative phenomena leading to social change. Prereq: Consent of Instructor. Coreqs: 310 and 311.

Sociological Research (3) Selected issues in social research. Prereq: Consent of Instructor.
111-112 Elementary Spanish (3,3) Language, culture, and the major social institutions of Spanish-speaking world. For students who wish to pursue a foreign language major. See the Director for further information. F

211-212 Intermediate Spanish (3,3) (Prereq: 110 or 112) or Department Placement. From the medieval and modern periods, major works of Spanish literature. May be repeated with consent of instructor. F

217-218 Honors: Intermediate Spanish (3,3) Honors course for students of superior ability in Spanish. Excellent students are admitted on the basis of a diagnostic level, high school averages, and performance on the ACT. Classes normally held at noon with enrollment of 20-25 students. Students should consult the schedule available in the Language and Science Office for further information. F

211 Spanish in English Language Teaching (3) From the Golden Age, Don Quijote, the cincuenta novel, escritores and the modern, Latinamerica, and the Spanish language. Writing emphasis course. F

213 Transitional Grammar Review and Reading (3) Students who are currently enrolled in 211 or 218 receive an additional three hours of practice in grammar. May be repeated with consent of instructor. F

301 Spanish for Students of Other Romance Languages (3) Accelerated class for beginning students who have a strong background in a Romance language. May be repeated with consent of instructor. F

310 Public Speaking (3) Preparation and delivery of speeches in any medium. Recommended for students majoring in another discipline, who wish to develop enriched oral presentation skills. May be repeated with consent of instructor. F

311 Sociolinguistics (3) Same as English 471 and Linguistics 471. F

316 Advanced Conversation (3) Develops speaking skills through interactions on a wide range of topics. May be repeated with consent of instructor. F

317 Advanced Grammar (3) Finer points of grammar, syntax, and style. May be repeated with consent of instructor. F

321 Phonetics (3) Prereq: 323 or permission of instructor. F

336 Aspects of Spanish American Literature (3) Literature of the Spanish-American countries. The Spanish-American novel in the 17th, 18th, and 19th centuries. May be repeated with consent of instructor. F

345-46 Conversations and Composition in Business Spanish I, II (3,3) Commercial vocabulary, business letters, report writing, and the Spanish economy. May be repeated with consent of instructor. F-W

350 Hispanic Drama (3) Close reading and analysis of representative works by selected dramatists of each major period, either Spain or Spanish America. Topics vary. May be repeated with consent of instructor. F-W

351 Hispanic Prose (3) Close reading and analysis of representative works by selected novelists, either Spain or Spanish America. Topics vary. May be repeated with consent of instructor. F-W

354 Advanced Composition (3) Develops writing skills to advanced level. Emphasis on composition and argumentation. May be repeated with consent of instructor. F

356 Latin American Civilization (3) Latin America's history and government, its social and political institutions, its cultural background. Restricted to students majoring with a concentration in Latin American Studies. F

357 Survey of Latin American Literature (3,3) Latin American literature, including colonial, independent, modern, and post-modern periods. May be repeated with consent of instructor. F-W

358 Latin American Drama (3) Latin American drama, including pre-Columbian, colonial, independent, and modern. May be repeated with consent of instructor. F

359 Organizational and Corporate Crime (3) Crime and corporate misconduct. Case studies of corporate and organizational crime, the organizational dynamic of crime, and theories of corporate crime, and regulation of social and governmental agencies. F

364 Environmental Studies (3) Ecology and human systems. Interactions of the environment in health care facilities, staff-patient relationships, demographics, and health care. F

365 Discourse, Reasoning, and Evaluating (3) Introduction to discourse analysis, reasoning, and evaluating the discourse of others. F

366 Health Care (3) Organization and operation of the health industry. The impact of the rapidly increasing number of older people on society, the effect of society on older people. F

367 Theory and Practice of Language Testing (3) The effects of testing on language learning and teaching. F

415 Sociology of Aging (3) How roles and statuses change with age in relation to the major social institutions; aging of the population, cultural changes with age. F

416 Sociology of Health Care (3) Organization and process of sport. Prereq: 291 or consent of instructor. F

421 Phonetics (3) Prereq: 323 or permission of instructor. F

422 Advanced Grammar (3) Finer points of grammar, syntax, and style. May be repeated with consent of instructor. F

423 Advanced Conversation (3) Develops speaking skills through interactions on a wide range of topics. May be repeated with consent of instructor. F

424 Comparative Poverty and Development (3) A critical examination of patterns of poverty and inequality in developing areas of the world, along with a review of major sociological theories which attempt to explain differences in poverty or development. Writing emphasis course. (Same as African-American Studies 424.) F

428 Hispanic Prose (3) Close reading and analysis of representative works by selected novelists, either Spain or Spanish America. Topics vary. May be repeated with consent of instructor. F-W

429 Practical Spanish (2) Elementary language credit awarded through placement. May be repeated. Maximum 12 hours. F-W

430 Legal Environment of Business (3) Organization, distribution, and composition; population policy. F

432 Advanced Conversation (3) Develops speaking skills through interactions on a wide range of topics. May be repeated with consent of instructor. F

433 Advanced Grammar (3) Finer points of grammar, syntax, and style. May be repeated with consent of instructor. F

434 Hebrew Grammar and Composition (3) Hebrew grammar and composition. May be repeated with consent of instructor. F

440 Sociology of Health Care (3) Organization and process of sport. Prereq: 291 or consent of instructor. F

442 Population (3) Demographic factors and social structure. F

444 Comparative Poverty and Development (3) A critical examination of patterns of poverty and inequality in developing areas of the world, along with a review of major sociological theories which attempt to explain differences in poverty or development. Writing emphasis course. (Same as African-American Studies 424.) F

450 Hispanic Prose (3) Close reading and analysis of representative works by selected novelists, either Spain or Spanish America. Topics vary. May be repeated with consent of instructor. F-W

451 Hispanic Prose (3) Close reading and analysis of representative works by selected novelists, either Spain or Spanish America. Topics vary. May be repeated with consent of instructor. F-W

452 Population (3) Demographic factors and social structure. F

453 Survey of Latin American Literature (3,3) Latin American literature, including colonial, independent, modern, and post-modern periods. May be repeated with consent of instructor. F-W

454 Advanced Composition (3) Develops writing skills to advanced level. Emphasis on composition and argumentation. May be repeated with consent of instructor. F

455 Introduction to Speech Communication (3) Fundamental theories and practices with particular relevance to interpersonal, institutional, group, organizational and public communication. F

456 Developing Speech Communication Skills (2) Principles and procedures for improving public speaking. May be repeated. Recommended for students who are concurrently enrolled in LING 444 in order to provide continuous work in dealing with their anxiety about speaking. F-W

457 Hispanic Philosophy (3) Philosophy of selected Latin American authors. Available to non-spansih-speaking students of Spanish. Spanish 323, 324 or 245-346 or permission of instructor. F-W

458 History of Latin American Studies (3) Latin American history and government, its social and political institutions, its cultural background. Restricted to students majoring with a concentration in Latin American Studies. F

459 Organizational and Corporate Crime (3) Crime and corporate misconduct. Case studies of corporate and organizational crime, the organizational dynamic of crime, and theories of corporate crime, and regulation of social and governmental agencies. F

462 Population (3) Demographic factors and social structure. F

471 Latin American Civilization (3) Latin America's history and government, its social and political institutions, its cultural background. Restricted to students majoring with a concentration in Latin American Studies. F

472 Latin American Drama (3) Latin American drama, including pre-Columbian, colonial, independent, and modern. May be repeated with consent of instructor. F

473 Latin American Civilization (3) Latin America's history and government, its social and political institutions, its cultural background. Restricted to students majoring with a concentration in Latin American Studies. F

474-475 Survey of Spanish American Literature (3,3) Latin American literature, including colonial, independent, modern, and post-modern periods. May be repeated with consent of instructor. F-W

476 Latin American Philosophy (3) Latin American philosophy, including pre-Columbian, colonial, independent, and modern. May be repeated with consent of instructor. F

478 Social Protest Literature of Latin America (3) Literature as a means of unmasking social ills that have traditionally been suppressed. Among major works covered in the course are the tales of the water in Latin America today, social and political resistance, and the use of the novel as a political weapon. F

479 Cultural Plurality and Institutional Changes in Latin America (3,3) History, society, and economy of Latin America, as well as special topics. May be repeated with consent of instructor. F

480 Introduction (1-15) Prereq: Consent of instructor. F-W

484 Spanish Language and World Business (3) The course will examine the importance of foreign trade at the local, state, and national levels. An interdisciplinary team from the College of Business and Arts and Sciences will provide an overview of the value of foreign languages in a business setting and the current state of international business. Restricted to students majoring in a business or science. See the Director for further information. F

485 Language and World Business (3) The course will examine the importance of foreign trade at the local, state, and national levels. An interdisciplinary team from the College of Business and Arts and Sciences will provide an overview of the value of foreign languages in a business setting and the current state of international business. Restricted to students majoring in a business or science. See the Director for further information. F

486 Methods of Historical Linguistics (3) (Same as French 426, German 425, German 426 and Linguistics 426) F

487 Romanic Languages (3) (Same as French 429 and Linguistics 429) F

488 Spanish Civilization (3) Major social, political, and cultural achievements of the Spanish people from the origins of their civilization until today. Prereq: 335 or 336 or equivalent. Writing emphasis course.
320 Interpersonal Communication (3) Process by which thoughts, feelings, and actions affect and are affected by the face-to-face communication situation. (Same as Sociology 260.)

340 Lieder (1-3) Study of the principles and techniques of lecturing. Focuses on theories and practical lecturing skills.

240 Business and Professional Communication (3) Ethical, social, political, and cultural factors that affect written and oral communication in business and professional situations. Topics and activities may include organizations/communications theory, problem-solving, case studies, interviewing, and formal presentations.

240 Communication and Society (3) Study of communication strategies and public opinion, with emphasis on mass media; analysis of roles, sources, songs, documentaries, dramas, and public address.

270 Argumentation and Debate (2) Reexamined declamatory speaking emphasis on analysis, evidence, reasoning, distinguishing and refuting arguments.

280 Communication Research Methods (3) How a survey process of contemporary methods used for Harvard in Speech Communication. Emphasis on inquiring and evaluating communication research reports.

290 Nonverbal Communication (2) Exploration of nonverbal communication from human communication perspective. Use of codes and conventions for expressing and transmitting meaning as they affect critical thinking in groups. Prereq: Speech Communication/Sociology 220 or consent of instructor.

295 Communication Research Methods (3) Survey of communication theory, group problem-solving, case studies, interviewing, and formal presentations. Emphasis on interpreting and evaluating communication research reports.

310 Persuasion (3) Methods which contribute to effective and ineffective persuasion. Topics include credibility, message construction, receiver variables.

312 Interpersonal Communication Processes (3) Social dimensions of interpersonal communication and relationships. Prereq: Speech Communication/Sociology 220 or consent of instructor.

315 Coaching of Baseball/Softball (1) Theoretical and practical approaches to coaching baseball/softball. Emphasis on teaching methods, training techniques for various positions, effective promotion and team building, and understanding the role and structure of the sport. Prereq: Consent of instructor. (Same as Child and Family Studies 430)

315 Coaching of Track and Field (1) Coaching techniques and training methods for various track and field events, including interval training and event-specific training. Prereq: Consent of instructor.

316 Coaching of Cross-Country (1) Coaching methods and strategies for coaching cross-country running. Prereq: Consent of instructor.

324 ACT, SAT, and Test Preparation (3) Psychological and practical aspects of standardized testing, with emphasis on test taking strategies, test anxiety, and academic counseling. Prereq: Consent of instructor.

330 Writing for College (3) Theoretical and practical aspects of the college writing process. Emphasis on reading, analyzing, and responding to a variety of texts. Prereq: Consent of instructor.

337 Gender and Communication (3) Theories and research on gender, power, and communication. Emphasis on interpersonal and organizational contexts. Prereq: Consent of instructor.

338 Interpersonal Communication (3) Process by which thoughts, feelings, and actions affect and are affected by the face-to-face communication situation. (Same as Sociology 260.)

345 Interpersonal Health Communication (3) Interpersonal communication in healthcare settings. Topics include provider-patient interaction, sociocultural aspects, organizational structures, and impact of health information technology. Prereq: Consent of instructor.

350 Family Communication (3) Dynamics of intrafamily communication in contemporary family life, study of family communication process, development of problem-solving and negotiation skills. Prereq: Consent of instructor.

351 Family Communication (3) Dynamics of intrafamily communication in contemporary family life, study of family communication process, development of problem-solving and negotiation skills. Prereq: Consent of instructor.

352 Family Communication (3) Dynamics of intrafamily communication in contemporary family life, study of family communication process, development of problem-solving and negotiation skills. Prereq: Consent of Instructor.

353 Family Communication (3) Dynamics of intrafamily communication in contemporary family life, study of family communication process, development of problem-solving and negotiation skills. Prereq: Consent of Instructor.

354 Family Communication (3) Dynamics of intrafamily communication in contemporary family life, study of family communication process, development of problem-solving and negotiation skills. Prereq: Consent of Instructor.

355 Family Communication (3) Dynamics of intrafamily communication in contemporary family life, study of family communication process, development of problem-solving and negotiation skills. Prereq: Consent of Instructor.

360 Topics in Communication and Society (3) Contemporary topics in the study of communication, with emphasis on the role of communication in contemporary society. Prereq: Consent of instructor.

360 Topics in Communication and Society (3) Contemporary topics in the study of communication, with emphasis on the role of communication in contemporary society. Prereq: Consent of instructor.

361 Communication and Conflict (3) Communication and resolution of conflict at the interpersonal, small group, organizational, or societal levels. Prereq: Consent of instructor.

362 Communication and Conflict (3) Communication and resolution of conflict at the interpersonal, small group, organizational, or societal levels. Prereq: Consent of instructor.

363 Communication and Conflict (3) Communication and resolution of conflict at the interpersonal, small group, organizational, or societal levels. Prereq: Consent of instructor.

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378 Communication and Conflict (3) Communication and resolution of conflict at the interpersonal, small group, organizational, or societal levels. Prereq: Consent of instructor.

379 Communication and Conflict (3) Communication and resolution of conflict at the interpersonal, small group, organizational, or societal levels. Prereq: Consent of instructor.

380 Special Topics (1-3) Study in selected disciplinary areas of Sport Management. May be repeated. Maximum 15 hours.

381 Coaching of Track and Field (1) Coaching methods and training techniques for various track and field events, including interval training and event-specific training. Prereq: Consent of instructor.

382 Coaching of Cross-Country (1) Coaching methods and training techniques for cross-country running. Prereq: Consent of instructor.

383 Coaching of Basketball (1) Individual and team coaching techniques for the high school basketball program. Focus on managerial tasks and administrative procedures. Prereq: Consent of instructor.

384 Coaching of Field Hockey (1) Coaching methods and training techniques for field hockey. Prereq: Consent of instructor.
UNIVERSITY STUDIES PROGRAM

Taught by faculty from the boundaries of a single discipline. Topics may be initiated by students, or by permission of instructor.

117-120 Honors Freshmen Seminar (1,1) Sequence designed to introduce all University Honors students in their first year. 117 concentrates on contemporary issues. 118 concentrates on aspects of society. See the Director of University Honors for further information. Credit/D/F grading only.

116-127 Honors Freshmen Seminar (1,1) Sequence designed to introduce all University Honors students in their first year. See the Director of University Honors for further information. Credit/D/F grading only.

111-128 Whittle Scholars Seminar (1,1) Sequence open to first year students selected for the Whittle Scholars Program. 111 concentrates on contemporary issues. 112 concentrates on aspects of society. See the Director of University Honors for further information. Credit/D/F grading only.

482 Urban Development and Finance (3) (Same as Finance 481.)

481 Real Estate Finance and Investment Analysis (3)

460 Senior Seminar (3) Variety of disciplines used to approach student selected problem. Prereq: 350, 450. May be repeated. Maximum: 9 hours.

412 Normandy Scholars Seminar: War and Remembrance (3) The course has three components: The social and political history of the Normandy area during World War II, the commemoration and remembrance of the Normandy area and the Normandy Scholars Program. The course is limited to students selected for the Normandy Scholars Program. May be repeated. Maximum: 9 hours.

URBAN STUDIES (985)

200 Human-Environment Systems (3) Some will be repeated. See the Director of University Honors for further information.

260 Introduction to Urban Studies (3) Introduction to the use of lively lecture sessions with community speakers, and applied projects. Open to all students with a GPA of 3.0 or greater. Topics vary. May be repeated.

250 Introduction to Urban Studies (3) Multidisciplinary approach to the study of urban systems. Open to all students with a GPA of 3.0 or greater. Topics vary. May be repeated.

245 Cities and Urban American History (3) (Same as History 455.)

443 Ecology and Management of Wild Mammals (3) Prereq: FWF 317 or consent of instructor. 2 hours and 1 lab. One weekend field trip required. S

444 Ecology and Management of Wild Mammals (3) Prereq: FWF 317 or consent of instructor. 2 hours and 1 lab. One weekend field trip required. S

WILDFI'E AND FISHERIES SCIENCE (993)

347 Toxicology and Environmental Health (3) Examines the effects of environmental pollutants on the integrity of the human body. Prereq: FWF 357 or consent of instructor. 1 hour and 1 lab. F

357 Honors: Concentration in the Natural and Applied Sciences (3) Small group studies of selected topics, issues or problems with a concentration in the natural and applied sciences. Open to all students with a GPA of 3.0 or greater. Topics vary. May be repeated.

327 Honors: Concentration in the Humanities (3) Small group studies of selected topics, issues or problems with a concentration in the humanities disciplines. Open to all students with a GPA of 3.25 or greater. Topics vary. May be repeated.

322 Technology, Society and the Common Good (3) Explores philosophical and religious systems with a commitment to engage the public in a discussion of these issues. Prereq: 250, 350, 450. May be repeated.

321 'Aging and Society (3) Multidisciplinary examination of the process of aging and the medical and social issues associated with the development of successful aging. Satisfactory/No Credit grading only. S

320 Women and Religion (3) (Same as Religious Studies 320.)

310 Emergence of the Modern American Woman (3) (Same as Child and Family Studies 220.)

230 Marriage and Family: Roles and Relationships (3) The roles and stereotypes portrayed in a variety of literary works throughout the United States and Europe. S

220 Women in Society (3) Role played by women in various societies during different historical periods. S

210 Images of Women in Literature: Fiction, Poetry, and Drama (3) The role played by women in various societies during different historical periods. S

199 Courses of Instruction
200 Courses of Instruction

330 Women in Music (3) (Same as Music History 330.) Writing-emphasis course.

332 Women in American Literature (3) (Same as English 332.)

340 Women, Politics, and the Law (3) An examination of recent changes in the law affecting women and a study of the role of women in contemporary American politics.

360 Women in Cross-Cultural Perspective (3) A study of the changing role of women in various contemporary cultures: industrial democracies, developing nations, communist countries. A team-taught course with guest lectures and slide presentations.

375 Gender in Society (3) (Same as Sociology 375.)

380 The Concept of Woman (3) (Same as Philosophy 380.) Writing-emphasis course.

382 Philosophy of Feminism (3) (Same as Philosophy 382.) Writing-emphasis course.

383 Women in the Greek and Roman World (3) (Same as Classics 383.) Writing-emphasis course.

400 Topics in Women's Studies (3) Content varies. May be repeated.

410 Sex Role Development: Implications for Education and Counseling (3) (Same as Educational and Counseling Psychology 410)

422 Women Writers in England (3) (Same as English 422.)

425 Women's Health (3) (Same as Health 425.)

428 Women in European History (3) (Same as History 428) Writing-emphasis course.

430 Library Portraits of French Women (3) (Same as French 430)

436 Psychology of Gender (3) (Same as Psychology 436) Writing-emphasis course.

438 Women in American History (3) (Same as History 438) Writing-emphasis course.

448 Women's Rights Movement to 1860 (3) Historical and critical study of American women's rights movement to 1860. (Seminar) Writing-emphasis course.

453 African-American Women in American Society (3) (Same as African-American Studies 453)

466 Rhetoric of the Woman's Rights Movement to 1930 (3) Historical and critical study of public address in the campaign for women's rights in the United States from the 1830s through the 1870s (Same as Speech Communication 466) Writing-emphasis course.

469 Sexuality and Cinema (3) Explores issues surrounding sexuality, gender and cinema from a feminist film critic's perspective. (Same as Cinema Studies 469)

476 Rhetoric of the Contemporary Feminist Movement (3) Historical and critical study of rhetoric in the campaign for women's rights in the United States from the 1940s to the present. (Same as Speech Communication 476) Writing-emphasis course.

483 African-American Women in American Society (3) (Same as African-American Studies 483)

491 Foreign Study (1-15)

492 Off-Campus Study (1-15)

493 Independent Study (1-15) Registration by consent of chair of Women's Studies.

from the 1830s through the 1870s (Same as Speech Communication 466) Writing-emphasis course.

409 Sexuality and Cinema (3) Explores issues surrounding sexuality, gender and cinema from a feminist film critic's perspective. (Same as Cinema Studies 469)

476 Rhetoric of the Contemporary Feminist Movement (3) Historical and critical study of rhetoric in the campaign for women's rights in the United States from the 1940s to the present. (Same as Speech Communication 476) Writing-emphasis course.