12. Orientation to Agricultural Economics and Business (1) Primarily for Agricultural Economics and Business majors in their first year. Introduction to current topics, subject matter, and career opportunities in the field. Discussion of career objectives and the career planning process. May be repeated for credit. Maximum 6 hours/ credits.

13. Agricultural Policy (3) Values, goals and policy processes. Emphasis on political analysis of agriculture, markets, and policy. Prerequisite: Econ 201 or consent of instructor. Sp

14. Agribusiness Management (3) Advanced decision analysis in management and policy making, planning and managing, principles and methods, application to agriculture. Prerequisite: Agri 320 or 440 or consent of instructor.

15. Agribusiness Finance (3) Macro-finance, financial institutions, investments, capital allocation, debt repayment, credit systems. Emphasis on specific problem areas in the agricultural sector. Prerequisite: 320 or 440 or consent of instructor. Sp

16. Agribusiness Marketing and Professional Selling (3) Industry structure, market channels, marketing strategies and methods for adult education in agriculture. Prerequisite: 320 or 440 or consent of instructor. Sp

17. Agribusiness Marketing Internship (1-3) Supervised experience in personal selling and related activities. Student must arrange with instructor. Prerequisite: Consent of instructor. May be repeated for credit. Maximum 6 hours/credits.

AGRICULTURAL ENGINEERING

18. Basic Engineering (4) Application of basic engineering principles to agriculture and natural resource management. Prerequisite: Math 132.

19. Agricultural Engineering (3) Application of basic engineering principles to agriculture and natural resource management. Prerequisite: Math 132.

20. Agricultural Engineering Fundamentals (3) Application of basic engineering principles to agriculture and natural resource management. Prerequisite: Math 132.

21. Agricultural Engineering Project (3) Application of basic engineering principles to agriculture and natural resource management. Prerequisite: Math 132.

22. Agricultural Engineering Internship (1-3) Supervised experience in agriculture and natural resource management. Student must arrange with instructor. Prerequisite: Consent of instructor. May be repeated for credit. Maximum 6 hours/credits.

23. Agricultural Engineering Research (1-2) Directed individual or group research experience in the field of agricultural engineering. Student must arrange with instructor. Prerequisite: Consent of instructor. May be repeated for credit. Maximum 6 hours/credits.


25. Agricultural Engineering Research (1-2) Directed individual or group research experience in the field of agricultural engineering. Student must arrange with instructor. Prerequisite: Consent of instructor. May be repeated for credit. Maximum 6 hours/credits.

26. Agricultural Engineering Internship (1-3) Supervised experience in agriculture and natural resource management. Student must arrange with instructor. Prerequisite: Consent of instructor. May be repeated for credit. Maximum 6 hours/credits.

27. Agricultural Engineering Research (1-2) Directed individual or group research experience in the field of agricultural engineering. Student must arrange with instructor. Prerequisite: Consent of instructor. May be repeated for credit. Maximum 6 hours/credits.

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Agricultural Economics (3) The study of market behavior and trends of agricultural commodities. Emphasis on supply and demand, and market failures. Prereq: 121. 3 hours and 1 lab.

Agricultural Engineering (3) Design and analysis of agricultural systems and processes, including the design of agricultural machinery and equipment. Prereq: 121. 3 hours and 1 lab.

Agricultural Management Systems Analysis (3) Use of the microcomputer to analyze and report problems related to agricultural sciences and natural resources. Introduction to word processing, spreadsheets, data bases, presentation graphics, and other applications software as needed for problem analysis and reporting. 2 hours and 1 lab.

Agricultural Resource Management Systems Analysis (3) Introduction to management oriented course for the horticultural sciences systems. Primarily for College of Agriculture Students. May be repeated. Maximum of 6 hours. Satisfactory/No Credit only.

Agricultural Technologies (3) The study of the biological, physical and environmental processes that are related to the development and use of agricultural technologies. Design content. Prereq: 311. 3 hours and 2 labs.

Agronomy (3) The study of crop production and management. Focus on the environmental hazards that have been, are, and will be created by agricultural systems. Includes the use of agricultural products, needed to feed, cloth and house a changing world population. Includes the concept of the bounty of nature that contributes to the quality-of-life variables, societal, economic, land-use, sustainability, and design, etc.

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oral reasons, breed classification programs, economic evaluation criteria, genetic improvement programs, Anthony and Jutai's study of prehistoric Tennessee, and the relationships between functional efficiency and the history of farming in traditional rural households. F

380 Animal Health Management (3) Characteristics, economics, principles of nutrition, reproduction, and parasitology; evaluation and control of parasitic infestations and vector-borne diseases. Prereq.: 320. 2 hours and 1 lab. Lab. E

381 Animal Production Systems (3) Functional organization and design of production systems: feedlot management, marketing, and improvement programs. Management evaluated in terms of performance responses and economic returns. Prereq.: 388. 2 hours and 1 lab. Lab. E

387 Comparative Zoology (9) Principles of nutrition, physiology, and behavior of domesticated species. 2 hours and 1 lab. Lab. E

389 Independent Study in Animal Science (1-3) Approval of instructor and Department Head is required. May be repeated for a maximum of 15 hours. F, S, Sp

390 Independent Study in Animal Science (1-15) Approval of instructor and Department Head is required. May be repeated for a maximum of 15 hours. E

210 Principles of Biological Anthropology (3) Methods in the study of culture; survey of cross-cultural similarities and differences in subsistence, social organization, economic, political, and religious institutions. Contributions of anthropology to understanding contemporary human problems. S

211 Principles of Biological Anthropology (3) Concepts and methods in the study of culture; survey of cross-cultural similarities and differences, social organization, economic, political, and religious institutions. Contributions of anthropology to understanding contemporary human problems. S

220 Human Origins (3) Survey of humanity's back

Courses of Instruction 149
and Span through the mid-twentieth century. Pretex 311, F.


234 Environmental Control Systems I (3) Principles of material and system selection for building systems. Pretex 316, F.

240 Environmental Control Systems II (3) Principles of material and system selection for building systems. Pretex 317, F.

241 Environmental Control Systems III (3) Principles of material and system selection for building systems. Pretex 318, F.

242 Environmental Control Systems IV (3) Principles of material and system selection for building systems. Pretex 319, F.

243 Structural and Mechanical Applications (3) Case studies analysis and selection of structural and mechanical systems, investigating the conceptual integration of design and materials. Pretex 320, 342, Coreq 471, F.

244 Computer Applications in Design I (3) Advanced computer-aided design using three-dimensional modeling software, including rendering, techniques, visualization, and video. Pretex 321, F.

245 Computer Applications in Design II (3) Advanced computer-aided design using three-dimensional modeling software, including rendering, techniques, visualization, and video. Pretex 322, F.

246 Architectural History IV (3) Principles of architectural design and its influence on modern and contemporary design. Pretex 323, F.

247 Architectural History V (3) Principles of architectural design and its influence on modern and contemporary design. Pretex 324, F.

248 Architectural History VI (3) Principles of architectural design and its influence on modern and contemporary design. Pretex 325, F.

249 Architectural History VII (3) Principles of architectural design and its influence on modern and contemporary design. Pretex 326, F.

250 Architectural History VIII (3) Principles of architectural design and its influence on modern and contemporary design. Pretex 327, F.

251 Architectural History IX (3) Principles of architectural design and its influence on modern and contemporary design. Pretex 328, F.

252 Architectural History X (3) Principles of architectural design and its influence on modern and contemporary design. Pretex 329, F.

253 Architectural History XI (3) Principles of architectural design and its influence on modern and contemporary design. Pretex 330, F.

254 Architectural History XII (3) Principles of architectural design and its influence on modern and contemporary design. Pretex 331, F.

255 Architectural History XIII (3) Principles of architectural design and its influence on modern and contemporary design. Pretex 332, F.

256 Architectural History XIV (3) Principles of architectural design and its influence on modern and contemporary design. Pretex 333, F.

257 Architectural History XV (3) Principles of architectural design and its influence on modern and contemporary design. Pretex 334, F.

258 Architectural History XVI (3) Principles of architectural design and its influence on modern and contemporary design. Pretex 335, F.

259 Architectural History XVII (3) Principles of architectural design and its influence on modern and contemporary design. Pretex 336, F.

260 Architectural History XVIII (3) Principles of architectural design and its influence on modern and contemporary design. Pretex 337, F.

261 Architectural History XIX (3) Principles of architectural design and its influence on modern and contemporary design. Pretex 338, F.

262 Architectural History XX (3) Principles of architectural design and its influence on modern and contemporary design. Pretex 339, F.

263 Architectural History XXI (3) Principles of architectural design and its influence on modern and contemporary design. Pretex 340, F.

264 Architectural History XXII (3) Principles of architectural design and its influence on modern and contemporary design. Pretex 341, F.
484 Architecture and Preservation (6) Conservation, urban design projects responding to community needs, and interior design and housing majors. Prerequisites: 470. F. Bi.

485 Development and Design (6) Exploration of image making and design with the assistance of design and arts. Concepts of space, form, and material, and marketing of interior and architectural design. Application of financial feasibility models. Prerequisites: 472 and 470 or consent of Instructor. F.

486 Design of Sustainable Architecture (6) Architectural design involving concern for everyone. Consideration of energy conservation techniques, and use of renewable resources. Prerequisite: 470. F.

498 Fine Art Studies in Krakow (3) Studio meets in Krakow, Poland. Design studies responding to specific community conditions in an European city. Prerequisite: consent of instructor. May be repeated. Maximum 12 hours.

499 Visiting Artist Seminar (2) Study and discussion of contemporary art issues conducted by different visiting artists each semester. (Does not apply toward arthistory requirement.) May be repeated. Maximum 12 hours.

191 Introduction to Studio Art: Various Media (3) Individual sections for various artistic disciplines. For non-majors only. Course may be repeated. Maximum 12 hours.

215 Ceramics: Handbuilding (3) Introduction to basic throwing techniques. Successful completion required prior to registration for junior and senior courses. Prerequisite: 221 and 222. May be repeated. Maximum 12 hours.

251 Beginning Graphic Design 1 (3) Introduction to the field of graphic design. Visualproblem-solving. Survey of graphicdesign, tools, and production techniques. Prerequisite: 101 and 103. Non-majors only. Courses may be repeated, medium for two and three-dimensional art. Includes sheet forming, lamination, embossing, publishing, printing, cutting, and other related techniques. Prerequisite: 321. May be repeated. Maximum 12 hours.

260 Intermediate Design and Color (3) Further exploration of basic techniques of two-dimensional design with emphasis on color theory and technique. Prerequisites: 251 and 252. May be repeated. Maximum 12 hours.

262 Ceramic: Advanced Throwing (4) Continued, in depth investigation of ceramic form with emphasis on the development of individual direction. Prerequisites: 321 and 322. May be repeated. Maximum 12 hours.

299 Special Topics (3) Instructor-initiated course offered at discretion of department. Prerequisite: Determined by department for individual topic. May be repeated. Maximum 12 hours.

356 Graphic Design Production (3) Traditional and computer-generated techniques for the production of typical prints, posters, and promotional materials. Prerequisites: 251 and 252. Non-majors only. Courses may be repeated, medium for two and three-dimensional art. Includes sheet forming, lamination, embossing, publishing, printing, cutting, and other related techniques. Prerequisite: 321. May be repeated. Maximum 12 hours.

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

361 Intermediate Ceramic: Handbuilding (3) Introduction to basic throwing techniques. Successful completion required prior to registration for junior and senior courses. Prerequisite: 221 and 222. May be repeated. Maximum 12 hours.

ART DESIGN/GRAPHIC (136)

191 Introduction to Studio Art: Various Media (3) Individual sections for various artistic disciplines. For non-majors only. Courses may be repeated, medium for two and three-dimensional art. Includes sheet forming, lamination, embossing, publishing, printing, cutting, and other related techniques. Prerequisite: 321. May be repeated. Maximum 12 hours.

260 Intermediate Design and Color (3) Further exploration of basic techniques of two-dimensional design with emphasis on color theory and technique. Prerequisites: 251 and 252. May be repeated. Maximum 12 hours.

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361 Intermediate Ceramic: Handbuilding (3) Introduction to basic throwing techniques. Successful completion required prior to registration for junior and senior courses. Prerequisite: 221 and 222. May be repeated. Maximum 12 hours.

ART CERAMICS (135)

101 Introduction to Studio Art: Various Media (3) Individual sections for various artistic disciplines. For non-majors only. Courses may be repeated, medium for two and three-dimensional art. Includes sheet forming, lamination, embossing, publishing, printing, cutting, and other related techniques. Prerequisite: 321. May be repeated. Maximum 12 hours.

222 Ceramics: Throwing (3) Introduction to throwing, glazing, clay preparation and firing. Prerequisite: 101 and 103. Prerequisites: 251 and 252. Non-majors only. Courses may be repeated, medium for two and three-dimensional art. Includes sheet forming, lamination, embossing, publishing, printing, cutting, and other related techniques. Prerequisite: 321. May be repeated. Maximum 12 hours.

230 Ceramics: Special Topics (3) Student initiated projects, and individual direction. Successful completion required prior to registration for junior and senior courses. Prerequisite: 221 and 222. May be repeated. Maximum 12 hours.

321 Ceramics: Handbuilding II (3) Continued investigation of throwing and basic throwing techniques. Successful completion required prior to registration for junior and senior courses. Prerequisite: 221. May be repeated. Maximum 12 hours.

322 Ceramics: Advanced Throwing (4) Continued, in depth investigation of ceramic form with emphasis on the development of individual direction. Prerequisites: 321 and 322. May be repeated. Maximum 12 hours.

361 Intermediate Ceramic: Handbuilding (3) Introduction to basic throwing techniques. Successful completion required prior to registration for junior and senior courses. Prerequisite: 221 and 222. May be repeated. Maximum 12 hours.
ART DRAWING (137)

491 Introduction to Studio Art (4) Media basics. Students may be required to secure permission from an instructor. May be repeated. Maximum 12 hours.

492 Drawing: Life Drawing (4) Development of an understanding of the human body and its expression in two dimensions. Prerequisites: Completion of 191, or concurrent enrollment in 191. May be repeated. Maximum 12 hours.

493 Drawing: Figure Composition (4) Introduction to techniques of developing and understanding the composition of the human figure. Prerequisites: Completion of 191 or concurrent enrollment in 191. May be repeated. Maximum 12 hours.

494 Individual Problems (5) Prerequisite: Consent of instructor. May be repeated. Maximum 12 hours.

ART EDUCATION (139)

171 Introduction to Twentieth Century Art (3) History of Western and non-Western art from the beginning of the 20th century. Prerequisites: Completion of 201, and either 202 or 203. May be repeated. Maximum 12 hours.

238 Modern and Contemporary Art (3) Examination of the work of artists from the 19th and 20th centuries, in the various major art historical movements. Prerequisites: Completion of 191. May be repeated. Maximum 12 hours.

316 Western Art History (3) Development of the study of art in Europe from prehistoric times to the present. Prerequisites: Completion of 201. May be repeated. Maximum 12 hours.

ART HISTORY (139)

171 Introduction to Twentieth Century Art (3) History of Western and non-Western art from the beginning of the 20th century. Prerequisites: Completion of 201, and either 202 or 203. May be repeated. Maximum 12 hours.

229 The Renaissance (3) Development of the study of art in Europe from prehistoric times to the present. Prerequisites: Completion of 201. May be repeated. Maximum 12 hours.

232 Western Art History (3) Development of the study of art in Europe from prehistoric times to the present. Prerequisites: Completion of 201. May be repeated. Maximum 12 hours.
315 Watercolor II (4) Individual expression with varied water-based media on paper. Prereq: 213 and 318 or consent of instructor. May be repeated. Maximum 12 hours.

Watercolor Portfolio Review (0) Review of prior work in watercolor. Successful completion required prior to registration for senior and capstone courses. Consists of presentation. Satisfactory/No Credit only.

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Watercolor Portfolio Review (0) Review of prior work in watercolor. Successful completion required prior to registration for senior and capstone courses. Consists of presentation. Satisfactory/No Credit only.
ART ARROWMONT PI BETA PHI SCHOOL OF ARTS AND CRAFTS

331 Special Topics (0-4) (B) Lecture or instruction—introduced course offered by permission of department. May be repeated.

120 Drawing (6-0) Beginning to intermediate. May be repeated.

200 Ceramics (6-0) Beginning to intermediate. May be repeated.

260 Fibers (6-0) Beginning to intermediate. May be repeated.

240 Painting (6-0) Beginning to intermediate. May be repeated.

220 Photography (6-0) Beginning to intermediate. May be repeated.

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

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

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

400 Special Topics (2-4) Lecture or instruction—introduced course offered at discretion of department. May be repeated.

391 Wood (6-0) Beginning to intermediate. May be repeated.

390 Special Topics (6-0) Beginning to intermediate. May be repeated.

380 Commencement (6-0) Beginning to intermediate. May be repeated.

370 Wood (6-0) Intermediate to advanced. May be repeated.

360 Ceramic (6-0) Intermediate to advanced. May be repeated.

350 Photography (6-0) Intermediate to advanced. May be repeated.

340 Painting (6-0) Intermediate to advanced. May be repeated.

330 Ceramics (6-0) Intermediate to advanced. May be repeated.

320 Fabric (6-0) Intermediate to advanced. May be repeated.

310 Composing (6-0) Intermediate to advanced. May be repeated.

300 Wood (6-0) Intermediate to advanced. May be repeated.

ASIAN LANGUAGES (144)

131-132 Elementary Chinese I, II (6,6) May be taken in sequence. F, Sp

151-152 Elementary Japanese I, II (6,6) May be taken in sequence. F, Sp

161-162 Elementary Persian (4,4) Taped language program. Must be taken in sequence.

171-172 Elementary Modern Standard Arabic I, II (6,6) Taped language program. Must be taken in sequence.

181-182 Elementary Modern Hebrew I, II (4,4) Taped language program. Must be taken in sequence.

191-192 Elementary Modern Turkish I, II (4,4) Taped language program. Must be taken in sequence.

193-194 Elementary Modern Jordanian Arabic (4,4) Taped language program. Must be taken in sequence.

200 Special Topics (2-4) (B) Lecture or instruction—introduced course offered at discretion of department. May be repeated.

231 Advanced Chinese I, II (4,4) Prereq: 231 or equivalent or consent of instructor. Must be taken in sequence. Winter, Spring.

311-312 Advanced Japanese I, II (4,4) Includes conversation, oral, including exams, but grammatical analysis is mandatory in intermediate level. Winter, Spring.

321 Readings in Chinese Literature (2) Prereq: Mastery of intermediate-level Chinese or consent of instructor. May be repeated. Maximum 3 hours.

341 Readings in Japanese Literature (2) Prereq: Mastery of intermediate level of Japanese or consent of instructor. May be repeated. Maximum 9 hours.

351-352 Advanced Japanese I, II (4,4) Includes conversation, oral, including exams, but grammatical analysis is mandatory in intermediate level. Winter, Spring.

411 Interdisciplinary Orientation in the Humanities (2) Prereq: Consent of instructor. May be repeated for credit with consent of department. Maximum 9 hours.

421-422 Interdisciplinary Modern Hebrew I, II (4,4) Taped language program. Must be taken in sequence. Enrollment by permission of instructor.


432 Articulation Disorders (3) Etiology, diagnosis and treatment.

433 Observation of Clinical Practice (1) Prereq: 320, 330. May be repeated for credit. Maximum 9 hours.

434 Clinical Practice in Speech-Language Pathology (4) Prereq: 420. Courses of Instruction

155 151-152 Introductory Astronomy with Laboratory (4,4) Survey course, with accompanying laboratory, teaching the components, structure and dynamics of the universe and introducing the basic vocabulary of astronomy. Components of the solar system including results from international space probes; characteristics of celestial objects and understanding the interplay of energy. Stellar and interstellar matter, and planetary systems. Principles for interpretation of astrophysical observations are reviewed in laboratory. Must be taken in sequence. 3 hours lecture, 2 hours laboratory. Only one of the three sequences 151-152, 161-162, or 217-218 may be taken for credit.

153-154 Introductory Astronomy (4,4) Survey course, with accompanying laboratory, teaching the components, structure and dynamics of the universe and introducing the basic vocabulary of astronomy. Components of the solar system including results from international space probes; characteristics of celestial objects and understanding the interplay of energy. Stellar and interstellar matter, and planetary systems. Principles for interpretation of astrophysical observations are reviewed in laboratory. Must be taken in sequence. 3 hours lecture, 2 hours laboratory. Only one of the three sequences 151-152, 161-162, or 217-218 may be taken for credit.

161-162 Introductory Astronomy with Laboratory (4,4) Survey course, with accompanying laboratory, teaching the components, structure and dynamics of the universe and introducing the basic vocabulary of astronomy. Components of the solar system including results from international space probes; characteristics of celestial objects and understanding the interplay of energy. Stellar and interstellar matter, and planetary systems. Principles for interpretation of astrophysical observations are reviewed in laboratory. Must be taken in sequence. 3 hours lecture, 2 hours laboratory. Only one of the three sequences 151-152, 161-162, or 217-218 may be taken for credit.

165-166 Introductory Astronomy (4,4) Survey course, with accompanying laboratory, teaching the components, structure and dynamics of the universe and introducing the basic vocabulary of astronomy. Components of the solar system including results from international space probes; characteristics of celestial objects and understanding the interplay of energy. Stellar and interstellar matter, and planetary systems. Principles for interpretation of astrophysical observations are reviewed in laboratory. Must be taken in sequence. 3 hours lecture, 2 hours laboratory. Only one of the three sequences 151-152, 161-162, or 217-218 may be taken for credit.

185-186 Introductory Astronomy with Laboratory (4,4) Survey course, with accompanying laboratory, teaching the components, structure and dynamics of the universe and introducing the basic vocabulary of astronomy. Components of the solar system including results from international space probes; characteristics of celestial objects and understanding the interplay of energy. Stellar and interstellar matter, and planetary systems. Principles for interpretation of astrophysical observations are reviewed in laboratory. Must be taken in sequence. 3 hours lecture, 2 hours laboratory. Only one of the three sequences 151-152, 161-162, or 217-218 may be taken for credit.

185-186 Introductory Astronomy (4,4) Survey course, with accompanying laboratory, teaching the components, structure and dynamics of the universe and introducing the basic vocabulary of astronomy. Components of the solar system including results from international space probes; characteristics of celestial objects and understanding the interplay of energy. Stellar and interstellar matter, and planetary systems. Principles for interpretation of astrophysical observations are reviewed in laboratory. Must be taken in sequence. 3 hours lecture, 2 hours laboratory. Only one of the three sequences 151-152, 161-162, or 217-218 may be taken for credit.
491 Foreign Study (1-15)
492 Off-Campus Study (1-15)
of various minority groups, of different ethnic and class
493. Speech and language differences of children required. Prereq: 320 or consent of instructor.
494. May be repeated. Maximum six hours.
445 Clinical Practice in Audiology (1-4) Prereq: 473
440 Voice Disorders (3) Etiology, diagnosis, and treat-
mendments. Prerequisites: consent of instructor. Satisfactory Credit Only may be repeated.
330 Animal Development and Embryology (3) Prin-
esciences, or developmental biology concentrated in
ogy, genetics, and evolution with emphasis on their impli-
cations for human society. (Same as Anthropology 306.)
302-303 Colloquy on Biological Research (1,1) Pre-
are taken in any sequence or combination with 220 and 230.
394 Seminar on Research Skills (3) Technical and
cognitive skills necessary for participation in biological research. Lectures, presentations and small
230 Human Physiology (5) Fundamentals of human
biodiversity and evolution with emphasis on their impli-
cations for human society. (Same as Anthropology 306.)
321 Introductory Plant Physiology (4) Organismal
biology, and selected topics in cellular, molecular, and
biology, cell biology, genetics, neuri-
"biology, cell biology, genetics, neursciences, or development biology concentrated in time and subject matter. Consult departmental binder for topics offered. Prereq: Asm 101. May be repeated. Maximum 4 hrs may go toward major.
"biology, cell biology, genetics, neursciences, or development biology concentrated in time and subject matter. Consult departmental binder for topics offered. Prereq: Asm 101. May be repeated. Maximum 4 hrs may go toward major.
420 Advanced Topics in Biochemistry (1) Selected
421 Cell and Tissue Structure and Function (4) Prereq:
449 Laboratory in Physiology (2) Prereq or coreq:
462 Junior/Senior Seminar (1) Lecture/discussion on
220 General Genetics (4) Classical and modern prin-
ciples of heredity. Prereq: 110-120, or Botany 110-120, or the equivalent of 2 years of high
school biology and satisfactory ACT scores. Chemistry 120-130. 3 hours. Lecture, 1 hour discussion. Each may be taken in any sequence or combination with 210 and 230.
221 General Botany (4) Relations between organisms and
their environment, including human environmental problems. Prereq: 110-120 or Botany 110-120, or
201-118 or the equivalent of 2 years of high school biology and satisfactory ACT scores. Chemistry 120-130. 3 hours. Lecture, 1 hour discussion. Each may be taken in any sequence or combination with 210 and 230.
201-118 or the equivalent of 2 years of high school biology and satisfactory ACT scores. Chemistry 120-130. 3 hours. Lecture, 1 hour discussion. Each may be taken in any sequence or combination with 210 and 230.
395 Laboratory Practicum Rotation (3) Rotationsof
430-340 Theoretical and Practical Studies in Biology Schol-
ogy Scholars. Required of (but not limited to) Threshold Biology Scholars. Prereq: 8 hours of 200 or above and 34.4. 
394 Seminar on Research Skills (3) Technical and
cognitive skills necessary for participation in biological research. Lectures, presentations and small
230 General Genetics (4) Classical and modern prin-
ciples of heredity. Prereq: 110-120, or Botany 110-120, or the equivalent of 2 years of high
school biology and satisfactory ACT scores. Chemistry 120-130. 3 hours. Lecture, 1 hour discussion. Each may be taken in any sequence or combination with 210 and 230.
221 General Botany (4) Relations between organisms and
their environment, including human environmental problems. Prereq: 110-120 or Botany 110-120, or
201-118 or the equivalent of 2 years of high school biology and satisfactory ACT scores. Chemistry 120-130. 3 hours. Lecture, 1 hour discussion. Each may be taken in any sequence or combination with 210 and 230.
201-118 or the equivalent of 2 years of high school biology and satisfactory ACT scores. Chemistry 120-130. 3 hours. Lecture, 1 hour discussion. Each may be taken in any sequence or combination with 210 and 230.
395 Laboratory Practicum Rotation (3) Rotationsof
430-340 Theoretical and Practical Studies in Biology Schol-
ogy Scholars. Required of (but not limited to) Threshold Biology Scholars. Prereq: 8 hours of 200 or above and 34.4. 
394 Seminar on Research Skills (3) Technical and
cognitive skills necessary for participation in biological research. Lectures, presentations and small
230 General Genetics (4) Classical and modern prin-
ciples of heredity. Prereq: 110-120, or Botany 110-120, or the equivalent of 2 years of high
school biology and satisfactory ACT scores. Chemistry 120-130. 3 hours. Lecture, 1 hour discussion. Each may be taken in any sequence or combination with 210 and 230.
301 Introduction to Chemical Research (1) Participating in laboratory research and conducting experiments, interpreting results, and formulating hypotheses. Credits may not be applied toward a major or minor in chemistry. Not a substitute or prerequisite for CHEM 200. Lecture and laboratory courses providing students with an overview of chemical laboratory and research techniques. Involves laboratory, statistical, and computational aspects of research. Students gain practical experience in labs at WATK. Permission: Communications 200. 275

212 Radio-TV News (3) Writing and reporting for electronic media. Lecture and laboratory courses. Topics include writing news packages, interpreting and writing news reports, and producing electronic media. 275 and Communications 200. 300

213 Radio-TV Production (3) Principles of operation and development with emphasis on best communication techniques. Geographical, historical, and operational aspects of U.S. radio and television systems. Includes writing, editing, and producing news packages. Prerequisite: 275. 10 hours and 4 lab.

214 Radio-TV Sales (3) Problems and practices of radio, television, and cable sales. Complex sales in electronic media with emphasis on the use of ratings and personal selling. Prerequisite: 275 and Communications 200. 300

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219 Radio-TV Sales (3) Problems and practices of radio, television, and cable sales. Complex sales in electronic media with emphasis on the use of ratings and personal selling. Prerequisite: 275 and Communications 200. 300

220 Business Campus Planning and Placement (1) Career opportunities in business. Making the career choice, determining the specific field, finding the career, using the Placement Office. Successfully No Credit only. Prerequisite: 275. 10 hours and 1 lab. 300

221 Business Career Planning and Placement (1) Career opportunities in business. Making the career choice, determining the specific field, finding the career, using the Placement Office. Successfully No Credit only. Prerequisite: 275. 10 hours and 1 lab. 300

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230 Business Career Planning and Placement (1) Career opportunities in business. Making the career choice, determining the specific field, finding the career, using the Placement Office. Successfully No Credit only. Prerequisite: 275. 10 hours and 1 lab. 300

231 International Business (3) Survey of international business operations in major geographic areas, emphasizing new developments, international environments, including cultural, political, economic, and legal characteristics. Prerequisite: Economics 201.
405. Research in Chemistry (3) Open to senior majors on topics covered in 350-360. Coreq: 360. One 5-hour lab.
406 Research in Chemistry (3) Open to seniors with consent of department head. Written reports required. Prereq: senior standing or consent of instructor. Coreq: Senior standing in chemistry. May be repeated. Maximum 9 hours.
407 Topics in the Development of Chemistry (3) Historical development of topics such as the atomic theory, chemistry industrialization of population, energy, and food. Subject matter may vary from semester to semester. Prereq: consent of instructor. May be repeated with consent of instructor. Prereq: permission of the instructor. May be repeated with consent of instructor.
409 Advanced Chemical Experimentation (3) Lab and their reactions. Reaction mechanisms, synthetic and theoretical implications. Prereq: consent of instructor. May be repeated with consent of instructor.
410 Analytical Chemistry Laboratory (1) Experiments on topics discussed in 360-366. Coreq: 360. One 4-hour lab.
410 Analytical Chemistry Laboratory (1) Experiments on topics discussed in 360-366. Coreq: 360. One 4-hour lab.
410 Analytical Chemistry (3) Fundamentals of titrimetric analysis, potentiometry, elementary techniques of instrumental analysis. Laboratory, on equipment, and solvent extraction. Prereq: 130 or 131 or 138. SP
410 Analytical Chemistry (3) Principles and procedures of quantitative methods. Prereq: consent of instructor. Introduces methods and applications of quantitative methods for solving chemical problems. Prereq: 130 or 131 or 138.
411 Introductory Polymer Chemistry (3) Fundamental principles relating to the chemistry of macromolecules. Selected topics in polymer science. Sequence of course material will be determined by instructor. Prereq: 360. Coreq: 405 or 406.
412 Radioactivity and Its Application (2) Radioactive material, nuclear medicine, applications of radioactivity. Prereq: consent of instructor. May be repeated with consent of instructor.
413 Introduction to Early Childhood Education (3) History, philosophy, curricular issues, socio-political influences, and current thought. Prereq: 130 or 131 or 138. SP
413 Introduction to Early Childhood Education (3) History, philosophy, curricular issues, socio-political influences, and current thought. Prereq: 130 or 131 or 138. SP
416 Parent Education (3) Families in Middletown and Later Adulthood (3) Adult life in society from youth through adulthood, adjustment to environmental changes through adulthood, and the development of healthy aging. Prereq: consent of instructor. May be repeated with consent of instructor.
417 Human Sexuality (3) Survey of human sexual behavior. Prereq: consent of instructor. May be repeated with consent of instructor.
418 Exceptional Children (3) Individualized curriculum plan based on knowledge of individual characteristics and educational needs. Prereq: consent of instructor. May be repeated with consent of instructor.
419 Family and Family Studies (3) Family stress reduction and management in classroom. Prereq: consent of instructor. May be repeated with consent of instructor.
420 Early Childhood Education I: Environments for Children (6) Classroom management, behavior guidance, development of discipline, and socialization. Prereq: consent of instructor. May be repeated with consent of instructor. Coreq: EDC 309. SP
421 Early Childhood Education II: Curricula and Program Development for Young Children (6) Engaging early learning programs for young children. Prereq: consent of instructor. May be repeated with consent of instructor. Coreq: EDC 351. SP
422 Early Childhood Education III: The Inclusive Classroom (3) Gender equity, multicultural perspectives, and special needs. Prereq: consent of instructor. May be repeated with consent of instructor.
423 Family and Family Studies (3) Family stress reduction and management in classroom. Prereq: consent of instructor. May be repeated with consent of instructor.
424 Directed Study in Child and Family Studies (1-3) Individual learning experience arranged for students under supervision of faculty. Prereq: may be repeated with consent of instructor. Coreq: Consent of instructor. SP
425 Student Teaching (1) Practicums for students currently enrolled in the Early Childhood Education program and consent of instructor. Coreq: Consent of instructor. SP
427 Family Communication (3) Dynamics of interaction within family systems, marriage, and parent-child relationships. Study of verbal and nonverbal communication processes, patterns and tasks. Prereq: 220 or consent of instructor. SP
428 Exceptional Children (3) Individualized curriculum plan based on knowledge of individual characteristics and educational needs. Prereq: consent of instructor. May be repeated with consent of instructor.
429 Family and Family Studies (3) Family stress reduction and management in classroom. Prereq: consent of instructor. May be repeated with consent of instructor.
431 Radioactivity and Its Application (2) Radioactive material, nuclear medicine, applications of radioactivity. Prereq: consent of instructor. May be repeated with consent of instructor.
433 Family and Family Studies (3) Family stress reduction and management in classroom. Prereq: consent of instructor. May be repeated with consent of instructor.
435 Family Diversity (3) Cultural, social/ethnic, and gender issues. Prereq: consent of instructor. May be repeated with consent of instructor. Coreq: EDC 354 or 360.
436 Early Childhood Education I: Environments for Children (6) Classroom management, behavior guidance, development of discipline, and socialization. Prereq: consent of instructor. May be repeated with consent of instructor. Coreq: EDC 309. SP
437 Exceptional Children (3) Individualized curriculum plan based on knowledge of individual characteristics and educational needs. Prereq: consent of instructor. May be repeated with consent of instructor.
438 Early Childhood Education II: Curricula and Program Development for Young Children (6) Engaging early learning programs for young children. Prereq: consent of instructor. May be repeated with consent of instructor. Coreq: EDC 351. SP
439 Family and Family Studies (3) Family stress reduction and management in classroom. Prereq: consent of instructor. May be repeated with consent of instructor.
440 Directed Study in Child and Family Studies (1-3) Individual learning experience arranged for students under supervision of faculty. Prereq: may be repeated with consent of instructor. Coreq: Consent of instructor. SP
443 Family and Family Studies (3) Family stress reduction and management in classroom. Prereq: consent of instructor. May be repeated with consent of instructor.
445 Family Diversity (3) Cultural, social/ethnic, and gender issues. Prereq: consent of instructor. May be repeated with consent of instructor. Coreq: EDC 354 or 360.
447 Family Communication (3) Dynamics of interaction within family systems, marriage, and parent-child relationships. Study of verbal and nonverbal communication processes, patterns and tasks. Prereq: 220 or consent of instructor. SP
448 Exceptional Children (3) Individualized curriculum plan based on knowledge of individual characteristics and educational needs. Prereq: consent of instructor. May be repeated with consent of instructor.
449 Family and Family Studies (3) Family stress reduction and management in classroom. Prereq: consent of instructor. May be repeated with consent of instructor.
450 Early Childhood Education I: Environments for Children (6) Classroom management, behavior guidance, development of discipline, and socialization. Prereq: consent of instructor. May be repeated with consent of instructor. Coreq: EDC 309. SP
451 Early Childhood Education II: Curricula and Program Development for Young Children (6) Engaging early learning programs for young children. Prereq: consent of instructor. May be repeated with consent of instructor. Coreq: EDC 351. SP
452 Early Childhood Education III: The Inclusive Classroom (3) Gender equity, multicultural perspectives, and special needs. Prereq: consent of instructor. May be repeated with consent of instructor.
453 Family and Family Studies (3) Family stress reduction and management in classroom. Prereq: consent of instructor. May be repeated with consent of instructor.
454 Directed Study in Child and Family Studies (1-3) Individual learning experience arranged for students under supervision of faculty. Prereq: may be repeated with consent of instructor. Coreq: Consent of instructor. SP
455 Student Teaching (1) Practicums for students currently enrolled in the Early Childhood Education program and consent of instructor. Coreq: Consent of instructor. SP
457 Family and Family Studies (3) Family stress reduction and management in classroom. Prereq: consent of instructor. May be repeated with consent of instructor.
459 Family Diversity (3) Cultural, social/ethnic, and gender issues. Prereq: consent of instructor. May be repeated with consent of instructor. Coreq: EDC 354 or 360.
460 Directed Study in Child and Family Studies (1-3) Individual learning experience arranged for students under supervision of faculty. Prereq: may be repeated with consent of instructor. Coreq: Consent of instructor. SP
**COMPUTER SCIENCE (266)**

105 Introduction to Computing and Computers (3) Basic concepts of computer hardware and software, microcomputer systems, and networking. May not be used to satisfy requirements for a Computer Science major or minor.

106 Introduction to Computer Science (4) Problem solving and algorithmic thinking, basic data structures, problem solving good programming habits, building abstractions with procedures and data, and programming in a modern computer language. Students who have received credit for 110 or 115 may not also receive credit for 106 except by consent of the instructor.

111 Computer Organization (3) Number systems, internal representation of numbers in computers, hardware components, hardware organization, introduction to assembly language, microprogramming and control units. Computing with register machines, introduction to digital circuits. Prerequisite: 106. 2 hour lab required.

121 Data Structures (3) Structured programming, data abstraction, linked lists, trees, stacks, queues, algorithms, file types, 3 hour lab required. Prerequisite: 102.

139 Computer Graphics and Graphical Computing (3) Computer hardware and software used in the electronic production of documents, presentations, form letters, graphics, reports, and graphs. Prerequisite: 111 and 112. Laboratory.

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

232 Fundamental Algorithms (3) Analysis, design, implementation and evaluation of fundamental algorithms, such as sorting and searching, and their data structures. Prerequisites: CS 111 and CS 112. 2 hour lab required.

2410 Electronic Graphics and Graphical Computing (3) Graphics utilities, presentation, portfolio creation, presentation, analysis, and design. Laboratory.

240 Foundations of Software Engineering (3) Principles of design and verification of computer software. Principles of program design and verification of computer software. Prerequisites: CS 111, 112, 313. 3 hour lab required.

260 System Programming (3) Introduction to user-level systems programming. File control, process control, memory management, operating systems, network programming. Prerequisites: CS 303. 3 hour lab required.

271 Numerical Algorithmic Methods (3)


311 Senior Thesis (1) Directed research in an upper-division topic. May be repeated. Maximum 6 hours. Prerequisite: completion of core curriculum or consent of instructor.

410 Advanced Topics in Machine Intelligence (3) Topics such as learning, reasoning, probabilistic systems, neural network models, and natural language processing. Computer program research. May be repeated. Maximum 9 hours. Prerequisite: completion of core curriculum or consent of instructor.

420 Advanced Topics in Hardware Systems (3) Topics such as architectures, processor design, multiprocessor systems, computer microarchitecture, computer organization and design, microprogramming and control units, computer complexity, and computer modeling and simulation of physical systems. Enthusiasm for faculty research may be required.

490 Advanced Topics in Scientific Computation (3) Topics such as numerical methods, supercomputers and supercomputer modeling and simulation of physical systems. Enthusiasm for faculty research may be required.

**COUNSELOR EDUCATION AND COUNSELING PSYCHOLOGY (267)**

205 Student Development (3) Practice in acquiring knowledge and skills in areas such as interpersonal relations, career decision-making, communication and self-awareness, individual and small-group formats. May be repeated. Maximum 6 credit hours. S/NC grading.


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

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

311 Computer Organization (3) Number systems, internal representation of numbers in computers, hardware components, hardware organization, introduction to assembly language, microprogramming and control units. Computing with register machines, introduction to digital circuits. Prerequisite: 106. 2 hour lab required.

412 Senior Thesis 1 (3) Continuation of 411. Writing technology and research. Students begin writing a senior thesis. Prerequisite: 111 and 112 and 311.

431 Personality and Mental Health (3) Perspectives of mental health with applications to education and mental health institutions. E

432 Independent Study (1) Independent study in area of student's primary interest. Directed by Computer Science faculty. May be repeated. Maximum 3 hours may be applied to the major. Prerequisite: consent of instructor.

480 Special Topics in Computer Science (1-3) May be repeated. Maximum 4 hours.

481 Most of student's primary interest. Directed by Computer Science faculty. May be repeated. Maximum 3 hours may be applied to the major. Prerequisite: consent of instructor.

**EDUCATION (268)**


**DANCE (274)**

230 Jazz: Level 1 (2) Instruction and practice in intermediate level jazz dance techniques. May be repeated. Maximum 4 hours.

291 Practical Dance Performance (2-2) Participation in practical dance performance in various areas. Participation through audition only. May be repeated. Maximum 4 hours.

310 Ballet: Level I (2) Instruction and practice in elementary/modern dance technique. May be repeated. Maximum 4 hours.

320 Jazz: Level 1 (2) Instruction and practice in elementary/modern dance technique. May be repeated. Maximum 4 hours.

330 Tap: Level I (2) Instruction and practice in elementary/modern dance technique. May be repeated. Maximum 4 hours.


482 Independent Study (1-3) Independent study in an area of student's primary interest. Directed by Computer Science faculty. May be repeated. Maximum 9 hours.
445 Composition II (2) Choreographic skills emphasized consent of instructor. May be repeated. Maximum 16. 

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

435 Jazz (Level II) (2) Instruction and practice in advanced jazz techniques. Available to dance majors and minors with consent of instructor. May be repeated. Maximum 16. 

434 Composition III (3) Instruction and practice in advanced modern dance techniques. Available to majors and minors with consent of instructor. May be repeated. Maximum 16 hours. 

415 Composition I (2) Choreographic skills emphasized form, content and music. Pre requisite: 4 hours credit in upper level modern dance technique (330 or 430) or approval of instructor. 

410 Ballet: Level I (1) Instruction and practice in professional areas of dance. May be repeated. 

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

380 Modern: Level I (2) Instruction and practice in modern dance techniques. Available to dance majors and minors or with consent of instructor. 

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

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

270 Ethnology and Sociobiology (3) Emphasis on diversity of life forms and adaptation to the environment. Lectures for applications, including societal and economic consequences of population growth. 

271 Gross Anatomy (3) Gross and microscopic anatomy of the human. Credit may not be applied toward Biology and human anatomy course requirements. Pre requisite: EEB 260 recommended. 2 hours and 2 labs. (Same as BIOC 205.) 

260 General Ecology and Evolutionary Biology (1-4) Credit vary depending on student interest. Instructor consent required. Pre requisite: None. 

255 Marine Ecology (3) Evolution, classification, biogeography, and ecosystem levels. Pre requisite: Biology 220, 230. (Same as Ecology 484.) 

254 Introduction to Geology (4) Physical, chemical, biological, and geologic processes of the earth, including plate tectonics, volcanic activity, ocean floor processes, marine sedimentation, biogeochemical cycles, and future wars. 

240 Comparative Vertebrate Biology (4) Organs, phylogeny and developmental biology. Laboratory involves dissection of skull, eye, and selected vertebrates. 2 hours and 2 lab. 

230 Comparative Invertebrate Biology (4) Origins, phylogeny, and developmental biology. Emphasis on invertebrates with emphasis on diversity of life forms and adaptations to diverse environments. 

220 Ethnology and Sociobiology (3) Emphasis course. An oral presentation and a referenced selection of reading materials required. 

202-203 Ecology and Evolutionary Biology (2) Introduction to the study of energy and matter in ecosystems. Weekly field trips. Pre requisite: 201. Writing emphasis course. 

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

190 Honors Field Experience (1-8) Course for students of superior ability and interest. Students accepted on the basis of their records. 

183 Intermediate Microeconomics (3) Theory of consumer behavior, theory of production and costs, price and demand, costs of evaluation, market models, national income and employment theory, money and bank, monetary and fiscal policy, debt, and international economics. 


171 Economic Development (Third World) (3) Trade development, welfare strategies and international economic systems. Emphasis on developing countries. Pre requisite: 201. Writing emphasis course. 


165 Economic History of the North Atlantic Community (2) Origins of capitalism, mercantilism, industrial civilization, development of factory system, rise of universal labor and international trade, capital and credit markets, business cycles, monetary and fiscal policy, monetary and fiscal policy, debt, and international economics. 

154 Survey of Labor and Business (3) Nontechnical treatment. May not be substituted for Economics 201. 


151 Monetary Economics (3) Role of money in the economy, financial institutions and markets, public policy questions, demand and supply, theory of wage differentials, unemployment, unions in the private sector, investment in individuals, education and training, mobility. Pre requisite: 201. 


141 Urban and Regional Economics (3) Overview of the economics of cities. Theory of industrial and agricultural location and migration, economic basis for land use patterns, central cities, and urban form, re-
Courses of Instruction

general and urban structure, growth, and methods of analysis, examination of urban problems. Prereq: 201.

381 Econometrics (3) Methods of econometric estimation, forecasting and testing of economic relationship, and introduction to experimental method. Credit/no credit. Prereq: 121-122 or 141-142.

400 Special Topic (3) Topics vary. Prerequisites determined by department each time course is offered. Numbers will be given to print semester course list. May be repeated when topics vary. Maximum 8 hours. Prereq: 201.

413 Macroeconomics: Fluctuations (3) Analysis of historical methods, data of balancing monetary and fiscal policies, and the role of monetary and fiscal policies in the aggregate economy. Prereq: 213 or consent of instructor. Writing emphasis course.

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


428 Industrial Organization Analysis (3) Monopoly and competition in U.S. economy, interindustry and international flows of resources. Benefits and costs of development of natural resources and impacts of growth on environment. Prereq: Writing-emphasis course.


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

501 Introduction to Social Studies Education (3) Education as a profession; recent trends in social science and environment education. Prereq: Consent of instructor. Writing emphasis course.

502 Introduction to Mathematics Education (3) Analysis of teaching mathematics tools (e.g., calculators, models, multimedia, etc.) to major topics of elementary and secondary education. Prereq: 201. May be repeated when topics vary. Maximum 9 hours. Prereq: 201.

504 Honors Seminar (3) Topics vary. Senior paper required. Prereq: Senior standing, 3.0 GPA in GPA in major. May be repeated when topics vary. Maximum 9 hours. Prereq: 201.

505 Independent Study (1-8) Opportunity for qualified students to undertake extended study in major areas of interest. Prereq: Senior standing, 3.0 GPA in GPA in major. May be repeated when topics vary. Maximum 9 hours. Prereq: 201.

506 Analysis of Economic Problems (3) Study of the effects of economic policy on monetary and fiscal policies of economics from a social-oriented perspective. Students are required to learn from all fields of economics and other disciplines where appropriate, and work as team to develop economic analyses of selected economic problems facing modern society. Prereq: Senior standing and completion of Economics 311, 313 and six other hours of upper division economics. Writing emphasis course.

ENGINEERING AEROSPACE (018)

345 Aerospace Engineering Instrumentation and Measurement Systems (3) covers all major systems, dynamic characteristics of instruments, statistical data treatment, transducer signal condition- ing; stress, pressure, temperature, and flow measure- ments. Prereq: ME 341, E 432.


422 Aerodynamics (3) Theory and design of aero- dynamic bodies for desired characteristics. Potential flow theory; viscous effects, compressibility effects, sub- sound, transonic, and supersonic airflow. Prereq: 370. F.

423 Viscous Flow (3) Boundary layer theory; laminar and turbulent flow, compressibility effects, numerical solution methods. Prereq: 422 or ME 444 or consent of instructor. Sp.


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

426 Introduction to Aerospace Design (2) Design a simple aerospace system, including economic and system analysis, optimization, design aesthet- ic and environmental considerations. Prereq: 351, 370, 376, Mech. E 344. F.

451 Structure and Control of a Complete Aircraft System including economic and technical aspects. Participation in design and system design emphasis course, including financial planning and design. Prereq: 351, 370, 376 and 432.

431 Mechanical Engineering/Aerospace Engineer- ing Senior Seminar (1) Review research on engineering ethics. Formal and presentation by students on engin- eering projects and by students on engineering projects. Prereq: Admission to Engineering/Aerospace.

449 Aerospace Engineering Laboratory (3) Laboratory for design and analysis of aerospace systems. Prereq: 201. F, Sp.


462 Field Experiences in Teaching (Secondary) (1) Field experiences in schools related to teaching and teacher roles. Prereq: Admission to Teacher Education Program. Satisfactory/No Credit only. Sp.

463 Field Experiences in Teaching (Secondary) (1) Field experiences in schools related to teaching and teacher roles. Prereq: Admission to Teacher Education Program. Satisfactory/No Credit only. Sp.

464 Field Experiences in Teaching (3) Field experiences in schools related to teaching and teacher roles. Prereq: Admission to Teacher Education Program. Satisfactory/No Credit only. Sp.

470 Problems in Improvement of Instruction (1-4) may include subject area conferences, workshops, or seminars. Prereq: Admission to Teacher Education Program. Prereq: 451.

471 Utilization of Instructional Media (3) Basic commu- nication process, need for instructional media, instruc- tional design, selection and utilization of topic media, and audio-visual production techniques. Credit/no credit. Prereq: Consent of instructor.

474 Teaching of Mathematics, Grades 7-12 (3) Produc- tion, selection, and production of textbooks and materials for teaching mathematics, teaching planning and evaluation and directed ob- servation in classroom. Prereq: Admission to Teacher Education Program. F.

476 Testing of Mathematics, Grades 8-12 (1) Exam- ination of testing principles, study of norms and score interpretation, and basic production skills needed for effective communication in the elementary class- room. Prereq: Consent of instructor. Writing-emphasis course.

494 Supervised Readings (1-3) Topic to be assigned. May be repeated when topics vary. Maximum 9 hours. Prereq: Consent of instructor. Writing-emphasis course.

495 Scientific Research in Mathematics (1) One- week seminar on recent developments in the field of mathematics. Prereq: Admission to Teacher Education Program. Prereq: 451.

496 Teaching Science Grades 7-12 (3) Methods, ma- terials, recent trends in science and environmental education of Computer-Aided Design and Drafting (CAD) is solving engineering geometry problems.
131 Statics (3) Vectors, forces and moments; equilib- 
rating force systems; free body diagrams, equilibrium, forces, moments and friction. Coreq: Math 141.

132 Dynamics (3) Kinematics, principles of motion, 
work, energy, impulse and momentum. Impact. Prereq: 121; Coreq: Math 142.

141 Mechanical Engineering Laboratory (3) Experimentation in mechanics. Prereq: 121; Coreq: Math 142.

142 Fluid Mechanics and Heat Transfer (4) Force, 
energy and frictional forces; flow in pipes, steam lines, nozzles, turbines and heat exchangers. Prereq: 141.

143 Chemical Engineering Laboratory (3) Chemical 

145 Fluid Flow and Heat Transfer (4) Force, 
energy and frictional forces; flow in pipes, steam lines, nozzles, turbines and heat exchangers. Lab. Prereq: Math 142.

146 Computer Engineering Applications (3) In- 
troduction to computer applications in chemical engineering. Lab. Prereq: Math 142, B503, C101, Chem 130.

147 Chemical Engineering Laboratory III (4) 
Computer laboratory exercises involving computer work- 

151 Introduction to Chemical Engineering (3) 
Introduction to chemical engineering. Prerequisite: Math 142.

152 Chemical Engineering Fundamentals (4) In- 
troduction to chemical engineering fundamentals. Prerequisite: Math 142.

153 Chemical Engineering Laboratory III (4) 

154 Mass Transfer and Separation Processes (3) 
Differential and integral calculus; mass and energy balance on systems, graphs and computer methods to design of stage separa-

155 Chemical Engineering Laboratory IV (3) 
Laboratory exercises on optimization of chemical processes, theory and practice of operating and maintaining such equipment. Lab. Prereq: Math 142, B503, C101, Chem 130.

161 Process Dynamics and Control (4) Introduction to 
process modeling and industrial control system design. Prereq: Math 142, B503, C101, Chem 130.

162 Chemical Engineering Laboratory V (3) Labora-

163 Computer Applications in Chemical Engineer-
ing (3) Introduction to computer applications in chemical engi-
neering problems. Prereq focus on the application of computers in studying mathematical models, such as computer simulations, statistics, spreadsheets, graphics and pro-
cess modeling.

435 Introduction to Chemical Engineering Process 
Economics (3) Concepts and methods of cost assum-
ing, debt and equity financing, discounted cash flow methods, and modeling of production cost functions. Includes case study and the use of computer methods for financial and sensitivity analyses. Prereq: Upper division standing in engineering.

436 Separation Process Technology (3) Nucleo-
phobic distillation, theory and computer simulation; humidification, specialized heat transfer; principles of heat exchanger design and analysis. Prereq: 435.

437 Heat and Mass Transfer (3) Thermal conduc-
tion, convection, radiation and design of heat exchangers. Prereq: 435.

438 Chemical Reactor Fundamentals (3) Heat and mass transfer, heat and mass transfer processes, the analysis of chemical and biological reactions, application to kinetic evaluation, molecular diffusion, including simula-
tion of reactor transfer and chemical reaction. Prereq: 435.

439 Advanced Process Control and Optimization (3) 
Principles and applications of process control and optimization. Prereq: Math 142, B503, C101, Chem 130.

440 Chemical Engineering Laboratory IV (3) 
Computer laboratory exercises involving computer work- 

441 Advanced Process Control and Optimization (3) 
Principles and applications of process control and optimization. Prereq: Math 142, B503, C101, Chem 130.

442 Construction Methods and Equipment (3) 
Principles and applications of construction methods and equipment. Prereq: Math 142, B503, C101, Chem 130.

443 Geological Engineering (3) Principles and ap-

445 Separation Process Technology (3) Nucleo-
phobic distillation, theory and computer simulation; humidification, specialized heat transfer; principles of heat exchanger design and analysis. Prereq: 435.

447 Transport Phenomena (3) Nucleophob- 
ic distillation, theory and computer simulation; humidification, specialized heat transfer; principles of heat exchanger design and analysis. Prereq: 435.

449 Process Control and Optimization (3) 
Principles and applications of process control and optimization. Prereq: Math 142, B503, C101, Chem 130.

451 Hydrology (3) Principles and applications of pro-

452 Civil Engineering Systems Design and Manage-
techniques. Concepts and methods of computer applications to civil engineering systems to enhance resource allocation for infra-
structure, environmental, water resources, structural analysis and urban infrastructure. Emphasis on using computer applications in the planning, design and construction of civil engineering projects. 3 hours lecture, 1 hour lab. Prereq: 330 or consent of instructor.

453 Environmental Engineering (3) Principles and ap-

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structure, environmental, water resources, structural analysis and urban infrastructure. Emphasis on using computer applications in the planning, design and construction of civil engineering projects. 3 hours lecture, 1 hour lab. Prereq: 330 or consent of instructor.
361 Analysis of Framed Structures (3) Maximum stress due to moving loads, uses of influence lines, dynamic potentials, uniform plane wave propagation. Design content: 2 hours. Prereq: 411.


432 Electronic Amplifiers (4) Feedback amplifier principles, operational amplifier, active filter, active integrator, active-pole, active-lead, active-lag, active-peak, active-slew components. Design content: 1 hour. Prereq: 350.

509 Quality Control (2) Application of statistical methods to quality assurance design, sampling, control, and measurement techniques. May not be repeated. Prereq.: 328.

510 Statistical Methods in Engineering (3) Application of statistical techniques to the solution of problems and decision making in engineering. Emphasis is placed on the application of statistical methods to problems of design, development, and testing of engineering systems. May not be repeated. Prereq.: 301 and 311.

511 Mathematical Quality Methods (3) Statistical methods for the design and analysis of experiments, including simple and multiple linear regression, analysis of variance and covariance. May not be repeated. Prereq.: 301 and 311.

512 Mathematical Models (3) Modeling and statistical analysis of complex materials and processes. Applications selected from a variety of fields. May not be repeated. Prereq.: 301 and 311.

513 Quality Engineering and Management (3) Application of statistical processes and software for quality engineering and management. May not be repeated. Prereq.: 301 and 311.

514 Quality and Reliability Engineering (3) Statistical methods to optimize quality and improve reliability and maintainability of engineering systems. May not be repeated. Prereq.: 301 and 311.

515 Quality Management (3) Improved approaches to the management of quality in engineering systems. May not be repeated. Prereq.: 301 and 311.

516 Quality Assurance and Control (3) Quality assurance of engineering systems. May not be repeated. Prereq.: 301 and 311.

517 Quality and Reliability of Engineering Systems (3) Statistical methods to optimize quality and improve reliability and maintainability of engineering systems. May not be repeated. Prereq.: 301 and 311.

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536 Quality Management (3) Improved approaches to the management of quality in engineering systems. May not be repeated. Prereq.: 301 and 311.
ENGINEERING MATTERALS SCIENCE (363)

301 Introduction to Materials Science and Engineering (3) Correlation of atomic structure, crystal structure and properties of inorganic materials, with mechanical, physical and chemical properties of engineering significance. Prereq: Chem 201-202.

303 Materials Laboratory Procedure (1) Thermo- metry, sample preparation for microscopic examination; X-ray diffraction and X-ray spectrometry, data analysis, report writing. Prereq: 201.

331 Mechanical Behavior of Materials (3) Tensile testing of metal, properties, yield, tensile strength, elasticity and fracture, hardness, fatigue, creep, wear, and tribology. Prereq: Math 211 and 241 or consent of instructor. S (Same as Engineering Science 332).


341 Thermodynamics of Solids (3) Applications to solid free energy, melting, solidification, metalurgy and heat treatments, elastic properties, creep, fracture, phase stability, phase transformation. Prereq: Chem 301 or Math 211-212.


442 Production Fabrication and Design (3) Analysis, labora- tory tests and final projects, oriented to solid mechanics, manufacturing processes, computer techniques, and quality assurance. Prereq: 341, 351, 401, or consent of instructor. S (Same as Engineering Science 432).


494 Selected Topics in Materials Science (1-3) Topics related to advanced engineering materials science and engineering. Prereq: 321, 340, 360. Sp (Same as Engineering Science 450).

495 Manufacturing Processes (3) Processes related to design of machine parts, casting, forging and cold forming, metal removal and weldments, manufacturing systems and maintenance techniques. Prereq: Materials Science 301, 360, 422. Sp (Same as Engineering Science 450).

497 Thermal Engineering (3) Correlation of atomic structure, crystal structure and properties of inorganic materials, with mechanical, physical and chemical properties of engineering significance. Prereq: Math 200 and 231.

499-500 Selected Topics in Mechanical Engineering (1-4, 4-4) Problems and topics related to developments and practice in mechanical engineering. Prereq: Consent of instructor. F, Sp, Su

ENGINEERING MECHANICAL (650)

351 Thermodynamics I (3) Energy and the first law of thermodynamics. Prereq: Calculus I. F

352 Thermodynamics II (3) Energy and the second law of thermodynamics. Prereq: Calculus II. F, Su

365 Elements of Mechanical Design I (3) Design of machine parts involving mechanical and thermal stress. Prereq: Math 211. F, Su

367 Elements of Mechanical Design II (3) Design of machine parts involving mechanical and thermal stress. Prereq: Math 211, 212, 213.

451 Systems and Controls (3) Analytical models of physical systems; comprised of combinations of mechanical, electrical, electronic, and electrical systems. Prereq: 302, 345, 466, 475. F, Sp, Su

455 Introduction to Machine Design (2) Engineering optimization; design for manufacturability, reliability, and product liability; design of mechanical engineering systems. Prereq: Math 200 and 231. F

459 Thermal Engineering (3) Correlation of atomic structure, crystal structure and properties of inorganic materials, with mechanical, physical and chemical properties of engineering significance. Prereq: Math 200 and 231.

481 Internal Combustion Engines (3) Thermodynamical processes in internal combustion engines. Prereq: Math 200 and 231. F

496-497 Selected Topics in Mechanical Engineering (1, 1) Topics related to developments and practice in mechanical engineering. Prereq: Consent of instructor. F, Sp

ENGINEERING NUCLEAR (716)

311 Seminar (1) Topics related to nuclear engi- neering. Satisfactory/unsatisfactory.

320-321 Introduction to Materials Science (3) First law of open analysis of systems, including of open systems, and study of stability in open systems. Prereq: Calculus I. F

323 Elements of Mechanical Design I (3) Design of machine parts involving mechanical and thermal stress. Prereq: Math 200 and 231. F

331 Mechanical Behavior of Materials (3) Tensile testing of metal, properties, yield, tensile strength, elasticity and fracture, hardness, fatigue, creep, wear, and tribology. Prereq: Math 211 and 241 or consent of instructor. S (Same as Engineering Science 332).

342 Mechanical Behavior of Materials (3) Tensile testing of metal, properties, yield, tensile strength, elasticity and fracture, hardness, fatigue, creep, wear, and tribology. Prereq: Math 211 and 241 or consent of instructor. S (Same as Engineering Science 332).
and economics, class project. Prerequisite: ECE 470.

- Aspects of system design include: system reliability analysis of nuclear systems, interface with non-nuclear variables; power distribution calculations and reactivity relations. Prerequisite: ECE 301.

- Cable to general criticality problems, eigenvalue searches, reactor physics relative to cross sections, kinematics of electromagnetic radiation. Characteristic of radiation fields, radiochemical techniques, measurement of radioactivity in various materials. Characteristics of particles and rigid bodies; gyroscopes; variable mass; kinematic of systems of particles; mass moments of inertia, angular momentum, work and energy conservation. Prerequisite: ECE 341 and Materials Science 201.


- Mechanical Behavior of Materials (3) Same as Materials Science 475.


- Mechanical Behavior of Materials (3) Same as Materials Science 475.


- Fluid Mechanics II (3) Differential forms of the equation of mass, momentum, and energy; applications to compressible flow, shocks, and disordered systems. Prerequisites: ECE 321, Mathematics 241.

- Dynamics of Materials (3) same as Materials Science 475.

- Mechanical Behavior of Materials (3) Same as Materials Science 475.

- Development of mathematical models of dynamic systems and dynamic analysis, includes model formulation, transient analysis, transformer functions, frequency response, stability, state space methods, and control. Prerequisite: ECE 351.

- Nuclear Reactor Engineering I (3) Fundamentals of nuclear criticality safety, criticality accident features, overview of approximate computational methods, and applications. Prerequisite: ECE 351.

- Radiation Shielding (3) Topics include neutron and gamma radiation, biological shielding, neutron and gamma hazard, neutron and gamma shielding, nuclear data, and control of radiation hazards. Prerequisite: ECE 321, coreq: Mathematics 241.

- Nuclear Reactor Engineering I (3) Fundamentals of nuclear criticality safety, criticality accident features, overview of approximate computational methods, and applications. Prerequisite: ECE 351.

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- Nuclear Reactor Engineering I (3) Fundamentals of nuclear criticality safety, criticality accident features, overview of approximate computational methods, and applications. Prerequisite: ECE 351.
301 Financial Management (3) Principles of financial management; investment, financing and asset management functions of the firm.

402 Special Topics in Finance (3) Junior and senior level finance topics. Topics to be announced prior to offering. Prereq: 301.

411 Investment Analysis (3) Principles and concepts of capital valuation in competitive and efficient financial markets. Basic analytical tools are developed and used to study evaluation of different types of financial instruments. Major topics include capital asset pricing, dividend growth and/or growth perpetuity models, portfolio theory, mean-variance portfolio theory and mean-variance efficient Frontiers. Prereq: 301, 420 or consent of instructor.

420 Portfolio Analysis and Management (3) Portfolio theory and evidence of security return with a view to determining optimal investment policy. Includes statistical analysis for risk and return of portfolios, portfolio evaluation and selection, capital market theory, capital asset pricing model; and efficient frontier. Prereq: 301, 411 or consent of instructor. Prereq: 301, 421 and Management 303.

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


450 Financial Management: Theory and Practice (3) Decision making processes in financial management including valuation, capital budgeting, uncertainty, cost of capital, capital structure theory and dividend policies. Major topics include risk and returns, capital budgeting, capital structure, and dividend policy. Prereq: 301.

460 Advanced Topics in Financial Management (3) Emphasis on practical analysis of current financial management issues. Prereq: 301, 420 or consent of instructor.

469 Meat Science Lab (1) Slaughter and processing of meat animals. Muscles and composition of meat. Emphasizes practical aspects of meat evaluation. Prereq: 320, 340 or consent of instructor. 2 75-minute lecture/labs.

470 Food Crop Products (3) Food products from plants. Properties and uses of grain products. Coreq: Botany 210 or consent of instructor. Prereq: 340 or consent of instructor. 3 hours lecture and 1 lab.


530 Forest Resource Inventory (3) Tree, log and pulpwood data; assessment of timber resources. Coreq: 306, 322, 324, 329, 330. Sp

531 Advanced Topics in Food Science and Technology (1) Topics in current food technology. May be repeated; maximum 3 hours credit. Prereq: 429. F

532 Special Topics in Food Science and Technology (1-6) Topics in current food technology. May be repeated; maximum 6 hours credit. Prereq: 411. F


534 Ecosystem Prescience Preparation (1) Analysis of ecosystems on designated land of and synthesis of information available on land. Coreq: 520. Sp

535 Food Production Functions (3) Production and distribution of food commodities. Current federal tax law applicable to real property. Coreq: 515. F

536 Land Use and Zoning (3) Zoning and land use control. Coreq: 520. F


543 Forest and Wildland Resource Policy (3) Policy development and the political process for policy determination of forest and wildland use and regulation: theory of conflict resolution; management and political issues. Coreq: 515. F

544 Wildland Recreation Planning and Management (3) Planning and management of recreation and wildlife uses. Coreq: 520. F
304 Intermediate Conversation (3) Emphasizes speaking skills. Further practice in conversational French. Prereq: French 212. French 310, 318, 320 may be applied toward the major or minor. French 334 and 345 may be applied toward the major or minor. French 341 or consent of instructor. French 341 or consent of instructor. French 341 or consent of instructor.

313 Principles of Wildlife and Fishery Management (3) Ecological relationships of wildlife with their habitats. Prerequisites: Wildlife 211, 211, 317, and Junior standing. French 211, 211, 317, and Junior standing. French 211, 211, 317, and Junior standing.

317 Principles of Wildlife and Fishery Management (3) Ecological relationships of wildlife with their habitats. Prerequisites: Wildlife 211, 211, 317, and Junior standing. French 211, 211, 317, and Junior standing.

111-113 Elementary French (3, 3, 3) Language Laboratory required. Must be taken in sequence. Not available to students eligible for 310. E

190 Intermediate French Translation (3) Prereq: Two years of high school French and a satisfactory score below the level required for admission to French 211. Satisfactory/Nocredit only. E

195 Planning and Management of Forest, Wildlife, and Fishery Resources (3) Integrated forest and wildlife management through developing land management plans and preparing case studies including conflict resolution. Prereq: Senior standing. 1 hour and 2 lab. E

212 Intermediate French (3) Prereq: French 111, 112, or Departmental Placement Exam. Must be taken in sequence and who need additional preparation in reading comprehension and elements of French culture related to good business practices. Either 342 or 345, may be applied toward the major or minor. Writing-emphasis course. Required for students preparing for language examinations, and upper division students preparing for language examinations. Prereq: French 212 or equivalent. Prereq: French 212 or equivalent. Prereq: French 212 or equivalent.

251-252 French Language and Business (6, 6) Prereq: French 211, 211 or equivalent. Prereq: French 211, 211 or equivalent. Prereq: French 211, 211 or equivalent.

255 French Business Communication (3) Business communication in the French language. Writing creative free-style composition. Meets two hours a week for one semester credit. 400-401 Consecutive and Simultaneous French-English Translation (3, 3) 500 level literature coursework. Not available to students majoring in French.


419 Readings in French Literature (3) French Cinema (3) The French cinema from its origins to the present day. Prereq: French 334 or 345. French Cinema (3) The French cinema from its origins to the present day. Prereq: French 334 or 345.

424 Advanced Conversation (1, 3) International conversation in the French language. Writing intensive course and has refined structure of the French language. Writing intensive course and has refined structure of the French language.
310 Introduction to Maps, Aerial Photographs, and Remote Sensing

- **310 Introduction to Maps, Aerial Photographs, and Remote Sensing**
  - **Ground and Methods of Cultural Geography**: Basic concepts and theories focusing on cultural landscape, cultural production of maps, aerial photographs, and other forms of spatial information.
  - **310 Introduction to Maps, Aerial Photographs, and Remote Sensing**: Must be taken in sequence. 3 hours lecture and 2 hours lab per week. Not open to students who have received an "A" in Geography 101. Students may not receive credit for both 102 and 108.

102 Geology of the American South (3) For sophomores of superior ability who are interested in the geographical approach to important world problems and world regions, especially those with problems or situations of contemporary interest, to illustrate geographical processes and phenomenon. Must be taken in sequence. 3 hours lecture and 2 hours lab per week. Not open to students who have received an "A" in Geography 101. Students may not receive credit for both 102 and 108.

108 Honors: World Geography (4) For freshmen and sophomores of superior ability who are interested in the geographical approach to important world problems and world regions, especially those with problems or situations of contemporary interest, to illustrate geographical processes and phenomenon. Must be taken in sequence. 3 hours lecture and 2 hours lab per week. Not open to students who have received an "A" in Geography 101. Students may not receive credit for both 102 and 108.

131-132 Geography of the Natural Environment (4, 4) Characteristics and processes of the earth’s surface and atmosphere; their interaction to produce a world of climates, vegetation, and human environments. Emphasis on the physical environment, economic, and social patterns of the world. 3 hours lecture and 2 hours lab per week. Prerequisites: 101 or consent of instructor.设计方案

235 Historical Geography of the United States (3) Survey of the changing human geography of the United States during the 20th century. Emphasis on changing population patterns, development of agriculture and industry, and regional relationships. Prerequisites: 201 or consent of instructor. 3 hours of lecture and 2 hours of lab per week.

361 Regional Geography of the United States and Canada (3) For sophomores of superior ability who are interested in the geographical approach to important world problems and world regions, especially those with problems or situations of contemporary interest, to illustrate geographical processes and phenomenon. Must be taken in sequence. 3 hours lecture and 2 hours lab per week. Prerequisites: 310 or consent of instructor.设计方案

497 Honors: Senior Thesis (3) Students develop an independent research project under the direction of a faculty advisor. Prerequisites: 494 with grade of "A" and permission of department head. Prerequisite: Consent of department head. May be repeated. Maximum 6 hours. Satisfactory/No Credit.

498 Honors: Senior Thesis (3) Completion of senior thesis project under the direction of a faculty advisor. Prerequisite: 497 with grade of "A" and permission of department head. Prerequisite: Consent of department head. May be repeated. Maximum 6 hours. Satisfactory/No Credit.

492 Off-Campus Study (1-15) Prereq: Written consent of department head or authorized internship director. May be repeated. Maximum 6 hours. Satisfactory/No Credit.

493 Directed Research (1-3) Supervised participation in active research projects. Prereq: Written consent of department head or authorized internship director. May be repeated. Maximum 6 hours. Satisfactory/No Credit.

494 Undergraduate Research Experience (1-3) Supervised participation in active research projects. Prereq: Written consent of department head or authorized internship director. May be repeated. Maximum 6 hours. Satisfactory/No Credit.
101 The Dynamic Earth (4) Physical processes within and at the surface of the earth, including formation of materials, plate tectonics and earthquakes, and landscapes. Must be taken in sequence. 3 lecture hours and one 2-hour lab per field period.

102, Earth Life and Time (4) Fossil and evolution. Ancient environments, plus a review of 4.5 billion years of life on Earth. Prerequisites: 101. 3 lecture hours and one 2-hour lab per field period.

104 Earth, Life and Time (4) Evolution, landscape development, and environments. Prerequisites: 101. 3 lecture hours and one 2-hour lab per field period.

108 The Earth’s Environments (4) Contemporary problems and solutions related to human disturbance of the environment; topics include: global climate change, pollution, desertification, deforestation, and wilderness. Prerequisites: 101. 3 lecture hours, 1 hour lab, and one 2-hour field trip. Consult current College of Arts and Sciences guidelines. Students may not receive credit for both GEOLOGY 101 and 107.

107 Honor: The Dynamic Earth (4) Laboratory and field emphasis to understanding physical processes, including the formation of rocks, plate tectonics, earthquakes, and landscapes. May not be repeated toward the Geology major. 3 lecture hours and one 2-hour field trip. Consult current College of Arts and Sciences guidelines. Students may not receive credit for both GEOLOGY 101 and 108.

110 Biodiversity: Past, Present, and Future (4) An introduction to evolution, human activities. Topics include measurement of biodiversity, biodiversity and ecosystem engineering, and the dynamics of extinction. May not be applied toward the Geology major.

202 Earth as an Ecosystem: Modern Problems and Solutions (3) Human impact on the physical and biological environment. Human disturbances such as habitat destruction and pollution, and their effects on ecosystems. May not be applied toward the Geology major.

300 Geology of Natural Fields (3) Geologically specific areas such as coasts, deserts, industrial regions, and the like. Laboratory work includes landform interpretation, rock identification, and mapping and includes lecture and laboratory hours as specified by instructor. Prerequisites: one of the following: GEOLOGY 101 or GEOLOGY 107, 3 lecture hours, 1 hour lab, and one 2-hour field trip.

310 Mineralogy (4) Introduction of crystallography, crystal chemistry, mineral classification, and the use of the crystallographic symbols and laws. Prerequisites: GEOLOGY 102, or instructor approval. 3 lecture hours and 2 lab hours.

316 Fieldwork in Geophysics (2) Field course for undergraduate geologists, and upper-level geology and related students. Field studies include field techniques, and economic classification of mineral deposits. Prerequisites: GEOLOGY 101, 1 hour lab.

320 Paleobiology (4) Fossils and their uses in functional morphology, paleoecology, and evolution. Emphasis on biological systems, both micro and macrofossils. Laboratory includes hand specimen examination, fossil and plant collection, and preparation of fossils. Students may receive credit for both GEOLOGY 320 and GEOLOGY 420.

325 Geological History of Land Organisms (3) Origin and development of the planets and the solar system; the development and evolution of life on Earth. Prerequisites: GEOLOGY 101 and 102, or instructor approval. 3 lecture hours and one 3-hour laboratory period.

330 Advanced Mineralogy (3) Crystal chemistry of the crystal lattices of minerals. Prerequisites: GEOLOGY 101 and 102, or consent of instructor. 2 lecture hours and one 2-hour lab.

331 Invertebrate Paleontology (4) Study of invertebrate animals, with emphasis on skeletal structure and functional morphology, ecology, and stratigraphic distribution. Prerequisites: GEOLOGY 101, or consent of instructor. 3 lecture hours and one 2-hour lab.

333 Fieldwork in Meteorology (3) Study of meteorological principles and applications. Laboratory includes study of cartographic techniques, and data interpretation. Laboratory also includes preparation of scientific reports based on field and laboratory analysis. Prerequisites: GEOLOGY 331, 3 lecture hours and one 2-hour lab.

334 Advanced Geophysical Analysis (3) Principles of geophysical analysis as applied to fossils and fossil assemblages with emphasis on data collection and interpretation. Laboratory is designed around preparation of scientific reports based on field and laboratory analysis. Prerequisites: GEOLOGY 331, 3 lecture hours and one 2-hour lab.

335 Advanced Geology (3) Same as Civil Engineering 431.

401 Plants and Geology (4) Summer field course for advanced undergraduate geologists, and two-week graduate students in geology. Topics include plant adaptations and the fossil record. Prerequisites: GEOLOGY 104. 3 lecture hours, 1 lab hour, and one 2-hour field period.

404 Fundamental Geology (4) An introduction to the development of the Earth from the solar nebula to the present. Prerequisites: GEOLOGY 101 and 102, or consent of instructor. 3 lecture hours, 1 lab hour, and one 2-hour field period.

405 Basic Environmental Geology (4) Applications of the physical sciences toward solution of the ecological problems of geologists. Prerequisites: GEOLOGY 101 and 102, 3 lecture hours, one 2-hour lab and one 3-hour lab field period.

406 Principles of Geophysics (3) Applications of physical principles to geophysical problems. Emphasis on the physical sciences toward solution of geophysical problems. Prerequisites: GEOLOGY 101 and 102, or consent of instructor. 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 environmental archaeology, geotechnical exploration, and prediction of mineral deposits.

480 Independent Study (1-15) Taught off-campus, and requires the full time of the student. Prerequisites: permission of instructor. May be repeated for credit. Maximum 6 hours.

490 Special Problems in Geology (1-3) Directed study for advanced undergraduates or graduate students. Prerequisites: permission of instructor. May be repeated for credit. Maximum 6 hours.

491 Independent Study (1-15) Taught off-campus, and requires the full time of the student. Prerequisites: permission of instructor. May be repeated for credit. Maximum 6 hours.
264 Intermediate Readings in Greek (3) Content varies (3) Systematic review of Attic Greek and readings through Proto-Germanic, Old High German, Middle High German, and Modern German language courses excluding courses in translation and syntactic analysis. Prereq: 6 hours of upper-division foreign language courses excluding courses in the humanities reading course. (Same as Russian 436, French 436, Spanish 436, and Latin 428.)

300 Health Education, Promotion, and Behavior (3) Health education, health behavior, and social-behavioral analysis; in school, community and health-care settings; health careers and opportunities; health behavior and intervention techniques; health appraisal techniques; health promotion. 

307 Honors: Introduction/Historical Problems (3) Health education goals, roles, target populations in school, community, and youth culture. Students will attend the appropriate 241-242 lectures and the designated honors discussion section.

525-526 Introduction to Latin American Studies (3) Societies of Latin America with special emphasis on cultural patterns, social changes, and impact of nationalism. (Same as Spanish 255-256 and Latin American Studies 251-252.)

306 Health Instruction in Elementary Grades (3) School health program in elementary grades. Topics include teaching with and presenting to elementary school children; psychology of children; health education goals; professional health education; and the implementation of the program.

521-522 History of the United States (3,3) Historical survey of the civilization of the western world. Historical survey of the United States from ancient times to the present. Writing-emphasis course. Students will attend the appropriate 241-242 lectures and the designated honors discussion section.

527-528 Honors: History of the United States (3,3) Content of discussion required. Prereq: 239-238, 241-242 lectures and the designated honors discussion section.

542 Suicide and Crisis Intervention (3) Factors which make suicide a serious health problem. Assessment, intervention, and prevention techniques. (Same as Social Work 490.)

543 Substance Use and Abuse (3) Drug and alcohol abuse and dependence; assessed usefulness of drugs and effects on society, for treatment of drug and alcohol, and for societal change. (Same as Social Work 491.)

449 Health (4) (10) Personal Health and Wellness (3) Information and life-style orientation on personal health and wellness. 

470 Special Topics (1-3) For advanced students, teaching, research, administration, nursing, and other professional experience. Lectures, demonstrations, films, field trips, and other methods. In special health/wellness or health promotion program. May be repeated. Maximum 12 hours. 

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

485 Business German (3) German used in fields of business, government, administration and economics. (Same as Linguistics 436.)

425 Introduction to Descriptive Linguistics (3) Same as Class of Greek 263, French 425, Spanish 425, and Latin 425.

292 Methods of Historical Linguistics (3) Phonology, distinctive feature analysis, sound change types, nature of change principles, of linguistic and fundamental assumptions about language change through time. Non-phonological language change, language change and human history. Prereq: 6 hours of upper-division foreign language courses excluding courses in the humanities reading course. (Same as Russian 436, French 436, Spanish 436, and Latin 428.)

304 Introduction to Health and Wellness (3) Science of human sexuality. Emphasis on the trends, conventions of women and techniques for prevention, treatment, and control. Prereq: Consent of instructor. (Same as Women's Studies 425.)

300 Health Instruction, Promotion, and Behavior (3) Health education purposes, methods, social-behavioral analysis in school, community and health-care settings. Health careers and opportunities; health behavior and intervention techniques; health appraisal techniques; health promotion.

524 Special Topics (1-3) Individual identification and study of a health/wellness or health promotion problem. Prereq: Consent of instructor. May be repeated. Maximum 12 hours.

523 Field Practice (1-6) Clinical or community problems or field practice in an educational or other agency with techniques of research. Prereq: Consent of instructor. Satisfactory/No Credit only. 

526-527 History of the United States (3,3) Historical survey of the civilization of the western world. Students will attend the appropriate 241-242 lectures and the designated honors discussion section.

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

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

420 Selected Topics in German Literature from 1750 to the Present (3) Prereq: 6 hours of 300 courses excluding 331-332 and courses in English translation, or equivalent.

417 Selected Topics in German Literature (3) Selected topics on the literatures, history, and techniques of research, emphasizing the roles of cli- mates of opinion and frames of reference and the techniques of research emphasizing the roles of cli- mates of opinion and frames of reference and the techniques of research emphasizing the roles of cli- mates of opinion and frames of reference and the techniques of research emphasizing the roles of cli-

247-248 Honors: Development of Western Civilization (3,3) Historical emphasis of the evolution of the health and wellness of the aged. Prereq: Consent of instructor. 

241-242 Development of Western Civilization (3,3) Historical emphasis on the evolution of the health and wellness of the aged. Prereq: Consent of instructor. 

240 Death, Dying and Bereavement (3) Aspects of death and dying. Emphasis on psychological, physical, social, and psychological aspects of death and dying. Prereq: Consent of instructor.

239 Alcoholism and Alcohol Education (3) Factors which make alcoholism a serious health problem. Assessment, intervention, and prevention techniques. (Same as Social Work 490.)

238 Selected Readings from Greek Literature (3) Prereq: 311-312 or equivalent or consent of instructor.
American Studies

475. American Studies
May be repeated. Maximum 9 hours. (Same as Latin especially on Russian and Polish history. May be repeated.

473. Studies in Eastern European History (3) Variable content. Recommended reference to historical writing, including critical analysis and historical controversy; emphasis on questions and skills, with special interest in the methodology of historians. May be repeated. Maximum 9 hours.

471. Internship I: Elementary (3-6) Methods and theories of teaching. Internship is completed in local public elementary schools. Application for internship should be made upon approval of the field experience advisor. Prerequisites: Admission to Teacher Education Program. Coreq: 420. F, Sp.

476. Studies in Asian History (3) Variable content. Special interest in the history of India, China, Japan, and the Middle East. May be repeated. Maximum 9 hours.

474. Studies in Medieval and Early Modern European History (3) Variable content. Special interest in medieval and early modern Europe. May be repeated. Maximum 9 hours.


471. Internship I: Elementary (3-6) Methods and theories of teaching. Internship is completed in local public elementary schools. Application for internship should be made upon approval of the field experience advisor. Prerequisites: Admission to Teacher Education Program. Coreq: 420. F, Sp.

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476. Studies in Asian History (3) Variable content. Special interest in the history of India, China, Japan, and the Middle East. May be repeated. Maximum 9 hours.

474. Studies in Medieval and Early Modern European History (3) Variable content. Special interest in medieval and early modern Europe. May be repeated. Maximum 9 hours.

120 Introduction to Hotel and Restaurant Administration (3) History and place of industry in national economy; basic operations, organization, structure, problems, and solutions. Prerequisites: none.

126 Front Office Management (3) Front office procedures and policies within context of hotel industry and individual hotel. Includes reservations systems, equipment, selling procedures, public relations, and management.

210 Foodservice Systems Administration (3) Managerial processes, resources, management systems, decision-making and operation principles. Prerequisites: none.

220 Quantity Food Production: Production and Service (3) Principles for determining needs, purchasing, storing, producing and serving foods in volume. Prerequisites: 120, 230, NTR 100 or 107, MGT 101 or 210, NTR 210, progressive into HRA program or consent of the instructor. Coreqs: 217, 218.

391 Quantity Food Production: Production and Service Laboratory (1) Application of principles in determining volume needs, purchasing, storing, producing and serving foods in volume as they apply in the hospitality industry. Prerequisites: 120, 230, NTR 100 or 107, MGT 101 or 210, progressive into HRA program or consent of the instructor. Coreq: 218.

392 Quantity Food Production: Production and Service Observation (1) Application of principles in production, marketing, personnel and social forces influencing domestic and international food markets. Prerequisites: 220 or consent of the instructor. Coreq: 320.

414 Advanced Hotel and Restaurant Administration (3) Integration of functional areas, management level, supervision of departments, personnel management, housekeeping, purchasing, sales and promotion, and public relations. Prerequisite: 220 or consent of instructor.


425 Hospitality Law (3) Legal rights and responsibilities of manager, employee, and guest. Prerequisites: 220, 317, 318, or 320. Coreq: 317, 318, 332, Bus. Law 310 or consent of instructor.

431 Food Service Management (3) Escape and seg- ments of management including required readings of major professional journals, case studies and student projects. Prerequisites: 320, 321, 322, or consent of instructor.

428 Special Topics: Hotel and Restaurant Administration (3-4) Develops, issues and problems in Home and Restaurant Administration; variables, principles, practices, tech- niques, organizational problems, stress and burnout, personal and professional growth. Prerequisite: 220 or consent of instructor. May be repeated. Maximum 3 credits.

494 Directed Study: Hotel and Restaurant Administration (1-3) Individual student: faculty experience. Prerequisite: Consent of Instructor. Satisfaction of No Credit only. Maximum 3 credits.

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

HUMAN EUROPEAN (520)

106 Special Topics in Human Ecology (1-5) Topics vary. Consent of the instructor. Satisfaction of No Credit only. May be repeated. Maximum 3 credits.

221 Field Experience in Family Life School-based Program (1) May be repeated. Minimum 6 credits.

322 Quantity Food Procurement, Production and Service Laboratory (1) Application of principles in determining volume needs, purchasing, storing, producing and serving foods in volume as they apply in the hospitality industry. Prerequisites: 120, 230, NTR 100 or 107, MGT 101 or 210, progressive into HRA program or consent of the instructor. Coreq: 217, 218.

100 Hospitality Sales and Marketing (3) Strategic marketing principles for lodging, restaurant, and catering organizations. Includes hotel, travel, catering, and meeting services; promotion and sales planning; internal and external communications; market analysis and research. Satisfactory/No Credit only. Prerequisites: 220, 320, 321, or 322.

101 Hospitality Sales and Marketing (1-3) Senior project. Prerequisite: Admission to HRA program or consent of the instructor. Coreqs: 220, 320, 321.

214 Hotel and Restaurant Administration (1-3) Individual student: faculty experience. Prerequisite: Consent of the instructor. Coreq: 320.

220 Food and Lodging Cost Control (3) Input, cost analysis, computer, financial statement in decision making, budgeting, accounting, and analysis. Prerequisites: 220, 317, 318, 320, or 322. Coreq: 220 or consent of instructor.

320 Hospitality Experience (3) Experiences in the hotel and restaurant administration. Prerequisites: Satisfactory performance in major courses and a two-day seminar. Students enrolled in this course selected their own paid work experience. Prerequisites: 220, 317, 318, 320, or 322. Coreq: 317, 318.

320 Hospitality Experience (1-3) Senior project. Prerequisite: Admission to HRA program or consent of the instructor. Coreqs: 220, 320, 321, or 322.

410 Human Ecology Systems (3) Systems theory as a comprehensive approach affecting the nature of individuals, families, and environments. Prerequisites: 320, 321, or 322; business, law, 301; 100 hours of verifiable work experience. Satisfactory/No Credit only.

415 Field Experience in Community-Based Projects (3-5) Placement in Home Economics, volunteer programs or businesses. Seminar. See prn. 60 hours. Satisfactory/No Credit only.

494 Directed Study: Human Ecology (1-3) Topics vary. Prerequisite: Consent of the instructor. Satisfactory/No Credit only. Maximum 6 credits.

419 Business Law 301; 100 hours of verifiable work experience. Satisfactory/No Credit only.

426 Convention Management (3) Scope and segments of staff, management, and guests. Prerequisites: 320, 321, or 322; Business Law 301; 100 hours of verifiable work experience. Satisfactory/No Credit only. May be repeated.

351 Manipulative Skills in Occupations (1-15) Applicants must show evidence of bona fide occupational experience. Prerequisites: 350, 354, 355, or 356.

354 Job Analysis Techniques and Curriculum Development (1-5) Applications of principles in the workplace. Satisfactory/No Credit only. E Preferred: consent of instructor. May be repeated. Maximum 5 credits.

420 Special Topics in Human Ecology (1-3) Topics variable. May be repeated. Maximum 6 credits.

102 Hospitality Sales and Marketing (3) Strategic marketing principles for lodging, restaurant, and catering organizations. Includes hotel, travel, catering, and meeting services; promotion and sales planning; internal and external communications; market analysis and research. Satisfactory/No Credit only. Prerequisites: 220, 320, 321, or 322.

103 Hospitality Sales and Marketing (1-3) Senior project. Prerequisite: Consent of Instructor. Satisfaction of No Credit only. Maximum 3 credits.

5135 Related and Applied Theory in Occupations (1-5) Selected topics. Course content varies. Satisfactory/No Credit only. E Preferred: consent of instructor. May be repeated. Maximum 7 credits.

5136 Job Analysis Techniques and Curriculum Development (1-5) Applications of principles in the workplace. Satisfactory/No Credit only. E Preferred: consent of instructor. May be repeated. Maximum 5 credits.

5137 Special Applications in Occupations (1-5) Applications of principles in the workplace. Satisfactory/No Credit only. E Preferred: consent of instructor. May be repeated. Maximum 5 credits.

5138 Application of educational research in the classroom setting. Satisfactory/No Credit only. E Preferred: consent of instructor. May be repeated. Maximum 5 credits.
451 Adaptation of Vocational Instruction for Special Needs Learners (3) Selection, design, and development of performance-based learning programs. Prereq: 302 or consent of instructor.

452 Utilization of Community Resources (3) Strategies of developing effective interpersonal relationships, coordinative responsibilities, and working relationships in the field. May be repeated. Maximum 12 hours. E

453 Special Topics in Vocational and Adult Education (1-15) Topics to be assigned. May be repeated. Maximum 12 hours. E

454 Training Aides for Vocational Education (3) Study and preparation of individualized aids and non-traditional media commonly used by technical instructors and trainees. Pr.

455 Performance-Based Evaluation (3) Assessing the effectiveness of training through the development of performance-based measures, evaluation of incumbent worker job performance. Pr.


457 Performance-Based Training Evaluation (3) Methods and media used in training/feedback modification in the secondary public schools. Prereq: Admission to Teacher Education Program.

458 Materials, Methods, and Processes (3) Materials relative to specifications, testing, and methods to classify and categorize materials. Supervised assignment to match industrial production needs. Prereq: Consent of instructor.

460 Introduction to Adult Education (3) Breadth of adult development concepts to design and manage training programs for adults. Satisfactory/No Credit only. Prereq: Progression to the major. E

461 Adult Education Program Planning (3) Processes of program development and special assignments to adult learning groups. Prereq: Consent of instructor.

463 Application of Business and Marketing (5) Customer and organization assessment: evaluation of social services and the variety of roles and functions of social service practitioners, such as art therapy, legal and ethical practice. Satisfactory/No Credit only. Prereq: 420. E

466 Human Services Field Work (3) Practical field experiences in appropriately organized and directed human service settings including the role of decision makers and systems; observation of human services delivery and service providers-direct service in a supervised learning situation. For majors only. Prereq: Admission to Teacher Education Program. E

471 Principles of Supervision (3) Problems of motivation, communication, interpersonal relationships and leadership. Prereq: Admission to Teacher Education Program. E

472 Field Experience in Early Childhood Special Education (3) Selection and arrangement of course content. Planning, instructional objectives, project/product selection, evaluation and evaluation of training programs in an industrial setting. May be repeated to a maximum of 9 semester hours. Satisfactory/No Credit only. F

480 Information Interception and Assessment (3) Sources, value, creation, organizing principles, right, preservation, national information policy, equity of access. Prereq: Consent of instructor. F

485 Supervised Internship (9) Practical experience in business and marketing settings under the supervision of practicing and academic personnel. May be repeated to a maximum of 9 credit hours. Prereq: Consent of instructor.

486 Area of Marketing (3) Marketing, personnel development, operation of marketing functions that affect the instructional leadership program in marketing education. F

487 Special Topics in Business and Marketing Education (1-15) Topics to be assigned. May be repeated. Maximum 12 hours. E

491 Adapting Vocational Instruction for Special Needs Learners (3) Selection, design, and development of performance-based learning programs. Prereq: 302 or consent of instructor.

492 Office Study (1-15) Topics to be assigned. May be repeated. Maximum 15 hours. F

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

HUMAN SERVICES (532)

520 Introduction to Human Services (3) Focus on related values and contemporary issues in human services. Emphasis on the various professions, related societal values and contemporary issues in human services. Prereq: Admission to Teacher Education Program. E

522 Adult Development and Training (3) Application of adult development concepts to design and manage training programs for adults. Prereq: Admission to Teacher Education Program. F

530 Thinking About People (3) Development of thought-skill abilities. Students develop critical thinking skills and apply them to understand human behavior, environments, and roles as studentsexamine the complex interactions of individual needs and societal needs. Prereq: Consent of instructor. F

531 Information Foundations (3) Nature of information, sources, values, creation, organizing principles, preservation, right, protection, national information policy, equity of access. Prereq: Consent of instructor. F

532 Human Services in Early Childhood (3) Development and application of training and teaching approaches for developing young children with special needs. Prereq: Progression to the major. Satisfactory/No Credit only. Prereq: Admission to Teacher Education Program. F

533 Human Resources for Human Resource Development (3) Selection and arrangement of course content. Planning, instructional objectives, project/product selection, evaluation and evaluation of training programs in an industrial setting. May be repeated to a maximum of 9 semester hours. Satisfactory/No Credit only. F

534 Introduction to Human Resource Development (3) Selection and arrangement of course content. Planning, instructional objectives, project/product selection, evaluation and evaluation of training programs in an industrial setting. May be repeated to a maximum of 9 semester hours. Satisfactory/No Credit only. F

535 Thinking About People (3) Development of thought-skill abilities. Students develop critical thinking skills and apply them to understand human behavior, environments, and roles as studentsexamine the complex interactions of individual needs and societal needs. Prereq: Consent of instructor. F

536 Information Interception and Assessment (3) Sources, value, creation, organizing principles, right, preservation, national information policy, equity of access. Prereq: Consent of instructor. F

537 Supervised Internship (9) Practical experience in business and marketing settings under the supervision of practicing and academic personnel. May be repeated to a maximum of 9 credit hours. Prereq: Consent of instructor.

538 Area of Marketing (3) Marketing, personnel development, operation of marketing functions that affect the instructional leadership program in marketing education. F

539 Special Topics in Business and Marketing Education (1-15) Topics to be assigned. May be repeated. Maximum 12 hours. E

540 Principles of Organizational Behavior (3) Decision making; emphasis on planning, executing, and evaluating organizational behavior in industry. Prereq: Admission to Teacher Education Program. E

541 Principles of Field Experience in Early Childhood (3) Field experience in appropriately organized and directed human service settings including the role of decision makers and systems; observation of human services delivery and service providers-direct service in a supervised learning situation. For majors only. Prereq: Admission to Teacher Education Program. E

542 Field Experience in Early Childhood Special Education (3) Selection and arrangement of course content. Planning, instructional objectives, project/product selection, evaluation and evaluation of training programs in an industrial setting. May be repeated to a maximum of 9 semester hours. Satisfactory/No Credit only. F

543 Human Services Field Work (3) Practical field experiences in appropriately organized and directed human service settings including the role of decision makers and systems; observation of human services delivery and service providers-direct service in a supervised learning situation. For majors only. Prereq: Admission to Teacher Education Program. E

544 Information Interception and Assessment (3) Sources, value, creation, organizing principles, right, preservation, national information policy, equity of access. Prereq: Consent of instructor. F

545 Supervised Internship (9) Practical experience in business and marketing settings under the supervision of practicing and academic personnel. May be repeated to a maximum of 9 credit hours. Prereq: Consent of instructor.

546 Area of Marketing (3) Marketing, personnel development, operation of marketing functions that affect the instructional leadership program in marketing education. F

547 Special Topics in Business and Marketing Education (1-15) Topics to be assigned. May be repeated. Maximum 12 hours. E

548 Human Services in Early Childhood (3) Development and application of training and teaching approaches for developing young children with special needs. Prereq: Progression to the major. Satisfactory/No Credit only. Prereq: Admission to Teacher Education Program. F

549 Introduction to Human Resource Development (3) Selection and arrangement of course content. Planning, instructional objectives, project/product selection, evaluation and evaluation of training programs in an industrial setting. May be repeated to a maximum of 9 semester hours. Satisfactory/No Credit only. F

550 Information Interception and Assessment (3) Sources, value, creation, organizing principles, right, preservation, national information policy, equity of access. Prereq: Consent of instructor. F

551 Supervised Internship (9) Practical experience in business and marketing settings under the supervision of practicing and academic personnel. May be repeated to a maximum of 9 credit hours. Prereq: Consent of instructor.

552 Area of Marketing (3) Marketing, personnel development, operation of marketing functions that affect the instructional leadership program in marketing education. F

553 Special Topics in Business and Marketing Education (1-15) Topics to be assigned. May be repeated. Maximum 12 hours. E

INCLUSIVE EARLY CHILDHOOD EDUCATION (542)

410 Early Childhood Special Education Foundations (3) Introduction to the field of early childhood special education including the issues of disability; theoretical foundations in the field, legislation, policy/legislation/curriculum/standardization. Prereq: Admission to Teacher Education Program. E


413 Early Childhood Special Education (3) Assessment, curriculum planning and development and teaching in human services settings. Development and practice. Prereq: Admission to Teacher Education Program. E

414 Early Childhood Education: Field Teaching in Kindergarten (1) Field teaching in the kindergarten. Prereq: Admission to Teacher Education Program. E


471 Principles of Supervision (3) Problems of motivation, communication, interpersonal relationships and leadership. Prereq: Admission to Teacher Education Program. E

472 Field Experience in Early Childhood Special Education (3) Selection and arrangement of course content. Planning, instructional objectives, project/product selection, evaluation and evaluation of training programs in an industrial setting. May be repeated to a maximum of 9 semester hours. Satisfactory/No Credit only. F

510 Principles of Information Retrieval (3) Principles, selection, and use of computer-based information management applications; software identification and task appropriate uses; communications, utilities, and memory management systems; micro operating systems and technology for national network communication centers. Prereq. Undergraduate credit only. F

513 Information Sources and Strategies (3) Information as critical resource for research and decision-making: emphasis on planning, executing, and evaluating information searching. Focus on topic of student's major. Undergraduate credit only. E

300 Books and Related Materials for Children (3) Materials for children in leisure time or classroom activities: criteria for selecting books, magazines, recordings.

178 Courses of Instruction
380 Environment on human behavior, feelings and values; three hours studio. Open only to majors in interior design and architecture.

340 Interior Design studio (3-4) Provides opportunity to participate with other students in practical applications of classroom principles. One hour lecture and two hours studio. Prerequisite: Completion of 250 and consent of instructor.

440 Interior Design studio (3) The problem of the study will be designed as a group project under the supervision of the instructor. The project will be initiated by the instructor and will involve the preparation of a design for a specific interior environment. One hour lecture and three hours studio. Prerequisite: Completion of 360 and consent of instructor.

450 Lighting for Interior Designers (3) Students will work on projects that involve the use of lighting in interior design. Projects will be reviewed in class. Prerequisite: 350 or consent of instructor.

460 History of the Contemporary Interior Architecture (3) Developmental problems, relationships among art, technology and society, and the history of the contemporary interior environment. Prerequisite: 300 or consent of instructor.

470 History of American Interior Architecture (3) Historical, theoretical and social aspects of American interior architecture. Prerequisite: 360 or consent of instructor.

480 Furniture Design (4) Human factors data applied to the design of furniture. Prerequisite: 370 or consent of instructor.

490 Directed Studies in Interior Design (1-4) Study of a special topic of interest to the student and instructor. Prerequisite: Consent of instructor.

493 Directed Studies (1-4) Advanced integrative design experience. Prerequisite: 490 or consent of instructor.

511 International Study (1-12) Individual or group study during formal academic term in any international location. Preparation and, if applicable, all expenses are the responsibility of the student. May be repeated for credit to a maximum of 12 hours. Letter grade or S/NC grading. 

512 Practicum for Interior Design (12) Supervised professional experience related to the student's professional curriculum. Determination of sequence, time and setting must be made by the student and, if applicable, by the director of Interdisciplinary Programs and the respective chairperson. May be repeated. Maximum 8 hours. Consent of Interior Design Department.

513 Honors: Interior Design (1-4) Advanced research or independent study project. Major credit only. Consent of instructor.

5240 Materials and Resources for Interiors (2) Theories and practices of materials and resources as related to the environment and design. Two hours lecture and one hour studio. Prerequisite: 360 and consent of instructor.

5245 Advanced Millwork Design (3) Non-residential studio projects of advanced complexity; integrates and extends principles, experiences, and guidelines for the design and planning of interiors. Prerequisite: 390 or consent of instructor.

5300 Business Principles and Practices (3) Internship, profitability, and business practices, management, and ethics. Prerequisite: Third year in Interior Design. Course extends previous experiences utilizing systematic design and management skills to the study of the interior environment. One hour lecture and two hours studio. Prerequisite: 360 and consent of instructor. 

5313 Business Programs and Practices (3) Internship, profitability, and business practices. Prerequisite: Third year in Interior Design. Course extends previous experiences utilizing systematic design and management skills to the study of the interior environment. One hour lecture and two hours studio. Prerequisite: 360 and consent of instructor.

5420 Practicum for Interior Design (3) Supervised professional experience related to the student's professional curriculum. Determination of sequence, time and setting must be made by the student and, if applicable, by the director of Interdisciplinary Programs and the respective chairperson. May be repeated. Maximum 8 hours. Consent of instructor.

5421 Practicum for Interior Design (3) Supervised professional experience related to the student's professional curriculum. Determination of sequence, time and setting must be made by the student and, if applicable, by the director of Interdisciplinary Programs and the respective chairperson. May be repeated. Maximum 8 hours. Consent of instructor.
420 Internship (1-15) Career-related experiences in the public affairs journalism field. May be repeated for a maximum of 15 credit hours. Prereq: Consent of instructor.

421 Opinion Writing (3) Analysis of editorial positions, understanding of communication practices in international affairs and broadcast systems studies in terms of relevant mass media. Role of media in society. Not available for the Communication major only. Satisfactory/No Credit only.

422 Photojournalism (3) Principles and practice of writing feature articles for newspapers, magazines and community publications. Critiquing of student's work in writing workshops, and writing about in-class pieces as assigned. Prereq: Typography proficiency.

430 Directed Readings in Foreign Study (1-15) May be repeated for a maximum of 15 credit hours. Prereq: Senior supervision. Consent of instructor.

431 Directed Readings in International Communications (1-15) May be repeated for a maximum of 15 credit hours. Prereq: Senior supervision. Consent of instructor.

435 Medieval Latin (3) Selected readings from the Latin proems and the writing of Cicero the model. Prereq: 252 or equivalent. Consent of instructor.

440 Introduction to Latin American Studies (3,3) (Same as History 255-256.)

451 Environmental Reporting (3) Writing for news media on such environmental issues as strip-mining, water pollution, air pollution, allergens, nuclear power, fossil fuel use, and acid-wastes. Students hear presentations from and interview experts in environmental science and reporting. Expository popular literature in Latin America, 18th to 20th centuries. May be repeated for a maximum of 15 credit hours. Prereq: Consent of instructor for non-majors.

452 Field Experience (1-2) Approved internships and supervised practice in journalism. May be repeated for a maximum of 2 credit hours. Prereq: Senior standing; international enrollment. Satisfactory/No Credit only.

453 Adolescent Literature (3) Literature written or for adolescence. May be repeated for a maximum of 12 credit hours. Prereq: Consent of instructor.

454 Writing about Science, Technology, and Medicine (3) History, style, vocabulary enrichment, study skills as they relate to the broad subject of science and technology. Prereq: Consent of instructor. (Same as Information Sciences 450.)

455 Issues in Science Communications (3) May be repeated for a maximum of 12 credit hours. Prereq: Consent of instructor.

456 Science Writing as Literature (3) Survey of important examples of science writing in modern culture. May be repeated for a maximum of 6 credit hours. Prereq: Consent of instructor. Consent of instructor.

460 Mass Communications History (3) Development of the press and the role of mass communications in American history. Newspapers, radio, television and magazines. F

461 Cuban Revolution in Historical Perspective (3) Readings from and interviews with experts in environmental science and reporting. Expository popular literature in Latin America, 18th to 20th centuries. May be repeated for a maximum of 12 credit hours. Prereq: Consent of instructor.

462 Directed Readings in Brazilian Literature (3) (Same as Spanish 432.)

463 Modern Latin American History in Film (3) (Same as History 405.)

LATIN (257)

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

190 Latin Transition (2) This course is designed to prepare students for enrollment in Latin 251, Prereq: Two years of high school Latin and a score on the Latin placement exam below that required for admission to Latin 251. Since 150 is a score for elementary Latin students who receives credit in this course may not also receive credit for any other 100-level Latin course and therefore also fulfill the 6 hours of elementary Latin requirement for certification.

251 Intermediate Latin: Grammar and Readings (3) Prereq: 112 or 150 or placement through the Latin placement examination.

252 Intermediate Latin: Vergil's Aeneid (3) Prereq: 251 or equivalent.

311 Cleo and Ballott (3) Prereq: 242 or equivalent.

313 Peoples and Cultures of Mesoamerica (3) (Same as Anthropology 313.)

318 Caribbean Cultures and Societies (3) (Same as Spanish 336.)

319 World Business: The Latin American Experience (3) Latin American business. Role of media in society. Not available for the Communication major only. Satisfactory/No Credit only.

320 Roman Lyric Poetry (3) Poetry of Catullus, Horace, and the elegists. Prereq: 242 or equivalent.

414 Claireo and Techniques of Latin Prose Composition (4) For seniors in Latin. Praxis, historical, and critical perspectives on Latin prose composition. The writings of Cicero, the model. Prereq: 301-302 or consent of instructor.

415 CLEO: Readings from Late Latin Literature (3) (3) (Same as Spanish 341.)

416 Cuba's Revolutionary History (3) (3) (Same as Spanish 341.)

417 History of Latin America (3) (Same as History 363.)

418 History of Latin America (3) (Same as History 363."

419 Geography of Middle America (3) (Same as Anthropology 313.)

420 Introduction to Latin American Studies (3,3) (Same as History 255-256.)

421 CLEO: Readings from Late Latin Literature (3) (3) (Same as Spanish 341.)

422 Directed Readings in Brazilian Literature (3) (Same as Portuguese 432.)

423 Directed Readings in Brazilian and Portuguese Literature (3) (Same as Portuguese 432.)

424 Latin American Government and Politics (3) (Same as Political Science 355."

425 Teaching Speech and Drama (3) (3) (Same as Speech 251-252.)

426 History of Latin America (3) (Same as History 363.)

427 Geography of Middle America (3) (Same as Geography 222.)

428 Geography of South America (3) (Same as Geography 222.)

429 Cultural Plurality and Institutional Changes in Latin America (3) (Same as Spanish 405.)

430 Latin American Studies Seminar (3) (Same as Speech 400.)

431 Directed Readings in Brazilian and Portuguese Literature (3) (Same as Portuguese 432.)

432 Directed Readings in Brazilian and Portuguese Literature (3) (Same as Portuguese 432.)

433 Latin American Government and Politics II (3) (Same as Political Science 416.)

434 History of Brazil (3) (Same as History 460.)

435 Cuba's Revolutionary History (3) (Same as History 460."

436 History of Mexico (3) (Same as History 462.)

437 Modern Latin American History in Film (3) (Same as History 405.)

LANGUAGE, COMMUNICATIONS AND HUMANITIES EDUCATION (598)

141 Efficient Reading and Study Skills (2) Improves students' ability to read quickly. May be repeated for a maximum of 6 credit hours. Prereq: Consent of instructor.

203 Editing (3) Methods and practice in judging news and issue-oriented journalism of politics and public affairs. Role of media in society. Not available for the Communication major only. Satisfactory/No Credit only.

290 Photojournalism (3) Principles and practice of writing feature articles for newspapers, magazines and community publications. Critiquing of student's work in writing workshops, and writing about in-class pieces as assigned. Prereq: Typography proficiency.

412 Opinion Writing (3) Analysis of editorial positions, understanding of communication practices in international affairs and broadcast systems studies in terms of relevant mass media. Role of media in society. Not available for the Communication major only. Satisfactory/No Credit only.

413 Claireo and Techniques of Latin Prose Composition (4) For seniors in Latin. Praxis, historical, and critical perspectives on Latin prose composition. The writings of Cicero, the model. Prereq: 301-302 or consent of instructor.
LOGISTICS AND TRANSPORTATION (624)

301 Introduction to Logistics (3) Business logistics as a strategy, within the firm. Role of material management and physical distribution, activities such as customer service, order processing and inventory, 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 analyzed for Interstate, parks and private, local and regional, traffic flows, transportation needs. Prereq: Economics 343, 347.

303 Logistics and Operation Management (3) Applications and techniques for the development of strategies and organizational structure and control of operations. Topics include design, planning, and operations support for the global supply chain. Prereq: 301-302, Statistics 365 and senior standing.

304 Special Topics in Logistics and Transportation (1-6) Seminar in current problem area in logistics and transportation. Topic announced prior to offering. May be repeated twice for additional credit provided topic is different. Maximum 6 hours. Prereq: Consent of instructor. Major writing requirement. Prereq: Completion of business core courses and senior standing. Must be admitted to a business major.

311 Labor Relations and Collective Bargaining (3) American labor history, structure and philosophy of collective bargaining, nature of labor-management, consumer relations, and dispute settlement. (Same as Economics 543.)

312 Organizational Structure and Behavior (3) Behavioral processes in organizations; motivation, leadership, decision making, communication; behavioral consequences; group behavior, informal organizations, organizational structure, socialization, conflict and change. Prereq: 301, 302 and senior standing.


342 Business Strategy/Policy (3) Strategy and policy which affect the direction and success of the total organization. Strategic courses which integrate all functional areas in the formulation and implementation of strategy which will enable the organization to reach objectives. Major writing requirement. Prereq: Completion of business core courses and senior standing. Must be admitted to a business major.

360 Business Strategy/Strategic Planning (3) General business simulation used by teams which formulate and implement business strategy. Application of strategic planning and group management skills. Prereq: 301, senior standing.

369 Implementation and Evaluation of Personnel Programs (3) Methods of identifying, developing, implementing and evaluating various personnel programs. Prereq: 431, senior standing.

400 Special Topics in Logistics and Transportation (3-6) Seminar in current problem area in logistics and transportation. Topic announced prior to offering. May be repeated once for additional credit provided topic is different. Maximum 6 hours. Prereq: Consent of instructor. Major writing requirement. Prereq: Completion of business core courses and senior standing. Must be admitted to a business major.


411 Seminar in Logistics Strategy (3) Senior seminar in development of strategy in logistics management. Major writing requirement. Prereq: 301, 302, 410, senior standing.

412 Seminar in Transportation Strategy (3) Senior seminar in development of strategy in transportation management. Major writing requirement. Prereq: 411, senior standing.

413 Logistics and Transportation Off-Campus Study (1-6) 1-credit, study-abroad credit only. Prereq: Consent of instructor.

415 Independent Study (1-6) Directed research on subject of mutual interest to student and advisor. Major writing requirement. May be repeated. Maximum 6 credit hours. Prereq: Consent of instructor.

417 Enterprise In-Residence in Transportation (6) Students take on the role of logistics and transportation executive. Focus on the elements of business decision making process. Prereq: Consent of instructor.

MANAGEMENT (625)

203 Management Information Systems (3) Management of information systems and applications. Using the computer as a tool to source, organize, and analyze data. Designing information systems to meet business needs. Emphasis on spreadsheet, database management, management information systems, telecommunications, and information technology. Prereq: Open to College of Business Administration students only.

204 Principles of General and Operations Management (3) Basic functions of general management and the principles and techniques used in operations management. Includes studies related to decision-making problems. Prereq: Statistics 201.


206 Statistics (3) Data modeling and statistical tools of business decision making. Emphasis on theoretical concepts and their application to business problems.
Course 122 Calculus A (3) For students not planning to major in the physical sciences, engineering, mathematics, or computer science. Elementary and logarithmic functions, exponential and logarithmic functions, plane curves, limits and continuity, optimization. Prereq: Two years of algebra and one year of geometry in high school plus satisfactory placement test scores, or 119 or 130.

124 Calculus B (3) For students not planning to major in the physical sciences, engineering, mathematics, or computer science. Sequel to 121, including elementary matrix algebra, vector calculus, multivariable functions, partial derivatives, and associated library software for problems selected from rootsof equations, systems of linear equations, and least-squares data fitting, interpolation, numerical integration, and numerical methods for ordinary differential equations. Prereq: 141 or 147.

125 Basic Calculus (3) For students not planning to major in the physical sciences, engineering, mathematics, or computer science. Calculus of algebraic, exponential, and trigonometric functions for students who have received credit for 141 or 151. Prereq: Two years of algebra, a year of geometry, and half a year of trigonometry in high school, plus satisfactory placement test scores, or Math 130.

123 Finite Mathematics (3) For students not planning to major in the physical sciences, engineering, mathematics, or computer science. Topics in linear algebra, differential calculus, optimization, probability theory, and computer science. Calculus of algebraic, exponential, and trigonometric functions for students who have received a grade of C or better in 141 or 151 may not subsequently receive credit in 125. Prereq: Two years of algebra and one year of geometry in high school plus satisfactory placement test scores, or 119 or 130.

130 Precalculus 1 (4) Review of algebra, logarithmic, exponential, and inverse functions; plane curves, limits and continuity, optimization. Prereq: Two years of algebra and one year of geometry in high school and satisfactory placement test scores, or Math 119, 115, 113, 130, and 201. Course does not count toward the total number of hours required for enrollment in Mathemat- ics.

130 Structure of the Number System (3) Problem-solving, estimation, and critical thinking. Counting, sets and relations, numeration systems, integers, rational numbers and rational number models. Prereq: Two years of algebra and one year of geometry in high school plus satisfactory placement test scores, or 119 or 130.


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

331 Mathematical Analysis I (3) First course in the sigma of major in the physical sciences, engineering, mathematics, or computer science. Elementary and logarithmic functions, exponential and logarithmic functions, plane curves, limits and continuity, optimization. Prereq: Two years of algebra and one year of geometry in high school plus satisfactory placement test scores, or 119 or 130.

131 Finite Mathematics (3) For students not planning to major in the physical sciences, engineering, mathematics, or computer science. Elementary and logarithmic functions, exponential and logarithmic functions, plane curves, limits and continuity, optimization. Prereq: Two years of algebra and one year of geometry in high school plus satisfactory placement test scores, or 119 or 130.

132 Calculus I (3) For students not planning to major in the physical sciences, engineering, mathematics, or computer science. Elementary and logarithmic functions, exponential and logarithmic functions, plane curves, limits and continuity, optimization. Prereq: Two years of algebra and one year of geometry in high school plus satisfactory placement test scores, or 119 or 130.

Prereq: Two years of algebra and one year of geometry in high school plus satisfactory placement test scores, or Math 130.


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

331 Mathematical Analysis I (3) First course in the sigma of major in the physical sciences, engineering, mathematics, or computer science. Elementary and logarithmic functions, exponential and logarithmic functions, plane curves, limits and continuity, optimization. Prereq: Two years of algebra and one year of geometry in high school plus satisfactory placement test scores, or 119 or 130.

131 Finite Mathematics (3) For students not planning to major in the physical sciences, engineering, mathematics, or computer science. Elementary and logarithmic functions, exponential and logarithmic functions, plane curves, limits and continuity, optimization. Prereq: Two years of algebra and one year of geometry in high school plus satisfactory placement test scores, or 119 or 130.

132 Calculus I (3) For students not planning to major in the physical sciences, engineering, mathematics, or computer science. Elementary and logarithmic functions, exponential and logarithmic functions, plane curves, limits and continuity, optimization. Prereq: Two years of algebra and one year of geometry in high school plus satisfactory placement test scores, or 119 or 130.

Prereq: Two years of algebra and one year of geometry in high school plus satisfactory placement test scores, or Math 130.


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

331 Mathematical Analysis I (3) First course in the sigma of major in the physical sciences, engineering, mathematics, or computer science. Elementary and logarithmic functions, exponential and logarithmic functions, plane curves, limits and continuity, optimization. Prereq: Two years of algebra and one year of geometry in high school plus satisfactory placement test scores, or 119 or 130.

131 Finite Mathematics (3) For students not planning to major in the physical sciences, engineering, mathematics, or computer science. Elementary and logarithmic functions, exponential and logarithmic functions, plane curves, limits and continuity, optimization. Prereq: Two years of algebra and one year of geometry in high school plus satisfactory placement test scores, or 119 or 130.

132 Calculus I (3) For students not planning to major in the physical sciences, engineering, mathematics, or computer science. Elementary and logarithmic functions, exponential and logarithmic functions, plane curves, limits and continuity, optimization. Prereq: Two years of algebra and one year of geometry in high school plus satisfactory placement test scores, or 119 or 130.

Prereq: Two years of algebra and one year of geometry in high school plus satisfactory placement test scores, or Math 130.


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

331 Mathematical Analysis I (3) First course in the sigma of major in the physical sciences, engineering, mathematics, or computer science. Elementary and logarithmic functions, exponential and logarithmic functions, plane curves, limits and continuity, optimization. Prereq: Two years of algebra and one year of geometry in high school plus satisfactory placement test scores, or 119 or 130.

131 Finite Mathematics (3) For students not planning to major in the physical sciences, engineering, mathematics, or computer science. Elementary and logarithmic functions, exponential and logarithmic functions, plane curves, limits and continuity, optimization. Prereq: Two years of algebra and one year of geometry in high school plus satisfactory placement test scores, or 119 or 130.

132 Calculus I (3) For students not planning to major in the physical sciences, engineering, mathematics, or computer science. Elementary and logarithmic functions, exponential and logarithmic functions, plane curves, limits and continuity, optimization. Prereq: Two years of algebra and one year of geometry in high school plus satisfactory placement test scores, or 119 or 130.

Prereq: Two years of algebra and one year of geometry in high school plus satisfactory placement test scores, or Math 130.


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

331 Mathematical Analysis I (3) First course in the sigma of major in the physical sciences, engineering, mathematics, or computer science. Elementary and logarithmic functions, exponential and logarithmic functions, plane curves, limits and continuity, optimization. Prereq: Two years of algebra and one year of geometry in high school plus satisfactory placement test scores, or 119 or 130.

131 Finite Mathematics (3) For students not planning to major in the physical sciences, engineering, mathematics, or computer science. Elementary and logarithmic functions, exponential and logarithmic functions, plane curves, limits and continuity, optimization. Prereq: Two years of algebra and one year of geometry in high school plus satisfactory placement test scores, or 119 or 130.
475 Industrial Mathematics (3) Modeling, analysis, decomposition, least squares and the algebraic eigenvalue problem of ordinary differential equations, approximation by polynomials and piecewise polynomials. Consent of instructor.

461 Topology (3) Introduction to topological spaces, connectedness, compactness, and the significance and correlation of laboratory data. Consent of instructor.

319 Introductory Microbiology Laboratory (2) Basic techniques for the examination, cultivation, and identification of microorganisms. Consent of instructor.

MEDICAL STUDIES (674)

161 Laboratory Safety Education (3) Preparation for laboratory safety. Hazards of chemicals, potential health hazards, and proper equipment will be demonstrated. Techniques of safe operation and handling will be presented.

163 Laboratory Industrial Safety (3) Safety techniques and accident prevention. All students must register for credit and must attend a minimum of 20 hours. Consent of instructor.

261 Medieval Culture: Reading from the Early Middle Ages, 500-1000 (3) Critical analysis and interpretation of selected works from the early medieval period. Emphasis on cultural and religious themes, on social and political history, and on the significance and correlation of laboratory data. Consent of instructor.

319 Introductory Microbiology Laboratory (2) Basic techniques for the examination, cultivation, and identification of microorganisms. Consent of instructor.

MEDICAL TECHNOLOGY (423)

410-411 Microbiology (4,4) Laboratory work in bacteriology, mycology, and virology. Emphasis on the identification of bacteria and fungi, their unusual methods of identification, and evaluation of antibacterial and antifungal compounds. Consent of instructor. Consent of instructor.

319 Introductory Microbiology Laboratory (2) Basic techniques for the examination, cultivation, and identification of microorganisms. Consent of instructor.

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1475 Industrial Mathematics (3) Modeling, analysis, decomposition, least squares and the algebraic eigenvalue problem of ordinary differential equations, approximation by polynomials and piecewise polynomials. Consent of instructor.

430-431 Hematology and Clinical Microscopy (4,4) Principles, theories, and instrumentation related to qualitative and quantitative evaluation of cellular elements of blood and other body fluids, factors of hemostasis, interpretive chemical analysis of urine, and renal function. Consent of instructor.

425 Clinical Hematology (3) Clinical aspects of hematology, including procedures in clinical laboratory analysis, anatomic pathologic evaluation, and the significance and correlation of laboratory data.

319 Introductory Microbiology Laboratory (2) Basic techniques for the examination, cultivation, and identification of microorganisms. Consent of instructor.

584 BIOLOGY (423)

319 Introductory Microbiology Laboratory (2) Basic techniques for the examination, cultivation, and identification of microorganisms. Consent of instructor.

319 Introductory Microbiology Laboratory (2) Basic techniques for the examination, cultivation, and identification of microorganisms. Consent of instructor.

319 Introductory Microbiology Laboratory (2) Basic techniques for the examination, cultivation, and identification of microorganisms. Consent of instructor.

161 Laboratory Safety Education (3) Preparation for laboratory safety. Hazards of chemicals, potential health hazards, and proper equipment will be demonstrated. Techniques of safe operation and handling will be presented.
240 Military Science 1 (3) Introduction of basic leadership principles and skills with emphasis on effective oral communication. Students present a military drill and ceremony briefing. May be repeated. Letter grade only. F, S.

120 Basic Military Science II (3) Instruction of basic leadership. Theory, principles, and skills with emphasis on practical usage. Students must pass a physical fitness examination. Letter grade only. F, S.

130 Army Conditioning Program (1) Challenge in physical fitness. Attention is given to cardiorespiratory endurance, muscular strength and endurance, flexibility, and skill in recreation. Letter grade only. F, S.

220 Military Studies - Practicum (2) Contact hours of instruction and evaluation at Fort Knox, Kentucky. One hour a week as a part-time participant. Prerequisites: United States citizen who has satisfactorily completed basic training. Letter grade only. F.

210 Class Woodwind Methods (2) Structure, techniques of playing, care, and repair of principal instruments. Includes brass and woodwinds. Letter grade only. F, S.

230 Conducting 1 (3) Basics of conducting: baton, gesture, tempos, techniques of handling, and movements of the left hand. Letter grade only. F.

221 Basic Officer Skills (3) The study of American military history from 1775 to the present. Includes the military role of the nation in peace and war and the conduct of international relations. Includes an understanding of the history of military art, strategy, battle history, technical studies, and the relationship of armed forces with society. Includes the history of the military and the military in society. Letter grade only. F, S.

232 Basic Officer Skills II (3) The study of American military history from 1775 to the present. Includes the military role of the nation in peace and war and the conduct of international relations. Includes an understanding of the history of military art, strategy, battle history, technical studies, and the relationship of armed forces with society. Includes the history of the military and the military in society. Letter grade only. F, S.

260 Functional Piano for Teachers (1) Practical piano skills for the general music teacher who does not have a keyboard instrument as the applied principal. Preparation, improvisation, reading open vocal scores, simple accompaniments. May be repeated once for credit. Letter grade only. F.

280 Basic Conducting (3) Flashing rhythmic, instrumental, choral, and vocal conducting, musical scoring, and conducting activities appropriate for the elementary grades. Prerequisite: Admission to Teacher Education Program. Letter grade only. F.

339 Independent Study (1-3) Developing advanced conducting, choral singing, or instrumental conducting techniques. Consent of instructor. May be repeated once for credit. Maximum 9 hours. Letter grade only. F, S.

320 Advanced Military Studies (6) Preparation of the future officer leader of the U.S. Army to meet the mission of the Army at the highest level of professional expertise. Letter grade only. F, S.

320 Conducting I (3) Developing advanced techniques of conducting, including the construction and development of the rehearsal plan, preparation and execution of rehearsal, and the development of leadership. Letter grade only. F, S.

300 Advanced Camp-Practicum (4) Four hours of contact per week during the four-week Army Camp at Fort Knox. Letter grade only. Maximum 8 hours. F.

310 Advanced Camp-Practicum (4) Four hours of contact per week during the four-week Army Camp at Fort Knox. Letter grade only. Maximum 8 hours. S.

310 Conducting I (3) Developing advanced techniques of conducting, including the construction and development of the rehearsal plan, preparation and execution of rehearsal, and the development of leadership. Letter grade only. F, S.

320 Advanced Military Studies (6) Preparation of the future officer leader of the U.S. Army to meet the mission of the Army at the highest level of professional expertise. Letter grade only. F, S.

320 Conducting I (3) Developing advanced techniques of conducting, including the construction and development of the rehearsal plan, preparation and execution of rehearsal, and the development of leadership. Letter grade only. F, S.

300 Advanced Camp-Practicum (4) Four hours of contact per week during the four-week Army Camp at Fort Knox. Letter grade only. Maximum 8 hours. F.

310 Advanced Camp-Practicum (4) Four hours of contact per week during the four-week Army Camp at Fort Knox. Letter grade only. Maximum 8 hours. S.

310 Conducting I (3) Developing advanced techniques of conducting, including the construction and development of the rehearsal plan, preparation and execution of rehearsal, and the development of leadership. Letter grade only. F, S.

320 Advanced Military Studies (6) Preparation of the future officer leader of the U.S. Army to meet the mission of the Army at the highest level of professional expertise. Letter grade only. F, S.

320 Conducting I (3) Developing advanced techniques of conducting, including the construction and development of the rehearsal plan, preparation and execution of rehearsal, and the development of leadership. Letter grade only. F, S.

300 Advanced Camp-Practicum (4) Four hours of contact per week during the four-week Army Camp at Fort Knox. Letter grade only. Maximum 8 hours. F.

310 Advanced Camp-Practicum (4) Four hours of contact per week during the four-week Army Camp at Fort Knox. Letter grade only. Maximum 8 hours. S.

310 Conducting I (3) Developing advanced techniques of conducting, including the construction and development of the rehearsal plan, preparation and execution of rehearsal, and the development of leadership. Letter grade only. F, S.

320 Advanced Military Studies (6) Preparation of the future officer leader of the U.S. Army to meet the mission of the Army at the highest level of professional expertise. Letter grade only. F, S.

320 Conducting I (3) Developing advanced techniques of conducting, including the construction and development of the rehearsal plan, preparation and execution of rehearsal, and the development of leadership. Letter grade only. F, S.

300 Advanced Camp-Practicum (4) Four hours of contact per week during the four-week Army Camp at Fort Knox. Letter grade only. Maximum 8 hours. F.

310 Advanced Camp-Practicum (4) Four hours of contact per week during the four-week Army Camp at Fort Knox. Letter grade only. Maximum 8 hours. S.
399-599 Trombone Choir (1,1) May be repeated.
399-599 Tubas Ensemble (1,1) May be repeated.
399-599 Percussion Ensemble (1,1) May be repeated.
311-011 Women's Chorale (1,1) May be repeated.
311-012 Baritone Choir (1,1) May be repeated.
311-013 Brass Choir (1,1) May be repeated.
311-014 Chamber Music Ensemble (1,1) May be repeated.
311-015 String Choir (1,1) May be repeated.
311-016 Vibraphone Ensemble (1,1) May be repeated.
311-017 Woodwind Ensemble (1,1) May be repeated.
312-020 UT Singers (1,1) May be repeated.
312-021 Chamber Singers (1,1) May be repeated.
322-031 College Choir (1,1) May be repeated.
324-041 Saxophone Choir (1,1) May be repeated.
326-042 Opera Theatre (1,1) May be repeated.
326-043 Concert Choir (1,1) May be repeated.
326-044 University Choir (1,1) May be repeated.
327-053 Men's Chorus (1,1) May be repeated.
327-054 Women's Chorus (1,1) May be repeated.
329-059 Accompanying (1,1) May be repeated.
380-580 Concert Choir (1,1) May be repeated.
383-583 Men's Chorale (1,1) May be repeated.
389-589 Women's Chorale (1,1) May be repeated.
399-599 Accompanying (1,1) May be repeated.

354-554 Varsity Band (1,1) May be repeated.
340-540 Opera Theatre (1,1) May be repeated.
330-530 Chamber Singers (1,1) May be repeated.
312-512 Baroque Ensemble (1,1) May be repeated.
309-509 Tuba Ensemble (1,1) May be repeated.
306-506 Trombone Choir (1,1) May be repeated.
300-500 Symphony Orchestra (1,1) May be repeated.

310 Fundamentals of Music (3) Theory and practice of basic elements of music. Writing emphasis course. Prereq: None.
311 Music Appreciation (3) Developing skills in appreciating and understanding music from the ancient roots to the 20th century; music history and culture. Writing emphasis course. Prereq: None.
312 History of Rock (3) Study and appreciation of rock music, its origins in blues and rock and roll, and its development and cultural dimensions to the present. Writing emphasis course. E, Prereq: None.
313 Music Performance (3) Individualized course of study combining participation in a University musical ensemble with study of an instrument or voice. One hour of applied study. (Music Performance 103-145 encompasses all levels of study in the Music Ensemble 301-395.) May be repeated once for credit. Requires permission of Applied Music Faculty. Fees apply. Performing on an instrument or voice in a University ensemble.
149 Fundamentals of Performance (1-2 Private instrumental or vocal study, one or two half-lessons per week. 1 hour credit: elective, secondary or minor, two hours credit: major.) This course is designed to prepare students for enrollment in Music Performance 103-139. Cannot be used as a satisfies all requirements in the Music Performance 103-139 level.
310-395 String Literature and Pedagogy 1,1,1 (3,3) Survey of instructional materials and methods. Application of pedagogical procedures to individual instruction and performance. Demonstration lessons by applied brass faculty and ensemble members. Prereq: Consent of instructor.
Woodwind Literature and Pedagogy 3,3 (3,3) Survey of instructional materials and methods. Application of pedagogical procedures to individual instruction and performance. Demonstration lessons by applied woodwind faculty and ensemble members. Prereq: Consent of instructor.
323 Percussion Literature and Pedagogy (1,1) Survey of instructional materials and methods. Application of pedagogical procedures to individual instruction and performance. Demonstration lessons by applied percussion faculty and ensemble members. Prereq: Consent of instructor.
410 Physique for Nuclear Medicine I (3) Nuclear physics, mathematics, and statistics. Survey of historic and current concepts in atomic and nuclear structure; interrelationships between matter and energy, nuclear reactions, nuclear stability, and fission; nuclear energy; radiation dosimetry; nuclear spectrometry; applications of nuclear medicine. May not be substituted for Physics 471 or 472.

140 Instrumentation (2) Course concerns non-imaging, imaging, and instrument quality assurance. Non-imaging topics include radiation detector design, their applications, fabrication, and therapeutics. Imaging topics include radiography, CT, nuclear medicine, MRI. May be repeated for credit. Prerequisite: consent of instructor.

150 Physics for Nuclear Medicine II (3) Continuation of focus on radiation biology and radiation safety. Radiation detectors include ionization chambers, scintillation detectors, and image intensifiers. Nuclear medicine topics include basic principles of nuclear medicine instrumentation, radionuclide production, and basic physical and chemical applications of medical isotopes. May not be substituted for Physics 471 or 472.

160 Instrumentation (3) Course concerns non-imaging, imaging, and instrument quality assurance. Non-imaging topics include radiation detector design, their applications, fabrication, and therapeutics. Imaging topics include radiography, CT, nuclear medicine, MRI. May be repeated for credit. Prerequisite: consent of instructor.

170 Choral Arranging II (2) Study and practice of choral arranging. Prerequisite: consent of instructor. May be repeated for credit.

180 Voice Literature I (2) Course development of general but not specific vocal literature from all cultures and styles. Prerequisite: voice literature I. May be repeated for credit. Prerequisite: consent of instructor.

190-290-390-490-590 Organ (1-4) May be repeated.

175-275-375-475-575 String Bass (1-4) May be repeated.

160-260-360-460-560 Violin (1-4) May be repeated.

155-255-355-455-555 Voice (1-4) May be repeated.

145-245-345-445-545 Tuba (1-4) May be repeated.

140-240-340-440-540 Baritone (1-4) May be repeated.

135-235-335-435-535 Trombone (1-4) May be repeated.

130-230-330-430-530 Trumpet (1-4) May be repeated.

120-220-320-420-520 Saxophone (1-4) May be repeated.

115-215-315-415-515 Clarinet (1-4) May be repeated.

110-210-310-410-510 Bassoon (1-4) May be repeated.
301 Clinical Pharmacology (3) Biochemical and pharmacological examination of drugs and their effects on body function. Therapy, management and administration of pharmacological agents. Prerequisites: Chem 100-10 and 6 semester hours of anatomy and physiology. Corequisite: Biology 310.

430 Computer Applications in Nuclear Medicine (2) Computer applications, algorithms, and components in quantification in nuclear medicine. Topics include deconvolution, statistical methods, and image reconstruction with analytic reconstruction methods and interatrial. Image reconstruction with analytic reconstruction methods and image processing algorithms with analytic reconstruction methods and image interpretation for National Registry Examination with special emphasis on imaging, instrumentation, radiopharmaceutical methods, and basic administrative and management procedures.

479 Nuclear Medicine Registry (2) Preparation for Nuclear Medicine Registry Examination with special emphasis on the interpretation and reporting in technical imaging. Prerequisites: Consent of instructor.

NURSING (720) All upper division nursing courses, except 301 and 302, are restricted to students who have successfully completed the major see Progression (see PROGRESSION AND PROCEDURES) in the chapter material.

202 Health and Culture (5) Exploration of the beliefs and practices of cultural groups within the United States. In relation to health, illness and the health care delivery system in the United States. This course has no prerequisites and is open to all UT Knoxville undergraduate students.

301 Clinical Pharmacology (3) Biochemical and pharmacological examination of drugs and their effects on body function. Therapy, management and administration of pharmacological agents. Prerequisites: Chem 100-10 and 6 semester hours of anatomy and physiology. Corequisite: Biology 310.

302 Life Span Nutrition (3) Physiological development of humans across the life span; needs of clients and groups with psychosocial and/or altered health states during lifecycle; nutritional intervention strategies for families experiencing normal pregnancy and birth and for infants and young children. Nutrition and family growth and development, family dynamics, and nutritional intervention strategies for families experiencing normal pregnancy and birth. Emphasis on provision of planned nursing care for selected clients in a variety of settings. 2 lectures, 4 lab. Prerequisites: 301, 304, 305, 306. Corequisite: CPHE 315 or CPHE 316.

303 Advanced Placement Credit: Care of the Adult Client (3) For registered nurses only. Satisfactory/No Credit only.

304 Advanced Placement Credit: Care of the Child (4) For registered nurses only. Satisfactory/No Credit only.

305 Transition to Professional Nursing (3) Current Health Care Delivery System and the role of the professional nurse. Philosophy and conceptual framework of the baccalaureate program. Prerequisite: Consent of instructor.


308 Nutrition of Adults Theory (3) Theoretical components of 330. For registered nurses only. Prerequisite: 301, 304, 305, 306. Corequisite: CPHE 315 or CPHE 316.

310 Physiological Chemistry (3) (Same as Biochemistry and Histology 310.) Lecture and laboratory study of the cell as a chemical unit. Topics include biochemistry, structure and function of the cell, and medical and biological aspects of human and mammalian tissues and cells. Prerequisites: Zoology 230 or consent of instructor.

311 Community Health Nursing: Aggregates (3) Introduction to the health professions, and a sociocultural dimension of health, illness and the health care delivery system. Standard committee for the baccalaureate program. Prerequisite: Consent of instructor.

314 Wellness and Lifestyle (3) Models of wellness and health promotion, disease prevention, wellness promotion, and rehabilitation. Emphasis on prevention of illness and disability. Prerequisites: 301, 304, 305, 306. Corequisite: 316 or consent of instructor.

315 Clinical Nursing Practicum (3) Application of nursing theories, principles, and concepts to care of hospital clients. Prerequisites: 301, 304, 305, 306. Prerequisites: CPHE 315 or CPHE 316.

316 Health Deviation Concepts II (4) Continuation of 303 with emphasis on the nursing process as applied to clients with pathological and behavioral deviations underlying or associated with common and critical illnesses. Prerequisites: 303, 306. Sp.

317 Clinical Nursing Practicum (2) Application of nursing theories, principles, and concepts to care of hospital clients. Prerequisites: 301, 304, 305, 306. Prerequisites: CPHE 315 or CPHE 316.

320 Advanced Placement Credit: Care of the Adult Client (4) For registered nurses only. Satisfactory/No Credit only.

321 Advanced Placement Credit: Care of the Child (4) For registered nurses only. Satisfactory/No Credit only.

322 Advanced Placement Credit: Care of Client with Mental Disorder (3) For registered nurses only. Satisfactory/No Credit only.

323 Advanced Placement Credit: Care of Client with Developmental Disorder (3) For registered nurses only. Satisfactory/No Credit only.

325 Nursing of Adults III (3) Continuation of 314, 325, 316, 326 with emphasis on provision of planned nursing care for selected clients in a variety of settings. 2 lectures, 4 lab. Prerequisites: 301, 302, 304, 305, 306. Corequisite: CPHE 315 or CPHE 316.

326 Nursing of Adults IV (3) Continuation of 325 with emphasis on provision of planned nursing care for selected clients in a variety of settings. 2 lectures, 4 lab. Prerequisites: 301, 302, 304, 305, 306. Corequisite: CPHE 315 or CPHE 316.

330 Community Health Nursing: Individuals and Families (3) Explorations of individual, family, community and societal health problems require in-patient services. 2 lectures, 2 lab. Prerequisites: 301, 302, 304, 305, 306. Corequisite: CPHE 315 or CPHE 316.

335 Community Health Nursing I (3) Development, psychosocial, cultural, environmental, ethical issues related to community health nursing. Applications of the nursing and epidemiologic processes to the care of individuals and families within the home and community. Emphasis on health promotion, disease prevention, and control of communicable disease. 2 lectures, 2 lab. Prerequisites: All 300 level nursing courses. F, Sp.

336 Community Health Nursing II (3) Continuation of 335 with emphasis on providing planned nursing care and care management in acute and extended health care services. Prerequisites: All required 300 level courses. Prerequisites: CPHE 401, 402, 411, 412, 431, 432, 433, F.

411 Independent Study (1-3) Nursing or health-related topic not covered in other nursing courses. Prerequisites: Consent of instructor.

412 Community Mental Health Nursing (6) Nursing for community mental health nursing. Topics include sociocultural, economic, and political factors that influence mental health needs and mental health services. Prerequisites: Consent of instructor.

431 Nursing of Children (4) Theoretical component and clinical experiences related to nursing of normal infants, children, and adolescents. Emphasis on application of physiological, psychological, behavioral, and developmental concepts for the provision of nursing care to children. Prerequisites: All 300 level nursing courses or their equivalent. F, Sp.

432 Leadership and Management in Nursing (3) Introduction to selected concepts related to leadership and management in the delivery of nursing care and health care services. Prerequisites: All required 300 level courses. Prerequisites: CPHE 401, 402, 411, 412, 431, 432, 433, F.

440 Clinical Nursing Practicum (3) Intensive experiential encounter that emphasizes integration of clinical skills, decision-making, time management, leadership, and management concepts in clinical practice. Prerequisites: All required 300 level courses. Prerequisites: CPHE 401, 402, 411, 412, 431, 432, 433, F.

441 Clinical Nursing Practicum (2) Intensive experiential encounter that emphasizes integration of clinical skills, decision-making, time management, leadership, and management concepts in clinical practice. Prerequisites: All required 300 level courses. Prerequisites: CPHE 401, 402, 411, 412, 431, 432, 433, F.

450 Physiological Principles (3) Concepts and principles of normal human physiology; tissue and organ function, integration of body function and the body in the environment; and for understanding pathophysiological mechanisms. Prerequisites: Consent of instructor.

470 Special Topics (1-3) Specialized study of selected nursing topics, problems, or issues not covered in other nursing courses. Prerequisites: Consent of instructor.

475 Independent Study (1-3) Nursing or health-related topic not covered in other nursing courses. Prerequisites: Consent of instructor.

477 Life Span Nutrition (3) Current issues in nutrition, food selection, health promotion, disease prevention, and evaluation. Prerequisites: Consent of instructor.

510 Food Preparation (3) Food selection, preparation, evaluation, meal planning, service. F, Sp.

525 Fundamentals of Nutrition (4) Nutrition in normal and altered health states during life cycle nutritional needs of infants and children and adults. Emphasis on the provision of nutritionally correct food to patients who have special needs. Prerequisites: Consent of instructor. Prerequisites: Zoology 230. Prerequisites: Consent of instructor. Prerequisites: Zoology 230. Prerequisites: Consent of instructor. F, Sp.

530 Fundamentals of Nutrition (2) Nutrition in normal and altered health states during life cycle nutritional needs of infants and children and adults. Emphasis on the provision of nutritionally correct food to patients who have special needs. Prerequisites: Consent of instructor. Prerequisites: Zoology 230. Prerequisites: Consent of instructor. F, Sp.

570 Life Span Nutrition (4) Physiological development and the nutritional needs that influence nutrient needs and nutrient behaviors of infants, children, and adults. Emphasis on application of physiological, psychological, behavioral, and developmental concepts for the provision of nursing care to children. Prerequisites: All 300 level nursing courses or their equivalent. F, Sp.

571 Physiological Chemistry (3) Elements of food selection, preparation, evaluation, meal planning, service. F, Sp.

572 Nutrition (4) Nutritional concepts: current consumer issues in nutrition; nutritional needs for infants, children, and adults. Emphasis on the provision of nutritionally correct food to patients who have special needs. Prerequisites: Consent of instructor. Prerequisites: Zoology 230. Prerequisites: Consent of instructor. F, Sp.

1101 Principles of Food (3) Food selection, safety, preparation, evaluation, meal planning, service. F, Sp.

341 Family/Community Health Nursing (6) Application of the nursing process to individuals, families, groups, and communities in the childbearing and childrearing process. Clinical experiences related to nursing care of clients in early, middle and late adulthood with various health needs. Emphasis on the provision of planned nursing care for selected clients in a variety of settings. 2 lectures, 2 lab. Prerequisites: All 300 level nursing courses. Prerequisites: Consent of instructor.
### Course Descriptions

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Title</th>
<th>Description</th>
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<tbody>
<tr>
<td>100</td>
<td>Chemistry 100</td>
<td>General chemistry for nonscience majors. Topics include atomic structure,</td>
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<td>chemical bonds, reactions, and applications.</td>
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<tr>
<td>280, 350,</td>
<td></td>
<td>Comprehensive study of residential landscapes and principles of landscape</td>
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<td>380</td>
<td></td>
<td>Principles of ground cover composition, control of environmental factors,</td>
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<td>regulation of growth, post-planting handling, and business management.</td>
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<td>320</td>
<td>Plant Materials (2)</td>
<td>Identification and classification of turfgrass species, ornamentals, trees,</td>
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<td>vines, and herbaceous plants and generally excluding those covered in 220.</td>
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<td>Prereq: 220 or consent of instructor. 2 labs. F.</td>
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<tr>
<td>325</td>
<td>Plant Propagation (3)</td>
<td>Physiology, methodology, and environmental requirements for propagation.</td>
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<td>Principles of plant growth, propagation, and management.</td>
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<tr>
<td>326</td>
<td>Nineteenth-and Twentieth-Century Philosophy</td>
<td>Development of Rationalism, empiricism, and pragmatism.</td>
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<td>The nature of modern philosophy, including the role of science in society.</td>
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<td>Prerequisites: Philosophy 280 or consent of instructor.</td>
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<td>340</td>
<td>Ethics (3)</td>
<td>Theories of ethical values. Writing-emphasis course.</td>
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<td>Prerequisite: Philosophy 200.</td>
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<tr>
<td>342</td>
<td>Business Ethics (3)</td>
<td>Ethical problems as they confront both business as a social institution and</td>
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<td>individual and society.</td>
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<td>Prerequisite: Introduction to Business Ethics.</td>
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<tr>
<td>344</td>
<td>Ethical Theory and Its Applications (3)</td>
<td>A study of moral and philosophical concepts, including ethics, philosophy,</td>
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<td>moral and political philosophy, and the nature of human values.</td>
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<td>Prerequisite: Introduction to Business Ethics.</td>
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<tr>
<td>370</td>
<td>Grounds Maintenance (3)</td>
<td>Identification and understanding of various landscape maintenance and</td>
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<td>groundskeeping practices.</td>
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<td>380</td>
<td>Advanced Landscape Design (4) Comprehensive study of landscape</td>
<td>Principles of green space construction, control of environmental factors,</td>
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<td>regulation of growth, post-planting handling, and business management.</td>
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<tr>
<td>385</td>
<td>Computer Aided Landscape Design (3) Overview of Computer Aided Design (CAD) as it relates to landscape design and construction. Emphasis on plan creation and construction of related landscape. Site evaluation techniques followed with utilization of AutoCAD and LANDCAD software. Prereq: 100. Agric. 290 or consent of instructor. Two 3-hour labs. F.</td>
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491 Foreign Study (1-15)
479 Studies in Recent Continental Philosophy (3)
465 Philosophy of History (3) Speculative and critical
446 Theoretical Issues in Medical Ethics (3) Prereq:
440 Contemporary Ethical Theory (3) Topics in meta-
425 Speculative and Critical Theory (6) Prereq: 440 or
400 The History of Ideas (6) Prereq: 311 or consent of
430 Social Philosophy (3) Prereq: 240 or consent of
426 Elementary Logic (4) Logical analysis of the
419 Philosophy of Mind (4) Prereq: 231 or consent of
418 Philosophy of Language (3) Prereq: 231 or consent of
417 Philosophy of Science (3) Prereq: 231 or consent of
405 Logic and Language (3) Prereq: 231 or consent of
403 Introduction to Symbolic Logic (4) Prereq: 231 or
402 Elementary Symbolic Logic (3) Prereq: 231 or
381 History of Mathematics (3) Prereq: 241 or consent of
376 Buddhist Philosophy and Religion of India (3) (Same as Religious Studies 376.) Writing emphasis course.
374 Modern Religious Philosophies (3) (Same as Religious Studies 374.)
373 Moksha Tradition (3) (Same as Religious Studies 412.)
372 Philosophy and Religion in China (3) (Same as Religious Studies 379.)
371 Religion and Philosophy in China (3) (Same as Religious Studies 372.)
366 Elements of Physics (4,4) Basic physical principles and applications required in pre-medical, pre-
military, pre-pharmacy and pre-veterinary programs. Must be taken in sequence. 3 hours lecture, 3 hours lab. Prereq: Mathematics 130 or Calculus.
365 Medical Ethics (3) Ethical issues in medicine such as abortion, euthanasia, human experimentation, fairness in healthcare delivery and the doctor-patient relationship. Must be taken in sequence. 3 hours lecture including demonstration lab. Prereq: Algebra.
356 Dynamic Astronomy (4) Prereq: 132-133 and Chemistry 101-102 or consent of instructor. Two 3-hour laboratory periods. Must be taken in sequence. 3 hours lecture. 3 lab hours. This course will satisfy the prerequisite requirement for various upper division physics courses that require Physics 231.
355 Water Safety Instructor (2)
354 Yoga and Relaxation (1)
353 Philosophy and Literature (3) Prereq: 311 or consent of
352 Physical Education Administration (3) Prereq: 245 or consent of instructor.
351 Elements of Physics (3,3) 311-312 Mechanics (3,3) 311 Kinematics and dynamics of rigid bodies, Lagrangian and Hamiltonian mechanics, systems of single particles, rotating reference systems. 312 Many body systems, many body problems. 312 Must be taken in sequence.
349 War and Morality (3) Moral justification for war (jus ad bellum): legal and moral constraints in war (jus in bello). Nature of the environment and the place of humanity within it. Must be taken in sequence. 3 hours lecture. 3 lab hours. Prereq: 321 or 245 or consent of instructor.
348 Practical Astronomy (3) Prereq: 241 or consent of instructor.
347 Space Physics (3) Prereq: 132-133 and Astronomy 101-102 or consent of instructor. Two 3-hour laboratory periods. Must be taken in sequence. 3 hours lecture. 3 lab hours. This course will satisfy the prerequisite requirement for various upper division physics courses that require Physics 231.
346 Advanced Programming Laboratory (3) Prereq: Programming 240 or 250. One 3-hour laboratory period. Must be taken in sequence. 3 hours lecture. 3 lab hours. This course will satisfy the prerequisite requirement for various upper division physics courses that require Physics 231.
345 Medical Ethics (3) Ethical issues in medicine such as abortion, euthanasia, human experimentation, fairness in health care delivery and the doctor-patient relationship. (Same as Religious Studies 345.)
341 History of Ideas (6) Prereq: 231 or consent of instructor.
340 Introduction to Symbolic Logic (3) Prereq: 231 or consent of instructor.
339 Psychology of Music (3) Production, transmission, and reception of sound waves. Frequency, intensity, loudness. Basic acoustics of instruments and voice. 3 lecture hours and demonstration. 3 lab hours. Prereq: Mathematics 130 or Calculus.
338 Introduction to Mathematical Logic (3) Prereq: 231 or consent of instructor.
337 Formal and Mathematical Logic (3) Prereq: 231 or consent of instructor.
336 Elements of Physics (4,4) Basic physical principles and applications required in pre-medical, pre-
military, pre-pharmacy and pre-veterinary programs. Must be taken in sequence. 3 hours lecture, 3 hours lab. Prereq: Mathematics 130 or Calculus.
335 Mathematical Physics I: Electricity and Magnetism (3) Continuation of 231. Required of all engineering students. Prereq: 231-232 or Basic Engineering 221. 3 hours lecture, 3 hours lab/recitation.
334 Fundamentals of Physics: Wave Motion, Optics, and Electromagnetic Radiation (5) Prereq: 221-222 Elements of Physics (4,4). Analysis of basic issues in philosophy of science. Writing emphasis course. 3 lecture hours, 3 lab hours. Prereq: Mathematics 130 or Calculus.
333 Fundamentals of Physics: Electricity and Magnetism (5) Continuation of 332. Prereq: 332 or 133-134 and consent of instructor. 4 hours lecture, 3 hours lab.
332 Fundamentals of Physics: Modern Physics (5) Prereq: 331-332 Elements of Physics (4,4) or consent of instructor. Fundamental concepts of modern physics and their applications to atomic and subatomic systems and nuclei. Must be taken in sequence. Prereq: 231-232 or Basic Engineering 221. 3 hours lecture, 3 hours lab/recitation.
331-332 Elements of Physics (4,4) Basic physical principles and applications required in pre-medical, pre-
military, pre-pharmacy and pre-veterinary programs. Must be taken in sequence. 3 lecture hours, 3 hours lab. Prereq: Mathematics 130 or Calculus.
330 Fundamentals of Physics: Electricity, Magnetism, Waves, and Optics (5) Continuation of 333. Prereq: 231-232 or Basic Engineering 221. 4 hours lecture, 3 hours lab. This course will satisfy the prerequisite requirement for various upper division physics courses that require Physics 231.
329 Philosophy of Science (3) Prereq: 326 or consent of instructor. A critical examination of the philosophical problems and issues involved in scientific theories and research. Writing emphasis course. 3 lecture hours. 3 lab hours. Prereq: Mathematics 130 or Calculus.
328 Social Dynamics (3) Prereq: 241 or consent of instructor.
326 Social Psychology (3) Prereq: 241 or consent of instructor.
325 Social Change (2) Prereq: 241 or consent of instructor.
324 Sociology (1) Prereq: 241 or consent of instructor.
323 Social Policy (2) Prereq: 241 or consent of instructor.
322 Social Action (2) Prereq: 241 or consent of instructor.
321 Sociology I (3) Prereq: 241 or consent of instructor.
319 Philosophy of Science (3) Prereq: 326 or consent of instructor. A critical examination of the philosophical problems and issues involved in scientific theories and research. Writing emphasis course. 3 lecture hours. 3 lab hours. Prereq: Mathematics 130 or Calculus.
318 Social Movements (3) Prereq: 241 or consent of instructor.
317 Social Problems (3) Prereq: 241 or consent of instructor.
316 Social Theory (3) Prereq: 241 or consent of instructor.
315 Social Institutions (3) Prereq: 241 or consent of instructor.
314 Social Change (3) Prereq: 241 or consent of instructor.
313 Social Institutions (3) Prereq: 241 or consent of instructor.
312 Social Movements (3) Prereq: 241 or consent of instructor.
311 Social Problems (3) Prereq: 241 or consent of instructor.
310 Social Theory (3) Prereq: 241 or consent of instructor.
309 Social Institutions (3) Prereq: 241 or consent of instructor.
308 Social Change (3) Prereq: 241 or consent of instructor.
307 Social Movements (3) Prereq: 241 or consent of instructor.
306 Social Problems (3) Prereq: 241 or consent of instructor.
305 Social Theory (3) Prereq: 241 or consent of instructor.
304 Social Institutions (3) Prereq: 241 or consent of instructor.
303 Social Change (3) Prereq: 241 or consent of instructor.
302 Social Problems (3) Prereq: 241 or consent of instructor.
301 Social Theory (3) Prereq: 241 or consent of instructor.
300 Social Institutions (3) Prereq: 241 or consent of instructor.
tion systems, operation amplifiers, digital-to-analog and analog-to-digital conversion, use of standard laboratory instruments, and applications of microprocessor systems. 352. Advanced Measurement techniques applied to all the study of electronic circuits as dynamic physical systems, feedback and stability, noise, sampling, Fourier transforms, linear and nonlinear circuits. Prezty 200 or 352. 4 hours per week.

401A Survey of Physics (3) A survey of physics from earliest times to the present, emphasizing the interplay of philosophical and mathematical ideas. Classical theories of mechanics, electromagnetism, and electricity. Various aspects of quantum mechanics, quantum electrodynamics, and nuclear physics. Concepts and techniques of information from a variety of fields. Prezty 101 or 352. 4 hours per week.

413 A Survey of Quantum Mechanics (3) Fundamental principles of quantum mechanics and methods of calculation of the outcome of the Schrödinger equation for simple systems. Application to atomic, molecular, nuclear, and solid-state physics. Must be taken in sequence. Prezty 240 or equivalent. Mathematics 450.

421 Modern Optics (3) Transmission of light in uniform, symmetric media, reflection and refraction at interfaces; measurement of wave motion and interference patterns. Ray tracing of optical systems, and holography. Prezty 430, or either 242, or 124, and consent of instructor. 3 hours lecture, 2 hours lab.

422 Electrical Magnetism (3) Electromagnetics, magnetostatics, complex potential methods and magnetohydrodynamics, Maxwell's Equations, electromagnetic waves and radiation. Prezty 220 or equivalent.

424 Modern Physics Laboratory (3,3) Introduction to fundamental and modern techniques in experimental physics, and to the theory and practical measurement of fundamental constants. Prezty 212 or consent of instructor. 3 hours lab per week.

471 Health Physics (3,3) Radiation in medical and industrial applications. Radiation and its effects on matter, units, point, total and extended sources. X-rays and gamma rays, internal and external radiation. Charged particles with matter. Stopping power, range-energy relations, scattering. Radiation protection and effects of ionizing radiations on the human body; waste disposal, critically; prevention, radiation biology and medical uses. Prezty 400 or equivalent. 4 hours per week.

480 Senior Seminar (1-3) Topics of current interest. May be repeated with consent of supervisor. Maximum 4 hours.

519 Foreign Language Study (3-15)

520 Research and Independent Study (1-3) Research and Independent Study. Consent of department is required. Maximum 4 hours.

PLANT AND SOIL SCIENCE (792)

200 Current Topics in Environmental Science (1) A survey of topics in environmental science, with emphasis on current issues and careers in Environmental Science. Prezty 100 or equivalent. 3 hours per week.

210 Introduction to Soil Science (3) Differences in soils with emphasis on physical, chemical, and biological properties of soils. Principles and methods of soil classification. Identification and interpretation of soil horizons. Prezty 100 or equivalent. 3 hours per week.

211 Introduction to Soil Science Laboratory (3) Experiments on topics covered in 210. 3 hours lab.

210A Introduction to Crop Science (3) Fundamental structure of crops, cultivation, and crop production. Prezty 210 or equivalent. 3 hours per week.

211A Crop Physiology (3) Course is designed for students majoring in biology and agricultural science. Prezty 210A or equivalent. 3 hours per week.

211B Crop Anatomy and Plant Physiology (3) Anatomical, developmental, and growth structure of higher plants. Prezty 211A or equivalent. 3 hours per week.

211C Crop Production Systems (3) Crop production systems. Prezty 211A or equivalent. 3 hours per week.

211D Crop Improvement (3) Genetics of crop plants. Prezty 211A or equivalent. 3 hours per week.

211E Crop Nutrition (3) Principles of crop nutrition. Prezty 211A or equivalent. 3 hours per week.

211F Crop Protection (3) Principles of crop protection. Prezty 211A or equivalent. 3 hours per week.

211G Crop Management (3) Principles of crop management. Prezty 211A or equivalent. 3 hours per week.

401 The City in the United States (3) Development and planning of urban and suburban areas. Principles of planning with special attention to the United States and of planning with special attention to the United States. May be repeated with the consent of the Department. Maximum 4 hours. 1 hour and 1 lab. F, Sp.

410 Soil Fertility (3) Influence of soil properties on plant availability to plants. Management of inorganic and organic fertilizer materials and the determination of their fate in the soil system. Nutrient management as it relates to agricultural sustainability and soil quality. Prezty 210D or 210E. 4 hours.

411 Soil and Water Conservation (3) Hydrologic, agronomic, and engineering principles related to nutrient management in crop production, irrigation, crop growth and development. Principles and methods of growing seasonal and annual crops, and of crop production for fresh and processing markets with emphasis on both vegetable and fruit crops. Prezty 210A or 210E. 3 hours lab.

412 Soil Genesis and Classification (3) Soil genesis, formation, and development. Prezty 210 or equivalent. 3 hours per week.

413 Soil Chemistry (3) Structure and chemical properties of soils. Prezty 210 or equivalent. 3 hours lab.

414 Soil, Land Use and the Environment (3) Soil as an environmental component and soil properties affecting land use. Soil as a resource in development planning related on recreational sites of rural areas. Prezty 210 or equivalent. 3 hours lab.

461-462 Modern Physics Laboratory (3,3) Laboratory methods in modern techniques in experimentation. Consent of instructor is required. Maximum 4 hours. 1 hour and 1 lab. F, Sp.

490 Senior Seminar (1-3) Topics of current interest. May be repeated with the consent of the Department. Maximum 4 hours. 1 hour and 1 lab. F, Sp.

590 Senior Thesis (1-3) Original research on topics covered in 490. Consent of instructor is required. Maximum 6 hours.

591 Advanced Research (1-3) Study of topics in plant and soil science. May be repeated with the consent of the Department. Maximum 6 hours.

PLANNING (782)

401 Introduction to Soils Science Laboratory (1) Experiments on topics covered in 401. Consent of instructor is required. Maximum 2 hours and 1 lab.

500 Planning Seminar (1-3) Discussion of current topics in urban and regional planning. Consent of instructor is required. Maximum 4 hours.

511 Planning and Urban Design (3) Principles of planning and design of urban and regional systems. Prezty 500 or equivalent. 4 hours per week.

512 Planning Techniques (3) Principles of urban and regional planning including non-engineering aspects of siteselection for housing, industrial facilities and techniques, quality evaluation and the professional presentation; professional ethics; review of the student's career interest. May not be used as 300-level credit in any department. Consent of instructor. 3 hours lecture, 1 lab.

521 Population and Urban Design (3) Principles of population and urban design including non-engineering aspects of siteselection for housing, industrial facilities and techniques, quality evaluation and the professional presentation; professional ethics; review of the student's career interest. May not be used as 300-level credit in any department. Consent of instructor. 3 hours lecture, 1 lab.

522 Environmental Design (3) Principles of environmental design including non-engineering aspects of siteselection for housing, industrial facilities and techniques, quality evaluation and the professional presentation; professional ethics; review of the student's career interest. May not be used as 300-level credit in any department. Consent of instructor. 3 hours lecture, 1 lab.

523 Environmental Planning (3) Principles of environmental planning including non-engineering aspects of siteselection for housing, industrial facilities and techniques, quality evaluation and the professional presentation; professional ethics; review of the student's career interest. May not be used as 300-level credit in any department. Consent of instructor. 3 hours lecture, 1 lab.

524 Environmental Planning (3) Principles of environmental planning including non-engineering aspects of siteselection for housing, industrial facilities and techniques, quality evaluation and the professional presentation; professional ethics; review of the student's career interest. May not be used as 300-level credit in any department. Consent of instructor. 3 hours lecture, 1 lab.

525 Environmental Planning (3) Principles of environmental planning including non-engineering aspects of siteselection for housing, industrial facilities and techniques, quality evaluation and the professional presentation; professional ethics; review of the student's career interest. May not be used as 300-level credit in any department. Consent of instructor. 3 hours lecture, 1 lab.

526 Environmental Planning (3) Principles of environmental planning including non-engineering aspects of siteselection for housing, industrial facilities and techniques, quality evaluation and the professional presentation; professional ethics; review of the student's career interest. May not be used as 300-level credit in any department. Consent of instructor. 3 hours lecture, 1 lab.

POLITICAL SCIENCE (801)

101 Introduction to Political Science (3) Introduction to fundamental institutions and processes of political life. Consent of instructor is required. Maximum 4 hours.

107 Honors: United States Government and Politics (3) An introduction to the American political system for students with superior ability. Admission by recommendation for students with at least a B average; entering freshman selected on basis of transfer placement exams and high school record.

201 Introduction to Political Analysis (3) Nature, structure, functions of modern research, data collection, and statistical techniques used in the study of politics. Consent of instructor is required. 3 hours per week.

202 Introduction to Political Research (3) Nature, structure, functions of modern research, data collection, and statistical techniques used in the study of politics. Consent of instructor is required. 3 hours per week.

312 Popular Culture and American Politics (3) Popu- lar culture and American politics. A study of the role of the media, television, music, film, and popular culture in American politics. Consent of instructor is required. 3 hours per week.

313 American Studies (3) and Cinema Studies (3) Both courses are open to any student with the consent of the instructor. Consent of instructor is required. Maximum 3 hours.

401A Survey of Planning (3) History of city development and planning. Principles and methods of city planning. Prezty 402. 3 hours lecture, 1 lab. F, A.

402 Survey of Planning (3) Principles and methods of city planning. Consent of instructor is required. 3 hours lecture, 1 lab.

480 Senior Seminar (1-3) Topics of current interest. May be repeated with the consent of instructor. Maximum 4 hours.

490 Senior Seminar (1-3) Topics of current interest. May be repeated with the consent of instructor. Maximum 4 hours.

491 Senior Seminar (1-3) Topics of current interest. May be repeated with the consent of instructor. Maximum 4 hours.
440 Organizational Psychology (3) Social-psychological and social factors in gender. Importance of gender. (Same as Sociology 370.) E
475 Working with Data (3) Data organization and analysis, using graphs and figures to display data, and interpretation of data as presentation format. Not open to students who have received credit for Sociology 395 or 396; Mathematics 115, 116, or Statistics 201. E
480 Contemporary Topics in Psychology (3) Current issues or problems, such as artificial intelligence, impact of technology, advice on stereotypes. Different topic each semester. Prerequisite: 110 or equivalent, and 210 or concurrent instruction. May be repeated. Maximum 6 hours may be applied toward major.
481 Statistical Analysis (3) Descriptive statistics; logical reasoning; the scientific method; and statistical inference. Basic psychological and non-parametric tests. Prerequisite: Mathematics 115. Not open to students with credit in Mathematics 118, Statistics 201, or equivalent. E
482 Methods of Research in Psychology (3) Fundamentals of research design; research methods; and interpretation of results, including systematic observation, experiments, quasi-experiments, and program evaluations. Focus on both theoretical and practical considerations. Prerequisite: 110 or equivalent. 485, 111, or 210, or equivalent. E
483 Supervised Research and Field Work (3) Field experience in community-based research and service settings. Prerequisites: 110 and 210, and 205 or Statistics 201 or Mathematics 115, or equivalent, or consent of instructor. May be repeated. There is no restriction on the number of times in which this course may be repeated. Maximum 12 hours in 399, 491, 492, and 493 combined may be applied toward the major. E
484 Cognitive Psychology: Language and Symbolic Processes (3) Principles of knowledge representation and understanding, Directed and associative thinking, memory, problem-solving, and concept formation. Nouns, uses, and development of language. Prerequisite: 110 or equivalent. E
485 Group Facilitation (2) Study of theory and techniques through supervised experience in small groups. Prerequisite: 220 or concurrent instruction. May be repeated. Maximum 6 hours may be applied toward major.
488 Advanced Measurement and Testing (3) Emphasis on mental test theory including classical test and item response theories. Prerequisite: 445.
489 Comparative Animal Behavior Laboratory (5) Coreq: 480. (Same as Zoology 451.) F
489 Physiological Psychology (3) Nervous system and physiological correlates of behavior. Behavioral biochemistry, learning, memory, and stress. Prerequisite: 110 or equivalent, and 210, and one year of Biology or Zoology introductory survey course or equivalent. Coreq: 445.
490 Laboratory in Physiological Psychology (5) Laboratory studies in nervous system and physiological correlates of behavior. Coreq: 445.
491 Theories of Personality (5) Major theories of human personality and their development. Prerequisite: 220 and 300 or equivalent. E
491 Directed Independent Study (1-3) Individual study. Prerequisite: Consent of instructor. May be repeated. Maximum 6 hours may be applied toward major.
492 Field Experience (1-2) Approved internship and other supervised practice in public relations. May be repeated for a maximum of 6 credits. Prerequisite: Consent of instructor. E
492 Field Experience (1-2) Approved internship and other supervised practice in psychology and public relations. May be repeated for a maximum of 6 credits. Prerequisite: Consent of instructor. E
493 Independent Study (1-3) Individual study. Prerequisite: Consent of instructor. May be repeated. Maximum 6 hours may be applied toward major. Prerequisite: 220 and 445 combined may be applied toward the major. F, Sp
493 Independent Study (1-3) Individual study. Prerequisite: Consent of instructor. May be repeated. Maximum 6 hours may be applied toward major. Prerequisite: 220 and 445 combined may be applied toward the major. F, Sp
495 Directed Independent Study (1-3) Individual study. Prerequisite: Consent of instructor. May be repeated. Maximum 6 hours may be applied toward major. Prerequisite: 220 and 445 combined may be applied toward the major. F, Sp
496 Senior Seminar: Great Ideas in Psychology (3) Advanced study of fundamental issues in psychology. Emphasis on understanding concepts, principles, and theories. Focus on implementation of selected ideas. Emphasis on critical thinking and evaluation of assumptions. Prerequisite: Consent of instructor. May be repeated. Maximum 6 hours may be applied toward major. Prerequisite: Consent of instructor. E
496 Senior Seminar: Great Ideas in Psychology (3) Advanced study of fundamental issues in psychology. Emphasis on understanding concepts, principles, and theories. Focus on implementation of selected ideas. Emphasis on critical thinking and evaluation of assumptions. Prerequisite: Consent of instructor. May be repeated. Maximum 6 hours may be applied toward major. Prerequisite: Consent of instructor. E
497 Praxis in Recreation and Leisure Studies (3) Supervised practice in an approved setting. May be repeated. Maximum 6 hours. Prerequisite: Consent of instructor. E
498 Practicum in Recreation and Leisure Studies (2-3) Supervised practice in approved agencies offering experience in selected areas of recreation and leisure services. Prerequisite: 270. E
498 Practicum in Recreation and Leisure Studies (2-3) Supervised practice in approved agencies offering experience in selected areas of recreation and leisure services. Prerequisite: 270. E
499 Working with Data (3) Data organization and analysis, using graphs and figures to display data, and interpretation of data as presentation format. Not open to students who have received credit for Sociology 395 or 396; Mathematics 115, 116, or Statistics 201. E
500 Directed Independent Study (1-3) Individual study. Prerequisite: Consent of instructor. May be repeated. Maximum 6 hours may be applied toward major. Prerequisite: Consent of instructor. E
501 Practicum in Recreation and Leisure Studies (2-3) Supervised practice in approved agencies offering experience in selected areas of recreation and leisure services. Prerequisite: 270. E
502 Practicum in Recreation and Leisure Studies (2-3) Supervised practice in approved agencies offering experience in selected areas of recreation and leisure services. Prerequisite: 270. E
503 Environmental Management and Control (3) The design, preparation, and implementation of plans and programs to control pollution and toxin problems in the environment. Prerequisite: 110 or equivalent. 210, and one year of Biology or Zoology. E
504 Health Psychology (3) Psychophysiological factors related to health and illness, including diet, personality, and stress. Application of psychological knowledge to clinical and public health settings. Prerequisite: 110 or equivalent. 210, and one year of Biology or Zoology. E
505 Public Relations Cases (3) Oral and written analysis of public relations cases. Emphasis on implementation of communication plans and strategies. Prerequisite: Consent of instructor. May be repeated. Maximum 6 hours may be applied toward major. Prerequisite: Consent of instructor. E
506 Public Relations Campaigns (3) Public relations campaigns involving special issues and ignoring specific principles of public relations. Prerequisite: Consent of instructor. E
507 Public Relations (3) Principles and practices of public relations. Overview of public relations in management of business, government, organizations, and personal relationships. Brief case studies and public relations in the arts. F
508 Public Relations Communication (3) Mechanics of effective writing for various media to achieve organizational goals. Overview of governing communication and awareness techniques. Focus on implementation of research-based, planned and managed ethical strategies in a lab setting. Prerequisite: 507 or APV 250, and COM 200, or consent of instructor. E
510 Opinion Writing (3) (Same as Journalism 412.) F
511 Issues in Public Relations (3) Topics vary. May be repeated. Maximum credit 6 hours. Prerequisite: Consent of instructor. E
512 Public Relations Campaigns (3) Public relations campaigns involving special issues and ignoring specific principles of public relations. Prerequisite: Consent of instructor. E
521 Theories of Learning (3) Classical and current approaches to learning and cognition. Prerequisite: 110. E
525 Research Methods (3) Critical analysis of special topics, such as American Psychology or Professional Ethics and competence for the public. Prerequisite: 110 or equivalent. Prerequisite: Consent of instructor. E
526 Research Methods (3) Critical analysis of special topics, such as American Psychology or Professional Ethics and competence for the public. Prerequisite: 110 or equivalent. Prerequisite: Consent of instructor. E
therapeutic recreation service for individuals with disabilities. Prereq: consent of instructor.

400 Practicum in Recreation and Leisure Studies (3-5) Supervised practice in approved agency offering leisure and sport-improving experiences. Each hour of clinical requires 45-60 hours of weekly work. For recreation majors only. SM only. Prereq: 200 and permission of instructor.

401 Management of Recreation and Sport Related Facilities (Principles for operating modern recreation and sport related facilities and the development of appropriate management strategies. Assessing cost, control analysis, facility control, program evaluation, evaluation, inventory systems, and security. Prereq: 310, 315, or consent of instructor.

415 Managing and Maintaining Recreation and Sport Related Facilities (Principles of planning, designing, outfitting, and maintaining, and conducting sport and recreation facilities. Includes lab. Prereq. 320 or consent of instructor.

420 Principles of Therapeutic Recreation (Principles and practices in therapeutic recreation, including activity analysis, activity program selection, evaluation, therapeutic recreation assessment, and professional issues. Prereq: 320 or consent of instructor.

425 Therapeutic Recreation Programming (Principles and practices of therapeutic recreation programming for individuals with various, and multiple, disabilities. Focus is on the social, interpersonal, and behavioral aspects of working with individuals in inclusive therapeutic recreation environments. Includes lab. Prereq. 320 or consent of instructor.

430 Organization and Administration of Leisure Service (Principles of administration applied to provision of leisure services offered by public, private, and/or commercial enterprises. Organizational structures, personnel management, evaluation, regulatory authority, introduction to budgeting and fiscal procedures. Prereq: 310 or consent of instructor. F. Or S.

440 Dimensions of Private and Commercial Recreation Services (Principles and practices of private and commercial recreation services, including locker room facilities, commercial, and industrial developments. Self-help recreation services, diffused in leisure market, factors influencing participation, marketing management considerations, and research in commercial recreation and tourism. Prereq. 110, 310, 265, 270, 295, or consent of instructor.

445 Special Topics in Leisure Education (1-4) Development of special interest area. Topics are organized around selected themes or problems. May be repeated. Maximum 6 hours.

451 Practicum in Recreation and Leisure Studies (2-12) Full time practicum in approved leisure or sport facilities. Focus is on the social, interpersonal, and behavioral aspects of working in interdisciplined therapeutic recreation environments.

460 Introduction to the Psychology and Education of the Hearing Impaired (3) Designed for those planning to teach the hearing impaired. Research related to psychological, social, educational, and educational-communication strategies. Introduction to assessment and education of the hearing impaired. Prereq. Survey of Leisure. Fails in progress 252.

470 Audiology 2 (3) Ear as a sensory organ, anatomy, physiology, acoustic, and phonetic aspects of hearing and speech. Prereq: 321.

473 Audiology 1 (3) (Same as Audiology and Speech Pathology 271.) The sciences underlying hearing and speech development. Hearing impairment, differences in hearing loss; methods and instrumentation for assessment of hearing loss; and the educational implications of hearing impairment. Prereq: 350.

481 Language Development for the Hearing Impaired (3)(Same as Audiology and Speech Pathology 275.) Language problems of hearing impaired individuals. Identification of hearing levels; interpretation of audiologic services to hearing loss; methods and instrumentation for assessment of hearing loss; identification of hearing loss; and the educational implications of hearing impairment. Prereq: 472.

483 Clinical Practice in Communication Disorders in Schools (3) Supervised practice with children with language and communication disorders. Prereq: 321, 110, 310, 473. [Lecture 240, Lab 80.]

500 Directed Independent Study (1-5) Tutorial and special area. Prereq. Consent of Instructor. May be repeated. Maximum 6 hours. SMC or letter grade.

501 Aural Habilitation/Rehabilitation of the Hearing Impaired (3-11) Focus is on the social, interpersonal, and behavioral aspects of working with individuals in inclusive therapeutic recreation environments.

RECOMMENDED ARIA (1-5) Recommended course work with approval of the advisor. May be repeated. For recreation majors only. Supervised practice in approved agency offering leisure and sport-improving experiences. Each hour of clinical requires 45-60 hours of weekly work. For recreation majors only. SM only. Prereq: 200 and permission of instructor.

510 Audiology 1 (3) (Same as Audiology and Speech Pathology 271.) The sciences underlying hearing and speech development. Hearing impairment, differences in hearing loss; methods and instrumentation for assessment of hearing loss; and the educational implications of hearing impairment. Prereq: 472.

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

519 Language Development for the Hearing Impaired (3) Language problems of hearing impaired individuals. Identification of hearing levels; interpretation of audiologic services to hearing loss; methods and instrumentation for assessment of hearing loss; and the educational implications of hearing impairment. Formal linguistic systems used to describe language development problems.


525 Speech Development of the Hearing Impaired (3) Speech, language, and listening interventions for hearing impaired individuals. Approaches to diagnosis, assessment, and aural habilitation. Pracicum experience.

530 Communication Processes for the Hearing Impaired (3) Prerequisites: and receptive vocabulary develop-
Course of Instruction

406 Sociology of Sport (3) Social meaning, organization, and processes of sport. Prereq: 201 or consent of instructor. (Same as Culture/Criticism in Education 203.)

414 Sociology of Health Care (3) Organization of health care: social problems, psychographics, characteristics, and prevalence of diseases.

418 Sociology of Aging (3) How rules and statuses change with age in relation to the major social institutions. Required of all students who will enter the labor world. Restricts to students majoring in sociology or the College of Arts and Sciences. See the director for further information.

211-212 Intermediate Spanish (3) Prereq: Two years of high school Spanish or the equivalent. This course will move you ahead of basic introductory high school Spanish. E

217-218 Honors: Intermediate Spanish (3) Honors course for students of superior ability in Spanish. Learning from study is on the basis of a definite level, high school level or college level. All assignments and tests are made orally. You will be required to make several oral reports in class. This course will move you ahead of basic introductory high school Spanish. E

219-220 Intermediate Spanish (3) Prereq: Two years of high school Spanish or the equivalent. This course will move you ahead of basic introductory high school Spanish. E

421 Criminal Justice (3) A critical assessment of the criminal/judicial apparatus and its components. Unleashed justice with the emphasis on the criminal courts and institutions and programs such as the prison, probation, and parole. Analysis of their operation, impact, and effects. Prior completion of 363 is recommended.


423 Advanced Conversation (3) Develops speaking and listening skills. Students are required to participate actively in class discussions and to engage in group work. E

422 Advanced Grammar (3) Finer points of grammar and pronunciation. Required of all majors. E

426 Special Topics (3) Focus on some aspect of Spanish language and culture. May be repeated with consent of department. Maximum 15 hours.

435 Survey of Spanish Literature (3) Survey of Spanish literature through the Golden Age. Prereq: Spanish 211 or equivalent. E

436 Survey of Spanish American Literature (3) Close reading and analysis of selected topics. Some works have been translated and others have not. Prereq: Spanish 211 or equivalent.

441 Spanish 300 or permission of instructor. E

451 Hispanic Prose (3) Close reading and analysis of representative works by selected novelists, essayists, or short-story writers of Spanish and Spanish-American origin. May be repeated with consent of department. Maximum 6 hours. Prereq: 305 and 306, or equivalent. E

452 Hispanic Poetry (3) Emphasis on the major poets of Spanish-speaking or Latin-American origin. Prereq: 341. May be repeated with consent of department. Maximum 6 hours. Prereq: 335 and 306, or equivalent. E

453 Hispanic Plays (3) Italian-American or Latin-American plays. Prereq: 306. May be repeated with consent of department. Maximum 6 hours. Prereq: 335 and 306, or equivalent. E

454 Introduction to Speech Communication (3) Fundamental theories and practices with particular reference to interpersonal, group, organizational, and public communication. E

455 Advanced Composition (3) Oral and written composition exercises based on the themes and ideas selected by the student. Recommended for student entering the second year. E

461 Special Topics (3) Focus on some aspect of Spanish language and literature. May be repeated with consent of department. Maximum 15 hours.

463 Foreign Policy (3) The major foreign policies of the United States in the 20th century. Prereq: 335, 336 or equivalent. Writing-emphasis course. E

471 Sociolinguistics (3) (Same as English 471 and Latin American Studies 471.) Writing-emphasis course. E

473-474 Survey of Spanish American Literature (3,3) Survey of Spanish American literature. Prereq: 211 or permission of instructor. E

480 Diffusion of Agricultural Technology (3) (Same as Linguistics 471.)

491 Foreign Study (1-15) Prereq: Advance departmental approval of equivalent. May be repeated. Maximum 15 hours.

492 Off-Campus Study (1-15) Prereq: Advance departmental approval of equivalent. May be repeated. Maximum 15 hours.

493 Independent Study (1-15) Prereq: Advance departmental approval of equivalent. May be repeated. Maximum 15 hours.

501 Introduction to Speech Communication (3) Fundamental theories and practices with particular reference to interpersonal, group, organizational, and public communication. E

502 Advanced Composition (3) Oral and written composition exercises based on the themes and ideas selected by the student. Recommended for student entering the second year. E

503 Advanced Grammar (3) Finer points of grammar and pronunciation. Required of all majors. E

504 Advanced Conversation (3) Develops speaking and listening skills. Students are required to participate actively in class discussions and to engage in group work. E

505 Spanish Language and World Business (3) The course will examine the importance of foreign trade at the local, national, and international levels. An interdisciplinary team of faculty from the College of Business and Arts and Sciences will provide an overview of the value of the Spanish language for careers in international business. Required of all students with a concentration in International Business. See the director for further information.
UNIVERSITY HONORS (983)

117-127 Honors Freshman Seminar (1) Sequence of Honors freshman seminars. To be taken in 1st and 2nd year of study. 127 concentrates on critical thinking and writing. Open to all students with a GPA of 3.5 or greater. Topics vary. May be repeated.

330-340 University Honors Seminar (3) Selected topic enrollment limited to students in the University Honors Program, or with the permission of the Director of University Honors. May be repeated. Students with a GPA of 3.5 or greater. Topics vary. May be repeated.

350 Honors: Concentration in the Social Sciences (3) Small group studies of selected topics, issues or problems with a concentration in the social sciences. Open to all students with a GPA of 3.25 or greater. Topics vary. May be repeated. Requires application.

351 Honors Seminar: Social Science Research (3) Development and presentation of senior honors project. Limited to and required of all graduating seniors in the Social Sciences. Proposals must be approved by the Honors Program. Should be taken in senior year.

357 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 3.5 or greater. Topics vary. May be repeated.

360 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 3.25 or greater. Topics vary. May be repeated.

367 Honors: Concentration in the Interdisciplinary Area (3) Interdisciplinary research approaches to major topics. Topics vary. May be repeated. Requires application.

390 Senior Honors Seminar: War and Remembrance (3) Integrated study of students selected for the Honors Program in War and Remembrance. Course includes study of the social, political and cultural history of 20th century Europe and World War II. Open to all students with a GPA of 3.25 or greater. Topics vary. May be repeated. Requires application.

411 Art and Organism (3) Interdisciplinary study of the relationship between art and biology. Open to all students with a GPA of 3.25 or greater. Topics vary. May be repeated. Requires application.

420 Honors Seminar: War and Remembrance (3) Course integrated study of students selected for the Honors Program in War and Remembrance. Course includes study of the social, political and cultural history of 20th century Europe and World War II. Open to all students with a GPA of 3.25 or greater. Topics vary. May be repeated. Requires application.

491 Honors: Independent Study (1-15) Open to any undergraduate honors student. Final project must be approved by the Director of University Honors for further information.

492 Off-Campus Study (1-15) Open to any undergraduate honors student. Final project must be approved by the Director of University Honors for further information.

UNIVERSITY STUDIES (984)

101 Freshman Seminar (3) Introduction to university study as a undergraduate liberal education. Credit available to freshmen majors only with consent of instructor. 90 hours of work required.

105 Applied Theatre: Lighting (3) Laboratory in lighting for departmental production. Credit available to faculty or students only with consent of instructor. 90 hours of work required.

106 Applied Theatre: Performance (3) Laboratory in performance for departmental production. Credit available to faculty or students only with consent of instructor. 90 hours of work required.

107 Applied Theatre: Management (2) Laboratory in management for departmental production. Credit available to faculty or students only with consent of instructor. 90 hours of work required.

191 Foreign Study (1-15) Open to any undergraduate honors student. Final project must be approved by the Director of University Honors for further information.

201 Campus Study (1-15) Open to any undergraduate honors student. Final project must be approved by the Director of University Honors for further information.

291 Independent Study (1-15) Open to any undergraduate honors student. Final project must be approved by the Director of University Honors for further information.
330 Women in Music (3) (Same as Music History 330.) Writing-emphasis course.
332 Women in American Literature (3) (Same as English 332.)
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.
384 Topics in Women's Studies (3) Content varies. May be repeated.
386 Sex Role Development: Implications for Education and Counseling (3) (Same as Educational and Counseling Psychology 416.)
387 Women Writers in England (3) (Same as English 422.)
385 Women's Health (3) (Same as Health 425.)
386 Women in European History (3) (Same as History 428.) Writing-emphasis course.
387 Library Portraits of French Women (3) (Same as French 433.)
388 Psychology of Gender (3) (Same as Psychology 434.) Writing-emphasis course.
389 Women in American History (3) (Same as History 435.) Writing-emphasis course.
390 Literary Portraits of French Women (3) (Same as French 433.)
400 Rhetoric of the Woman's Rights Movement (3) Historical and critical study of rhetoric in the campaign for women's rights in the United States from the 1920s through the 1930s (Same as Speech Communication 466.) Writing-emphasis course.
409 Sexuality and Cinema (3) Explores issues surrounding sexuality, gender and cinema from points of view of feminist film criticism. (Same as Cinema Studies 469.)
410 Sex Role Development: Implications for Education and Counseling (3) (Same as Educational and Counseling Psychology 416.)
422 Women Writers in England (3) (Same as English 422.)
425 Women's Health (3) (Same as Health 425.)
432 Women in European History (3) (Same as History 428.) Writing-emphasis course.
433 Literary Portraits of French Women (3) (Same as French 433.)
434 Psychology of Gender (3) (Same as Psychology 434.) Writing-emphasis course.
435 Women in American History (3) (Same as History 435.) Writing-emphasis course.
436 Rhetoric of the Woman's Rights Movement (3) Historical and critical study of rhetoric in the campaign for women's rights in the United States from the 1920s through the 1930s (Same as Speech Communication 466.) Writing-emphasis course.
440 Topics in Women's Studies (3) Content varies. May be repeated.
449 Off-Campus Study (1-15)
453 Women in American History (3) (Same as History 435.) Writing-emphasis course.
454 Psychology of Gender (3) (Same as Psychology 434.) Writing-emphasis course.
455 Women in American History (3) (Same as History 435.) Writing-emphasis course.
456 Rhetoric of the Woman's Rights Movement (3) Historical and critical study of rhetoric in the campaign for women's rights in the United States from the 1920s through the 1930s (Same as Speech Communication 466.) Writing-emphasis course.
466 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.
469 Sexuality and Cinema (3) Explores issues surrounding sexuality, gender and cinema from points of view of feminist film criticism. (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 and 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.