Directory of Courses

The following directory lists the undergraduate courses which the University expects to offer, although the University in no way guarantees that all such courses will be offered in any given academic year, and reserves the right to alter the list if conditions warrant. Students may ordinarily determine when courses are to be offered by consulting the Directory of Classes published prior to each semester through the Office of the Registrar.

Courses to be offered through the Office of Credit Programs, Extended and Continuing Education, are included in brochures issued each semester and summer session.

Numbering System. Students are referred to the condensed curricula of the several colleges for information concerning the semester and year in which required courses should be taken. Courses numbered 01-99 are courses in the Ratcliffe Hicks School of Agriculture; baccalaureate students may not register for these courses. Courses numbered 100-199 are primarily for freshmen and sophomores; courses numbered 200-299 for juniors and seniors. Courses numbered 300-399 are for graduate students and appear in The Graduate School Catalog. University regulations allow undergraduates to take courses at the 300’s level only if they have a cumulative grade point average of 2.6 or above and if they are in the seventh or eighth semester of University standing; individual schools and colleges may have more stringent requirements which students must meet. Exceptions can be made only by the instructor and the dean of the school or college in which the student is registered.

If a course was formerly given under another number the fact is listed in the course description. In such cases the course cannot be taken for credit by students who have received credit for it under the earlier number.

Skill Codes. In compliance with the General Education Requirements, skill code designations (W, Q, C and combinations thereof) have been added to courses where applicable. Students may find a comprehensive explanation of these skill codes under “Course Information” of the Academic Regulations section of this Catalog. Note: The same 3-digit numerics are not repeatable, ie 107, 107W.

Course Semester. Single semester courses designated as "either semester" are given in the first semester and repeated in the second semester. Such courses may be taken in either semester but may be taken for credit only once.

Courses carrying hyphenated numbers are full year courses extending over the two semesters. The first semester of such courses is always prerequisite to the second, but the student may receive credit for the first semester without continuing with the second. If a course with hyphenated numbers is designated as "either semester," the student may start the year’s work in either semester; if it is designated as “both semesters," the course starts in the first semester and runs through the academic year.

A few advanced courses, usually of a seminar or special problems nature, are labeled “either or both semesters.” Students may take such courses in either semester alone or they may repeat them for credit. Only in these cases unless the course description carries a specific statement to the contrary, may a student take the course more than once for credit.

Course Hours. Classes meet for the equivalent of three 50-minute periods, unless otherwise specified. Information about the specific times that a course will meet may be obtained from the Directory of Classes that is available before the opening of each semester through the Office of the Registrar.

Refer to the Academic Regulations section of this Catalog for further information regarding registration for courses.

Accounting (ACCT)

Head of Department: Professor Richard F. Kochanek
Department Office: Room 329, Hall Building

For major requirements, see the School of Business Administration section of this Catalog.

Courses in this department, with the exception of Accounting 131, are open to juniors and seniors only.

Accounting majors are required to achieve a 2.0 grade point average in all accounting courses taken at the University of Connecticut, excluding grades and credits for independent studies (Accounting 299's) and internships (Accounting 289's) as a requirement for graduation.

Either semester. Three credits. Not recommended for freshmen.

The study of the generation and interpretation of accounting information as a basis for financial statement analysis and management decision-making.

200. Principles of Managerial Accounting
Either semester. Three credits. Prerequisite: ACCT 131.

Open to sophomores.

Internal reporting to managers for use in planning and controlling operating systems, for use in decision-making, formulating major plans and policies, and for costing products for inventory valuation and income determination.

201. Intermediate Accounting I
Either semester. Three credits. Prerequisite: ACCT 200 and ECON 112.

An in-depth study of financial accounting, giving particular emphasis to balance sheet valuations and their relationship to income determination.

202. Intermediate Accounting II
Either semester. Three credits. Prerequisite: ACCT 201 and OPIM 203.

A continuation of Accounting 201.

203. Advanced Accounting
(Also offered as ACCT 303.) Either semester. Three credits. Prerequisite: ACCT 202.

An in-depth study of accounting for business combinations. Coverage will also be given to accounting for nonprofit entities and contemporary issues in financial accounting.

203P. Advanced Accounting
(Also offered as ACCT 303.) This course and one additional P course from the Accounting Department constitute one W requirement.

205. Introduction to a Profession
First semester. One credit. Prerequisite: ACCT 131. Required for Accounting majors.

Designed to help students (1) understand the professional responsibilities of accountants, (2) enhance one’s knowledge of the structure of the accounting profession and the reporting process, (3) evaluate alternative accounting careers, and (4) prepare for accounting internship and career opportunities. Consists of a series of evening seminars. Topics include: alternative accounting careers, accounting standard setting, professional certification for accountants, and analysis and interpretation of accounting information. A major course project involves the analysis of the annual report of a real-life company. The course will also introduce and allow students to interact with UConn accounting alumni in a variety of accounting careers.

211. Cost Accounting
Either semester. Three credits. Prerequisite: ACCT 200 and OPIM 203 (may be taken concurrently).

The study of (1) product costing as a basis for income determination and inventory valuation and (2) accounting concepts for planning and controlling organizational operations.

222. Cost Analysis

243. Assurance Services
(Also offered as ACCT 304.) Either semester. Three credits. Prerequisite: ACCT 221. This course focuses on issues relevant to the public accounting profession, such as legal liability and ethics, audit risk analysis, planning of audit engagements, audit reports, and other assurance services and reports. Students will learn to think critically about issues facing the accounting profession, primarily by analyzing cases and completing a number of individual and group research projects.

243P. Assurance Services
(Also offered as ACCT 304.) This course and one additional P course from the Accounting Department constitute one W requirement.

250. Federal Income Taxes
Either semester. Three credits. Prerequisite: ACCT 131. A study of the underlying concepts of federal income taxation. Emphasis to be placed upon the impact of taxes on business decisions.

254. Advanced Federal Taxes and Tax Research
Second semester. Three credits. Prerequisite: ACCT 250. An in-depth analysis of the tax aspects of corporations, partnerships, and S corporations, including their organization, operations (including international aspects), and liquidation. The course includes an examination of tax research methodology and techniques, using both printed and electronic materials, and discussions of cases requiring tax planning.

1289. Field Study Internship
Either or both semesters. Six credits. Hours by arrangement. Prerequisite: courses in Principles of Managerial Accounting, Cost Accounting and Intermediate Accounting, as well as consent of instructor and department head. Designed to provide students with an opportunity for supervised field work. Students will work with one or more professionals in their major academic area. Student performance will be evaluated on the basis of an appraisal by the field supervisor and a detailed written report submitted by the student.

† Students taking this course will be assigned a final grade of S (satisfactory) or U (unsatisfactory).
293. Foreign Study
Either or both semesters. Credits and hours by arrangement, up to a maximum of six credits. Consent of department head required, prior to the student’s departure.

Special topics taken in a foreign study program.

296W. Senior Thesis in Accounting
Either semester. Three credits. Hours by arrangement. Open only to Accounting Department Honors Students with consent of instructor and Department Head.

298. Special Topics
Either semester. Credits and hours by arrangement. Prerequisite: Announced separately for each offering. With a change in content, may be repeated for credit. Classroom course in special topics as announced in advance for each semester.

299. Independent Study
Either or both semesters. Credits by arrangement, not to exceed six in any semester. Open only with consent of instructor and Department Head.

Individual study of special topics as mutually arranged between a student and an instructor.

Agricultural and Resource Economics (ARE)
(Formerly Agricultural Economics and Rural Sociology)
Head of Department: Professor Emilio Pagoulatos
Department Office: Room 318, W.B. Young Building
For major requirements, see the College of Agriculture and Natural Resources section of this Catalog.

110. Population, Food, and the Environment
Either semester. Three credits.

The role of agriculture in the growth and development of societies throughout the world. Economic and sociological problems of food and fiber needs and production in the developing and the advanced societies.

150. Principles of Agricultural and Resource Economics
Either semester. Three credits. Taught concurrently with SARE 50.

An introduction to agricultural economics, the role of agriculture in today’s United States economic system, and relationships that regulate the entire economic environment.

215C. Business Management
First semester. Three credits. L. Lee

Analysis of marketing, management, and financial decision-making tools in agribusiness, including computer applications.

217. Business Finance in Food and Resource Industries
Second semester. Three credits. Recommended preperation: One of the following: ARE 150, ECON 112, ECON 102 or ARE 215C. Not open for credit to students who have passed AERS 230. L. Lee

Analysis of financial statements, credit, risk, and investment decision-making.

221. Business Strategies and Policy in Food Industries
Second semester. Three credits. Recommended preparation: ARE 150, or ECON 112, or ECON 102. Cotterill

Market structure and business strategies of firms, including pricing, advertising, entry and new products. Analysis of mergers and other antitrust issues from a public as well as firm perspective. Case studies of actual events.

222. Food Trends and the Changing Consumer
Second semester. Three credits.

Determinants of food consumption trends. Particular attention to demographic and economic factors and to changing concerns regarding health and food safety.

225. Marketing and Futures Trading
Second semester. Three credits. Recommended preparation: ARE 150, or ECON 112, or ECON 102. Lopez

Principles and applications of marketing, with special emphasis on the use of futures markets for profit and price risk management. Includes marketing case studies, internet applications, and a futures simulation exercise.

234. Environmental and Resource Policy
Either semester. Three credits. Altbello

Economic and policy aspects of natural resource use and environmental quality issues. Designed for students with diverse departmental affiliations.

234W. Environmental and Resource Policy

235. Environmental and Resource Economics
Second semester. Three credits. Prerequisite: ARE 150, or ECON 112, or ECON 102.

Natural resource use and environmental quality analysis using economic theory. Reviews of empirical research and relevant policy issues.

238. Valuing the Environment
Second semester. Three credits. Prerequisite: ARE 150 or ECON 112 or consent of instructor. Larson

Conceptual and practical understanding of main methods used to evaluate economics benefits of environmental protection and damages from degradation. Methods include: change in productivity, hedonic pricing, travel cost method, contingent valuation, defensive expenditures, replacement costs, and cost-of-illness. Topics covered include: recreation, soil-erosion, energy, forestry, hazardous waste, air pollution, deforestation and wetlands, wildlife, biodiversity, noise, visibility, water and water pollution.

255. The Role of Agriculture in Economic Development
First semester. Three credits. Recommended preparation: ARE 150, or ECON 112, or ECON 102. Credit may not be received for both ARE 305 and 255.

The role of agriculture in the economic development of less developed countries. Population and rural employment, the economics of food consumption and nutrition, international food aid, agricultural marketing and trade, land tenure, agrarian reform, and appropriate agricultural technology.

255W. The Role of Agriculture in Economic Development

Second semester. Three credits. Prerequisite: ARE 150 or ECON 112. Credit may not be received for both ARE 307 and 257.

Theoretical foundations and applications of benefit-cost analysis in project appraisal and in evaluation of public policies regarding resource management and environmental protection.

260. Food Policy
First semester. Three credits. Recommended preparation: ARE 150, or ECON 112, or ECON 102. Lopez

Analysis of food and agricultural policies in the United States and abroad. Designed for students with diverse departmental affiliations.

260W. Food Policy

275. Agribusiness Management and Entrepreneurship
First semester. Three credits. Prerequisite: Open to students with ARE 150, or ECON 112, or ECON 102. Cotterill

Management techniques for achieving the merchandising objective and standards of the firm, with maximum efficiency in the use of capital, personnel, facilities and equipment. Directed toward those students who plan to enter agribusiness.

280. Economic Organization of Agriculture
First semester. Three credits. Recommended preparation: ARE 150, or ECON 112, or ECON 102.

Economic organization of competitive industries using agriculture as an example of one such industry. The problems growing out of the competitive structure of agriculture, and the economic concepts, principles and research results applicable to these problems.

285. International Commodity Trade
First semester. Three credits. Recommended Preparation: ARE 150, or ECON 112, or ECON 102. Pagoulatos

The basic principles of international commodity trade and market institutions. Applications to current problems of international commodity trade and policy.

290V. Quantitative Methods for Agriculture
Second semester. Three credits. Open only with consent of instructor. T. Lee

Data collection, compilation, charts, frequency distribution, simple descriptive statistics, index numbers, economic time series analysis and simple correlations.

295. Seminar
Either or both semesters. Credits and hours by arrangement. May be repeated for credit with a change of topic. Open only with consent of instructor.

Participation in staff conferences and discussions, reviews of important books, and reports on recent developments in economic theory and research.

296. Agribusiness Internship
Either semester or summer. One to six credits (repeatable for a total of six credits). Prerequisite: Open to Upper Division Resource Economics majors with Independent Study Authorization.

This course is designed to provide students with an educational experience in agribusiness firms or agribusiness-related institutions. Each student taking this course must submit a formal written report for evaluation and meet all other course requirements as specified by the instructor.

297. Resource Economics Internship
Either semester or summer. One to six credits (repeatable for a total of six credits). Open only to Upper Division students majoring in Resource Economics who have demonstrated outstanding academic ability and possess excellent professional potential. Requires Independent Study Authorization with consent of department head and advisor.

This course is designed to provide students with a meaningful experience in a formalized agribusiness or natural resources program under supervised conditions. Each student taking this course must submit a formal written report for evaluation and meet all other course requirements as specified by the instructor.

298. Special Topics
Either semester. Credits and hours by arrangement.

May be repeated for credit with a change of topic. Open
only with consent of instructor.

Topics and credits to be published prior to the registration period preceding the semester offerings.

299. Independent Study
Either or both semesters. Credit and hours by arrangement. Prerequisite: Open to students with Independent Study Authorization.

This course is designed primarily for Resource Economics majors.

Agriculture and Natural Resources (AGNR)

210. Extension Organization and Policy
First semester. Two credits. One 2-hour lecture period.

A course designed to acquaint the student with the history, objectives, policy, administrative procedures, organization and methods used by the Cooperative Extension Service. Special consideration will be given to the inter-relationship with other adult education programs.

215. Cooperative Extension Communications
Second semester. Three credits.

Communication theory, methods, and skills relevant to the educational functions of the Cooperative Extension Service. Acquaint students with relationships among Extension objectives, clients and the communication media.

223. Agriculture and Natural Resources Internship
Either semester or summer. One to six credits. Open to Upper Division students in the College of Agriculture and Natural Resources with consent of the Dean, the student’s department head and advisor. This course may be repeated for credit with the total credits earned not to exceed six.

This course is designed to provide students with a meaningful experience in a formalized agricultural or natural resources program under supervised conditions. Each student taking this course must submit a formal written report for evaluation and meet all other course requirements as specified by the instructor.

298. Special Topics
Either semester. Credits and hours by arrangement. Open only with consent of instructor. May be repeated for credit with a change of topic.

299. Independent Study
Either or both semesters. Credits and hours by arrangement. May be repeated for credit with a change of topic. Prerequisite: Open only to students with Independent Study Authorization.

This course is designed primarily for Resource Economics majors.

Air Force Studies (AIRF)

Head of Department: Colonel Ken DiPrimo
Department Office: 28 North Eagleville Road

For departmental description, see the College of Liberal Arts and Sciences section of this Catalog.

113. Air Force Studies I
First semester. One credit. One class period and one 2-hour leadership seminar.

Military customs/courtesies, officeranship/leadership. Air Force mission, military as a profession, and basics of flight.

114. Air Force Studies I
Second semester. One credit. One class period and one 2-hour leadership seminar.

The organization, mission, and functions of the Department of Defense and the military services. Emphasis is on the U.S. Air Force.

123. Air Force Studies II
First semester. One credit. One class period and one 2-hour leadership seminar.

Study of air power from balloons through World War I, World War II, Interwar Years, WW II. Principles of war, Berlin Airlift. Development of communication skills.

124. Air Force Studies II
Second semester. One credit. One class period and one 2-hour leadership seminar.

Air power from post World War II to the present: Korean Conflict, War in Vietnam, force modernization. Development of communication skills.

201. Aviation Ground School
One credit. One 2-hour class period per week for twelve weeks. Prerequisite: MATH 109 or permission of instructor. Open only with consent of instructor.

The principles of flight. Meets the course study requirement for private pilot’s written examination. (FAA)

235-236. Air Force Studies III
Both semesters. Three credits each semester. One class period, and a 2-hour leadership seminar. Prerequisite: AIRF 114 and 124, or six weeks field training. Open only with consent of instructor. May not be taken concurrently with AIRF 245-246.

Management fundamentals, motivational processes, leadership, group dynamics, organizational power, managerial strategy. Development of communication skills.

235W-236W. Air Force Studies III
245-246. Air Force Studies IV

Both semesters. Three credits each semester. One class period, and a 2-hour leadership seminar. Prerequisite: AIRF 235-236. Open only with consent of instructor. May not be taken concurrently with AIRF 235-236.

American civil-military relations, defense policy formulation, role of the professional officer, military justice system, Air Force Command.

245-246W. Air Force Studies IV

Allied Health (AH)

Head of Department: Dean Joseph Smey
Department Office: Room 227A, Koons Hall

For major requirements see the College of School of Allied Health section of this Catalog.

For course descriptions of Allied Health, see these topics listed alphabetically throughout this Directory of Courses:

- Allied Health (AH)
- Cytotechnology (CYTO)
- Diagnostic Genetic Sciences (DGS)
- Dietetics (DIET)
- Health Sciences (HESC)
- Medical Laboratory Sciences (MLS)
- Medical Technology (MT)
- Physical Therapy (PT)

100. Introduction to Allied Health Professions
Semester and hours by arrangement. One credit. Open only with consent of instructor.

Overview of health professions, team approach to health care delivery.

101. Health and Wellness
Either semester. Three credits. Open to all students in the University.

Wellness, holistic health, mind-body connection, health and wellness models, mental wellness, positive self-concept, preventing heart disease and cancer, licit and illicit lifestyle drugs, stress management, diet, nutrition, weight control, aerobic and anaerobic exercise, healthy lifestyle behaviors, applications to life.

102. Peer Health Education
Fall semester. Three credits.

This course fosters skills that will prepare the student to function effectively as a peer health educator. Content includes leadership and communication skills, and a working knowledge of health-related topics such as stress management, body image, body art, sexuality, and other contemporary issues.

115. Introduction to the Health Professions
Semester and hours by arrangement. Three credits.

Introduction to the Allied Health professional curriculum through special topics.

200. Drugs and Society
Either semester. One credit. Two class periods for seven weeks. Priority given to Allied Health and Education students.

Overview of drugs in America, co-dependence, the role of the counselor, psychological and physiological addiction, cocaine, heroin, marijuana, psychoactives, over-the-counter drugs, prescription drugs, AIDS.

202. Clinical Biomechanics
First semester. Three credits. Open only to Orthotics and Prosthetics Students.

An introduction to fundamental biomechanical principles through a review of concepts from applied physics with an application to technically relevant problems.

203. Aging: Implications for Health Professionals
Either semester. Three credits. Three hours of lecture.

Age-related physiological changes and pathological changes, psychological function in health behaviors and care, role change and transition, health care issues, therapeutic relationships.

204. Conversational Spanish for the Health Professional
Either semester. Three credits. Three hours of lecture. Open to Allied Health students and students in other health-related fields (i.e. nursing, nutritional sciences, pharmacy); others with consent of instructor.

Basic conversational skills, medical terminology, patient/client interviewing skills, cultural factors affecting health care delivery.

215. Critical Health Issues of Asian Americans
First semester. Three credits. Palaniswamy

Examination of critical health issues affecting Asian American sub populations. Topics to include gender specific health problems; cultural issues; and health care issues.

216. Asian Medical Systems
(Also offered as AAST 216.) Second semester. Three credits. Palaniswamy

Examination of traditional medical systems of Asian origin and their prevalence in the United States. Topics to include popular medical systems: Ayurveda, Traditional Chinese Medicine, Chinese, Indian and Japanese Herbal Medicine; the values and beliefs of different models.
236. Issues for Women and Health
Semester and hours by arrangement. Two credits
A study of current issues related to women as providers and consumers of health care.

241. Research for the Health Professional
Either semester. Three credits. Three hours of lecture.
Prerequisite: A course in statistics or consent of the instructor. Open only to Allied Health majors; others with consent of instructor.
Research questions/hypothesis, finding and using research literature, ethical considerations, research design, sampling, measurement, reliability and validity, descriptive and inferential statistical methods, computer analysis of data, evaluating research, reviews of literature and proposals.

241W. Research for the Health Professional
Prerequisite: A course in statistics and English 105 or consent of the instructor.

242. Counseling and Teaching for the Health Professional
Either semester. Three credits. Three hours of lecture. Open only to Allied Health and Nutritional Science students; others with consent of instructor.
Individualized study in a specialized area in the field of allied health.

243. Health Care Issues for the Health Professional
Either semester. Three credits. Three hours of lecture. Open only to Allied Health students; others with consent of instructor. Not open for credit to students who have passed Allied Health 202.
Individual community and institutional health care needs and issues from a bio-medical and socio-cultural point of view. The health care delivery system; health and its relationship to poverty, ethnicity, life-cycle events, ethics, etc.

244. Management for the Health Professional
Either semester. Three credits. Three hours of lecture. Open only to Allied Health and Nutritional Science students; others with consent of instructor. Not open for credit to students who have passed Allied Health 240.
Basic management principles and concepts of planning, organizing, supervising, controlling and evaluating in health care environments. Leadership, motivation, supervision, time management, labor relations, quality assurance/proficiency, financial management.

280. Safety and Health Management
First semester, alternate years. Three credits. Three hours of lecture.
This course encompasses the principles of managing occupational safety and health programs from development, implementation through evaluation.

281. Industrial Hygiene
First semester, alternate years. Three credits. Three hours of lecture.
This course introduces the principles of industrial hygiene with emphasis on protecting workers’ health through evaluation and intervention within the workplace.

282. Accident Prevention Techniques
Second semester, alternate years. Three credits. Three hours of lecture.
This course provides the student with the fundamental skills needed to prevent occupational injuries and illnesses in the workplace.

283. Occupational Safety and Health Regulations
First semester, alternate years. Three credits. Three hours of lecture.
This course provides a comprehensive overview of the occupational safety and health regulatory process and standards.

284. Ergonomics
First semester, alternate years. Three credits. Three hours of lecture.
This course is concerned with the achievement of an optimal relationship between humans and their work.

298. Special Topics
Either or both semesters and summer. Credits and hours by arrangement. Open only with consent of instructor. May be repeated for credit.
Investigation of a special topic in allied health related to the basic core or interdisciplinary areas.

299. Independent Study for Undergraduates
Either semester. Credits and hours by arrangement, not to exceed four. Open only with consent of instructor. May be repeated for credit.
Individualized study in a specialized area in the field of allied health.

Animal Science (ANSIC)

Head of Department: Professor Ian C. Hart
Department Office: Room 107, White Building
(Animal Science)

For major requirements, see the College of Agriculture and Natural Resources section of this Catalog.

120. Introduction to Animal Science
First semester. Three credits. Two class periods and one 2-hour discussion or laboratory period. Taught concurrently with SAAS 020. Darre
The biological, physical, and social factors that influence animal production and utilization.

125. Behavior and Training of Domestic Animals
Second semester. Three credits. Two class periods and one 2-hour laboratory. Taught concurrently with SAAS 025. Darre
Application of behavior of cattle, horses, sheep, goats, swine and poultry to their management, training and welfare. Basic principles of genetics and physiology of behavior; perception, training, learning, motivation, and stress with consideration of integrated behavioral management and animal welfare.

127. Introduction to Companion Animals
Second semester. Three credits. Taught concurrently with SAAS 027. Stuke
Basic concepts of the nutrition, physiology, health and management of companion animals.

160. The Science of Food
(Also offered as NUSC 160.) Second semester. Three credits. Faustman, Zhao
An introductory level course for students interested in the application of science to food. Nutritional and functional attributes of various food constituents are discussed. Issues concerning food processing and food safety are covered.

216. Principles of Nutrition and Feeding of Animals
First semester. Three credits. Two class periods and one 2-hour discussion and demonstration period. Andrew
This course covers feed nutrients and their digestion and use. Nutrient requirements and feeding standards for various classes of livestock for reproduction, lactation, growth, work and maintenance are included. Attention also is given to characteristics of common feedstuffs and to formulating rations and nutritional programs for animal enterprises.

217. Animal Breeding and Genetics
First semester. Three credits. Two class periods and one 2-hour discussion period. Prerequisite: BIOL 107. Recommended preparation: BIOL 108. Yonash
The principles of genetic, chemistry of nucleic acids, replication, transcription, translation and regulation of genes, population and quantitative genetics, and modern molecular genetic approaches to animal breeding.

219. Reproductive Physiology
Second semester. Three credits. Two class periods and one 3-hour laboratory or discussion period. Riesen
A study of the reproductive anatomy and physiology of domestic animals. Laboratory will include macro and micro anatomy, hormone action, and techniques used in reproductive management of domestic animals.

221. Environment, Genetics and Cancer
Second semester, alternate years (even numbered). Three credits. Prerequisites: BIOL 107, CHEM 141 or 243. Concurrent enrollment in at least one of the following courses is strongly recommended: MCB 203 or 204, MCB 200 or 213; or MCB 210. Silbatur
Basic principles in tumor biology will be presented with an emphasis on phenotypic changes in transformed cells and cell morphology and behavior. The biochemical and genetic basis of cell transformation, proliferation, and metastasis will be covered, followed by discussions of molecular mechanisms by which environmental chemicals interact with DNA and other cellular components. Metabolic activation of genotoxic carcinogens will be covered in detail, and the importance of polymorphisms in activating enzymes among human sub-populations will be discussed in terms of individual risk of cancer. Activation of proto-oncogenes, inactivation of tumor suppressor genes, and the role of these proteins in regulating the cell cycle will be covered in detail. Approaches for estimating human risk of cancer based on exposure estimates and biological markers will also be presented.

222W. Growth Biology and Metabolism of Domestic Livestock
Second semester. Three credits. Two class periods and one 2-hour discussion period. Recommended prepara-
tion: PVS 200 or consent of instructor. Zinn
Course will focus on the embryonic and postnatal growth and development of domestic livestock with emphasis on metabolic and hormonal regulation of processes that influence growth and development. Discussion period will focus on methods used to measure growth and metabolism.

224. Food Safety
Second semester. Three credits. Prerequisite: Biology 107. A one semester course in organic chemistry is recommended. Faustman, Venkitanarayanan
Current topics in food safety will be discussed, with special emphasis on microbial and chemical contamination of food. Specific topics including the safety of natural versus synthetic chemicals, food additives, irradiation and other practices, basic microbiology and toxicology, current regulatory practices and risk assessment will also be included. The Hazard Analysis Critical Control Points (HACCP) approach to food safety will be discussed.
225. Environmental Health Field Experience
First semester. One credit. One class period. Silhurt
Field trips and discussion periods will focus on waste management and disposal. Topics will include water purification and sewage treatment, municipal and industrial waste incineration, a superfund site and pharmaceutical waste management. Some field trips will be scheduled by arrangement.

226. Environmental Health
First semester. Three credits. Prerequisite: BIOL 100 or equivalent; CHEM 122 or 127; or consent of instructor. Silhurt
Course will focus on the environmental health consequences of exposure to toxic chemicals, food contaminants and radiation. Basic principles of toxicology will be discussed, followed by lectures on specific topics such as: cancer, occupational hazards, radiation, genetic biomonitoring, risk assessment techniques, risk/benefit analysis, social/legal aspects of regulating toxic chemicals, and other related topics.

229. Animal Embryology and Biotechnology
First semester. Three credits. Recommended preparation: ANSC 219 or MCB 219, or consent of instructor. Yang
Introduction to recent research in animal embryology and related reproductive biotechnologies. Basic principles, methodology and state of the technology for numerous established and emerging animal biotechnologies such as transgenesis and cloning. Lab tours, hands-on experience, and field trips to biotechnology companies will be included.

231. Developing the Driving Horse
First semester. Two credits. One 1-hour lecture and two 1-hour laboratories. Prerequisite: Junior or senior standing. Consent only. Callahan
Techniques related to training the driving horse will be described. Prior working experience with horses is recommended.

234. Pleasure Horse Appreciation and Use
Either semester. One credit. One 1-hour lecture and one 1-hour laboratory. Open to seniors who have passed ANSC 236. Callahan
Open to all University students interested in pleasure horses. The principles of horse management and horsemanship.

235. Horse Science
First semester. Three credits. Two class periods and one 2-hour laboratory or discussion period. Open to sophomores. Dinger
This course will be of particular value to animal science majors and includes horse breeds and nutrition, breeding, evaluation, behavior, care and management with attention given to detailed studies of the problems and practices of horse production and use.

236. Light Horse Training and Management
Second semester. Two credits. Three 1-hour laboratory and one 1-hour discussion period. Prerequisite: ANSC 235. Open only with consent of instructor. Callahan
The theory, fundamentals and practice of breaking, training, fitting, showing, and the use of horses for riding. Primarily for Animal Science majors.

237. Methods of Equitation Instruction
Second semester. Two credits. One class period and one 2-hour laboratory or discussion period. Taught concurrently with SAAS 37. Consent of instructor required. Intermediate II or above riding experience required. Callahan
The techniques and procedures of teaching equitation including the theories of riding and teaching methods. Practice teaching will be required under the supervision of the instructor.

238. Horse Breeding Farm Management
Second semester. Three credits. One class period and two 2-hour laboratory or discussion periods. Recommended preparation: ANSC 235. Dinger
This course is designed to develop technical and managerial skills necessary for operating horse breeding farms. Programs for herd health, hoof care, nutrition, breeding, foaling, and record keeping will be included.

253. Animal Food Products
First semester. Three credits. Two class periods and one 3-hour laboratory. Faustman
A study of the food products derived from animal agriculture, including dairy, meat, poultry and fish. Emphasis will be placed on inspection, grading, processing, nutritive value and food safety concerns of these products. Field trips will be required.

253W. Animal Food Products
Four credits.

254. Principles of Poultry Science
Second semester of odd numbered years. Three credits. Two class periods and one 2-hour laboratory period. Darre
The application of the basic scientific principles to the management of poultry, egg and meat production systems. Field trips are required.

269. Laboratory Animal Science
Second semester. Three credits. Two class periods and one 2-hour laboratory or discussion period. Prerequisites: BIOL 107 and 108 or equivalent or consent of instructor. Open to sophomores. Milvae
The course is concerned with the principles and practices of laboratory animal care and management in relation to animal characteristics, handling and restraint, animal house design, reproduction and nutrition and legal regulations. Various laboratory animal techniques will be covered.

273. Livestock Management
First semester. Four credits. Three class periods and one 2-hour laboratory period. Hoagland
The production and management of beef cattle, sheep, and swine. Laboratories involve theory and practice in livestock management, skills, and techniques.

275. Dairy Cattle Management
First semester of even numbered years. Three credits. Two class periods and one 2-hour laboratory period. Kazmer
Management of dairy cattle including milking procedures, sanitation, reproduction, selection, and record keeping.

277S. Dairy Herd Management (W, C)
Second semester of odd numbered years. Three credits. Two class periods and one 2-hour laboratory period. Kazmer
Dairy farm management practices with emphasis on business and economic decision making. The effects of various programs in selection, nutrition, facilities, reproduction and herd health on overall business health will be evaluated. Each student will manage a computer simulated herd during the semester and must fulfill requirements for “W” and “C” skill course designations to successfully complete the course. Field trips are required.

278. Dairy Management Decision-making
Both semesters. One credit. One 2-hour discussion period. Consent of instructor required. May be repeated twice for credit. Kazmer
Participation in all phases of dairy herd management including decision-making activities, with particular emphasis on impact of decisions on financial health and stability. Course requires participation beyond specific semester calendars.

281. Horse Selection and Evaluation
Second semester. Two credits. One 4-hour laboratory or discussion period. Taught concurrently with SAAS 081. Not open for credit to graduate students. Consent of instructor is required. Bennett
Comparative evaluation, classification and selection of horses according to conformation, breed characteristics and performance. Judging skills including justification of placings through presentation of oral reasons will be developed. The Intercollegiate Horse Judging Team may be selected from this course. Field trips are required.

283. Livestock and Carcass Evaluation
Second semester. Two credits. Two 2-hour laboratory periods. Taught concurrently with SAAS 83. Not open for credit to graduate students. Hoagland
Classification, form to function relationships, grades and value differences of livestock are included. Objective and subjective methods of appraisal are used to evaluate beef cattle, horses, sheep and swine.

284. Dairy Cattle Evaluation
Second semester. Two credits. Two 2-hour laboratory or discussion periods. Kazmer
An introduction to the evaluation of dairy cattle on the basis of conformation. Breed classification and type improvement programs, score card criteria in relation to longevity, physiological efficiency and performance are included. Attention is also given to fitting and showing methods. Field trips may be required.

288. Advanced Animal and Product Evaluation
First semester. Two credits. One 4-hour laboratory or discussion period. Taught concurrently with SAAS 88. Not open for credit to graduate students. May be repeated once for credit. Consent of instructor required.
Intensive training in the evaluation of selected species of farm animals or their products. Type standards and the relation of anatomical features to physiological function are emphasized. Evaluation skills including justification of decisions will be developed. Intercollegiate dairy cattle, horse, livestock, poultry judging teams will be selected from this course. Field trips are required, some of which may occur prior to the start of the semester.

295. Seminar
Second semester. One credit. One 2-hour discussion period. Open only to juniors and seniors. Zinn
A discussion of current employment opportunities in animal agriculture. In addition, students will prepare resumes and present oral talks.

296. Professional Internship
Either semester. Credits and hours by arrangement. Open only to juniors and seniors with consent of instructor. Andrew, Darre

299. Independent Study
Either or both semesters. Credits and hours by arrangement of instructor. May be repeated for credit.
**Anthropology (ANTH)**

**Head of Department:** Professor Jocelyn Linnekin

**Department Office:** Room 311, Manchester Hall

For major requirements, see the College of Liberal Arts and Sciences section of this Catalog.

100. **Other People’s Worlds**

Either semester. Three credits.

A survey of the development, contributions, and contemporary social problems of selected non-European peoples and cultures.

106. **Introduction to Anthropology**

Either semester. Three credits. Two class periods and one 1-hour discussion. Students should ordinarily take this course in the fall semester.

This course is concerned with the biological and cultural development of humans from their origin to the present. A brief survey of human evolution is followed by a comparative study of behavior and beliefs of our own and other societies.

193. **Foreign Study**

Either or both semesters. Credits and hours by arrangement. May be repeated for credit (to a maximum of 17). Consent of Department Head is required before departure. May count toward the major with the consent of the advisor.

Special topics taken in a foreign study program.

212W. **The Development of Anthropological Theory**

Either semester. Three credits. Prerequisite: ANTH 220. Recommended for seniors.

Historical and contemporary theories in social and cultural anthropology.

214. **Introduction to Archaeological Methods**

First semester. Three credits. Open to sophomores.

Dewar, McBride

The concepts, methods and practice of anthropological archaeology.

215. **Migration**

Second semester, alternate years. Three credits. Recommended preparation: ANTH 100 or ANTH 106.

The social, cultural and economic causes and consequences of internal and international migration in the modern era. Topics include migrant selection, social adaptation, effects on home and host societies, and cultural identity.

217. **Old World Prehistory**

First semester. Three credits. McBrearty

The origin of humanity in Africa, hunters and gatherers of the Paleolithic, the origins of agriculture and the transition to settled life, and the emergence of civilizations in Africa, Asia and the Near East.

218. **New World Prehistory**

Second semester. Three credits.

The entry of early hunters into the New World, the origins of agriculture and sedentary life, and the rise of complex civilization in Mesoamerica and South America.

220. **Social Anthropology**

Either semester. Three credits. Open to sophomores. Not open for credit to students who have passed ANTH 200.

A comparative study of social structure including an analysis of kinship, marriage, community organization, political and economic institutions, and the role of the individual in these institutions.

220W. **Social Anthropology** (Formerly offered as Anthropology 200.) Open to sophomores.

221. **Contemporary Latin America**

Either semester. Three credits.

Survey of anthropological contributions to the study of contemporary Mexico, Central America, South America, and the Hispanic Caribbean. Special focus on the comparative analysis of recent ethnographic case studies and local/regional/national/international linkages.

222. **Peoples and Cultures of South America**

Either semester. Three credits.

The history, ecology, and culture of the native peoples of South America.

223. **Pre-Colonial Africa**

First semester. Three credits.

A survey of African society and history prior to and including the Atlantic slave trade.

225. **Contemporary Africa**

Second semester. Three credits.

Africa since its partition in 1884. Urbanization, social stratification, racial and ethnic conflict.

226. **Peoples and Cultures of North America**

Either semester. Three credits.

A survey of representative Native American cultures as they existed prior to the twentieth century, together with a view of the changing life of modern Native Americans.

227W. **Contemporary Mexico**

Either semester. Three credits.

Analysis and interpretation of interrelated economic, political and cultural processes in the contemporary social life of Mexico and the U.S.-Mexico borderland. Draws broadly on the social science literature with a special focus on anthropological contributions.

228. **Australian Aborigines**

Either semester. Three credits. Recommended preparation: ANTH 220. Dussart

An introduction to the history and understanding of Aboriginal ways of life and thought. Social relations, modes of thought and belief that are particularly Aboriginal and which show continuity with the past. Notions of identity and the relationship of various indigenous communities to the non-Aboriginal population of Australia.

229. **Caribbean Cultures**

Either semester. Three credits.

Peoples and cultures of the Caribbean region.

230. **Peoples of the Pacific Islands**

Either semester. Three credits. Linnekin

Survey of the indigenous societies and cultures of the Pacific Islands, from the first settlement to the postcolonial period. Topics include prehistoric canoe voyaging, modes of subsistence, political forms, ritual and religion, ceremonial exchange, gender ideologies, European colonization, and modern indigenous nationalism. Ethnographic examples will be drawn from Polynesia, Melanesia, and Micronesia.

231. **Anthropological Perspectives on Women** (Also offered as WGS 231.) First semester. Three credits. Open to sophomores. Dussart

Major conceptual and historical problems in the study of gender in anthropology. Women’s roles in different historical and contemporary settings, and new understandings of family, kinship, power, and cultural ideologies.

232. **Cognitive Anthropology**

Either semester. Three credits. Recommended preparation: ANTH 244. Boster

The study of how the content of thought or knowledge, is created, organized, and distributed in human communities. Topics include cultural models of the mind, emotions, personality, and relationships.

233. **Human Evolution**

Second semester. Three credits. Open to sophomores. McBreyart

The processes and events leading to the origin of human beings. Human physical and cultural development from its beginning to the dawn of settled life, through the approaches of physical anthropology and archaeology.

234W. **Culture and Religion**

Either semester. Three credits. Prerequisite: ANTH 106 or consent of instructor. Dussart

Religion as a social institution, with emphasis on the social and psychological functions of religious beliefs and practices. Materials are drawn from a wide range of historical and contemporary societies.

235. **Economic Anthropology**

Either semester. Three credits.

An introduction to the comparative study of economic life in contrasting pre-industrial, tribal and peasant economies.

236Q. **Human Behavioral Ecology**

Either semester. Three credits. Sosis

The application of the theory of natural selection to the study of human culture and behavior, with emphasis on the interaction between humans and their environment.

237. **Psychological Anthropology**

Either semester. Three credits.

Cross-cultural overview of critical issues regarding the relationship between individual personality and sociocultural systems, and mental health and illness.

238. **Peoples and Cultures of the Middle East**

Either semester. Three credits.

Selected social and cultural features of past and contemporary Middle Eastern social forms, and the origins and varieties of Western perceptions of these features.

239. **Cultural Dynamics**

First semester. Three credits. Bee

Interrelations among cultural, social and psychological factors influencing the process of cultural growth and change.

240. **Cross-Cultural Perspectives in Education**

First semester. Three credits.

Implications of anthropology for education, with emphasis on the relationship between the learning process and the cultural setting.

241. **Latin American Minorities in the United States** (Also offered as PRLS 241). First semester. Three credits.

Emphasis on groups of Mexican, Puerto Rican and Cuban origin, including treatment and historical background, social stratification, informal social relations, ethnic perceptions, relations and the concept of Latino identity.

242W. **African-American Culture**

Either semester. Three credits.

Sociological and anthropological analysis of the development and persistence of Afro-American culture.
243W. The American in Foreign Cultures
Second semester. Three credits. Prerequisite: SOCI 107 (required for sociology majors) or ANTH 106. Not open for credit to students who have passed SOCI 225. The nature of the foreign situation encountered by past and present overseas Americans and their responses to it.

244. Culture, Language, and Thought
Either semester. Three credits. Boster
Anthropological contributions to the study of language, culture, and their relationship. Topics include the Sapir-Whorf hypothesis and the application of cognitive anthropological methods and theory to the study of folk classification systems.

245. Parent-Child Relations in Cross-Cultural Perspective
(Also offered as HDFS 245.) Offered every third semester. Three credits.
Theory and research on major dimensions of parenting in the U.S.A. and cross-culturally: parental warmth, control and punishment.

246W. Illness and Curing
Either semester. Three credits. One 3-hour class period. Erickson
Cross-cultural analysis of ethnomedicine, major medical systems, alternative medical systems, curing and healing illness and social control, gender and healing, and the role of traditional and cosmopolitan medical systems in international health.

247. Culture, Power, and Social Relations
Either semester. Three credits.
Comparative and historical analysis of the sources and consequences of power in human populations.

248. Urban Anthropology
(Also offered as URB 248.) Either semester. Three credits.
A general course on urbanization, emphasizing contrasts between “developed” and “developing” countries.

249. Field Research in Social Settings
Either semester. Three credits.
Methods and techniques of field research in social settings, including observational procedures, interviewing, and the construction and use of questionnaires.

251. The Status of Women in Evolutionary Perspective
Either semester. Three credits.
A cross-cultural analysis of the status of women from a biosocial and cultural evolutionary perspective.

252. Native American Arts
(Also offered as ARTH 252.) Either semester. Three credits. Not open for credit to students who have passed ARTH 256. One three-hour class period. Valentinio
A topical survey of the arts of Native American culture in the United States and Canada.

253W. North American Pre-History
Either semester. Three credits. McBride
Prehistoric cultures of North America from the earliest traces to European contact, with emphasis on the region east of the Mississippi.

254. Archaeology of Eastern North America
Second semester. Three credits. Prerequisite: ANTH 253 or consent of instructor. McBride
Prehistoric cultures of the eastern United States and Canada from their earliest appearances to the arrival of the Europeans. Laboratory and field work projects.

255. Archaeology of Mesoamerica
Either semester. Three credits. An archaeological survey of the ancient cultures of Meso-America, from the earliest evidence through the emergence of agricultural village life, chiefly societies and the high civilizations, including the Zapotec, Teotihuacan, Toltec, Maya, and Aztec.

256. Archaeology of South America
Either semester. Three credits.
The prehistoric cultures of South America, including the Inca and other high civilizations of ancient Peru, as well as the complex chiefdoms of Colombia, Venezuela and the Caribbean.

257W. Near Eastern Pre-History
(Also offered as HIST 212W.) Either semester. Three credits. Not open for credit to students who have passed HIST 212W.
From the earliest hunter-gatherers to the rise of the state: the transition from food gathering to food production and the development of complex societies in the Near East.

258. Archaeology of Eastern Asia
First semester, alternate years. Three credits. Dewar
The development of cultures in China, Japan and Southeast Asia from their earliest beginnings until the historical period.

259W. Primitive Technology
Second semester. Three credits. Technology of pre-industrial and non-industrial societies from the first evidence of tool-making to the present, emphasizing materials, processes, and products of simple crafts.

261. Medical Ecology
Either semester. Three credits. One 3-hour class period. Recommended preparation: ANTH 277. Erickson
Anthropological perspectives on the interrelationships between culture, biology, environment, and disease. Major topics include ecology and adaptation, population dynamics, nutrition, reproduction, disease in sociocultural context, health seeking behavior, and the complexity of the interaction of western and non-western medical systems.

262. Laboratory Techniques in Archaeology
Second semester. Three credits. McBride
Methods and techniques of archaeological analysis and presentation of various kinds of archaeological artifacts, floral and faunal remains and sedentary contexts from excavated sites.

263. Ethnology of Native New England
Either semester. Three credits. McBride
Combines archaeological and ethnological data to reconstruct lifeways of the Native Americans of southern New England from the prehistoric period to the present.

264. African Prehistory
Either semester, alternate years. Three credits. McBryanty
The African archaeological record from first artifacts to historic times. The stone age, the domestication of crops, the ways of life of early herding societies, the development of metal working, and the rise of early African kingdoms.

265. Paleoanthropology
Either semester, alternate years. Three credits. Recommended preparation: ANTH 214, 217, or 233. McBryanty
Fossil evidence for the evolution of the human family, Hominidae. Anatomical features, behavior, and evolutionary relationships of extinct hominids; the use of biological, geological, and archaeological evidence to reconstruct past hominid adaptations.

266. Human Osteology
Human skeletal anatomy from an evolutionary and functional perspective. Identification and interpretation of bones of the human skeleton, methods for aging, sexing, and identifying pathologies.

267. Lithic Technology
Either semester. Three credits. McBrearty
The properties of stone tools—the primary evidence of human behavior for humanity’s first 2.5 million years—and the processes of their manufacture. Analysis of prehistoric tools and tool replication.

268. Cultural Research
Either semester. Variable (one to three) credits. Boster, Handwerker, Linnekin
The theoretical foundations and basic methods used to collect and analyze cultural data.

269. World Religions
Either semester. Three credits. Bee
A survey of religious belief systems, both polytheistic and monotheistic, from around the world.

270. Contemporary Native Americans
Either semester. Three credits. Bee
Analysis of Native American reservations and urban communities and their relationship to the larger U.S. society. Special focus on federal policy and economic development, cultural identity, and politics of Native Americans.

271. Social Change and Development
Second semester. Three credits. Bee
Developmental change in western and non-western societies, focusing on theories, processes, and sociocultural contexts of development.

274. Women and Religion
Either semester. Three credits. Linnekin
The theological standing and ritual activities of women in a cross-cultural sample of the world’s religions. Overview of selected topics and current issues relevant to the study of women and religion, such as comparative gender ideologies, feminist hermeneutics, feminist theology, and fundamentalism.

275. Race, Ethnicity, and Nationalism
Either semester. Three credits. Bee
Poplar and scholarly theories of human group identity and diversity, in cross-cultural and historical perspective. Topics include: an overview of ‘race’ and ‘ethnicity’ in Western thought, ethnic group formation and transformation, political mobilizations of group identity, and systems of inequality.

276. Human Reproductive Ecology
Either semester. Three credits. Sosis
The influence of ecology on the evolution of the human life course, with emphasis on men’s and women’s reproductive decisions.

277. Medical Anthropology
First semester. Three credits. Erickson
An introduction to the theory, method, and content of medical anthropology.

281. Sex and Gender
Either semester. Three credits.
Cross-cultural and interdisciplinary analysis of biological sex, gender, sex roles, and sexuality.

285. Anthropological Perspectives on Art
Second semester. Three credits.
Approaches to cultural creativity and aesthetics in
the graphic and plastic arts of pre-state societies. Examples from North America, Oceania, and Africa.

293. Foreign Study
Either or both semesters. Credits and hours by arrangement. May be repeated for credit. Consent of Department Head required, normally to be granted prior to the student’s departure. May count toward the major with consent of the advisor.
Special topics taken in a foreign study program.

295. Variable Topics
Either semester. Three credits. With a change in topic, may be repeated for credit. Prerequisites, required preparation, and recommended preparation vary.

296. Directed Field Research in Anthropology
Either semester. Course may be repeated, but credits may not exceed 12 by graduation. Hours by arrangement. Prerequisite: ANTH 249 or consent of instructor.
The investigation of a sociocultural and/or archaeological problem in some domestic or foreign field location.

297. Field Work in Archaeology
Summer session. Variable credits. Open only with consent of instructor. McBride
Training in the techniques of archaeological site excavation; mapping; recording; field conservation, and preliminary analysis of materials.

298. Special Topics
Either semester. Credits and hours by arrangement. Open only with consent of instructor. With a change of content, may be repeated for credit.

299. Independent Study
Either semester. Credits and hours by arrangement. Open only with consent of instructor. With a change in content, may be repeated for credit.

Art (ART)
Head of Department: Professor Gina S. Werfel
Department Office: Room 100, Art Building

135. Art Appreciation
Either semester. Three credits. Not open to Art majors.
Introduction to the visual arts, past and present. The visual language of artists, historical and cultural significance of works of art.

193. Foreign Study
Both semesters. Credits and hours by arrangement. Consent of Department Head required, normally before the student’s departure to study abroad.
Special topics taken in a foreign study program.

STUDIO COURSES

111. Foundation: Studio Concepts
Either semester. Three credits. Two 3-hour studio periods.
Introduction to key concepts and practices in art making.

113. Foundation: Criticism and Interpretation
First semester. Three credits. One 3-hour class period. Not open to students who have taken ART 232.
An introduction to various current critical approaches to the producers, contexts, audiences, and histories of contemporary visual culture.

130. Drawing I
Either semester. Three credits. Two 3-hour or three 2-hour studio periods.
Fundamental principles of drawing based on observation.

152. Drawing II
Either semester. Three credits. Two 3-hour or three 2-hour studio periods. Prerequisite: ART 130.
Observational drawing; emphasis on spatial organization and structure.

153. Life Drawing I
Either semester. Three credits. Two 3-hour studio periods. Prerequisite: ART 152.
Introduction to figure drawing.

160. Basic Studio, Printmaking
Either semester. Three credits. Two 3-hour studio periods. Prerequisite: ART 111 and 130.
Introduction to practice and principles of printmaking, including intaglio, relief and lithographic processes.

163. Basic Studio, Sculpture
Either semester. Three credits. Two 3-hour studio periods. Prerequisite: ART 111 and 130.
Introduction to principles and techniques of sculpture.

164. Basic Studio, Painting
Either semester. Three credits. Two 3-hour studio periods. Prerequisite: ART 111 and 130.
Introduction to the principles and techniques of painting media.

165. Design Process
Either semester. Three credits. Two 3-hour studio periods. Prerequisite: ART 111 and 130.
Introduction to content, meaning, form, and structure in communication design, emphasizing conceptual analysis and approaches to visualization.

166. Basic Studio, Photography
Either semester. Three credits. Two 3-hour studio periods. Prerequisite: ART 111 and 130.
Introduction to techniques and aesthetics of photography, with emphasis on the camera.

195. Architectural Graphics I
First semester. Three credits. Two 3-hour studio periods.
Architectural graphics. Basic two- and three-dimensional delineation: axonometric, isometric and perspective drawing.

204. Life Drawing II
Either semester. Three credits. Two 3-hour studio periods. Prerequisite: ART 153. Open to sophomores.
Drawing from the figure.

211. Pottery and the Vessel
Either semester. Three credits. Two 3-hour studio periods. Prerequisite: ART 163 or consent of instructor.
Open to sophomores. May be repeated for credit with a change in course content to a maximum of 9 credits.
Vessel-oriented ceramics, wheel-thrown and hand-built. Basic technical information on clay, glazes and kiln firings.

212. Sculpture: Clay
Either semester. Three credits. Two 3-hour studio periods. Prerequisite: ART 163 or consent of instructor.
Open to sophomores. May be repeated for credit with a change in course content to a maximum of 9 credits.
Basic principles and techniques of ceramic sculpture. Technical information on clay, glazes and kilns.

216. Sculpture: Wood
Either semester. Three credits. Two 3-hour studio periods. Prerequisite: ART 163. Open to sophomores.
May be repeated for credit with a change in course content to a maximum of 9 credits.
Investigation of sculptural form, process, and environment, using wood.

217. Sculpture: Metals
Either semester. Two 3-hour studio periods. Prerequisite: ART 163. Open to sophomores. May be repeated for a maximum of 9 credits.
Investigation of sculptural form, process, and environment, using metal fabrication techniques such as welding, forging, and casting.

219. Sculpture: Moldmaking/Casting
Either semester. Three credits. Two 3-hour studio periods. Prerequisite: ART 163 or consent of instructor.
Open to sophomores. May be repeated for credits with a change in course content to a maximum of 9 credits.
Investigation of mold-making techniques and casting processes, including ceramic slip casting, for students in any area of concentration.

220. Sculpture Seminar
Either semester. Three credits. Two 3-hour studio periods. Prerequisite: ART 163 and 9 credits in any area of concentration.
For the advanced undergraduate in any area of concentration. Exploration of 3-dimensional issues in a studio seminar format.

221. Intaglio Printmaking
Either semester. Three credits. Two 3-hour studio periods. Prerequisite: ART 160 or consent of instructor.
Open to sophomores.
Investigation of black-and-white and color intaglio techniques.

222. Lithography
Either semester. Three credits. Two 3-hour studio periods. Prerequisite: ART 160 or consent of instructor.
Open to sophomores.
Investigation of lithographic techniques.

224. Intaglio II
Either semester. Three credits. Two 3-hour studio periods. Prerequisite: ART 221. Open to sophomores.
Continuation of ART 221 with emphasis on color printing.

225. Lithography II
Either semester. Three credits. Two 3-hour studio periods. Prerequisite: ART 222. Open to sophomores.
Continuation of ART 222 with emphasis on color printing.

226. Printmaking Workshop
Either semester. Variable credit. Two 3-hour studio periods. Required preparation: ART 221 or 222, or consent of instructor.
Open to sophomores. May be repeated for credit with a change in course content to a maximum of 18 credits.
Workshop for students to continue developing ideas in a print medium.

228. Architectural Graphics II
Second semester. Three credits. Two 3-hour studio periods. Prerequisite: ART 195 or consent of instructor.
Open to sophomores.
Development of presentation skills and techniques. Graphic analysis of architectural forms using various drawing media and models.

235. Intermediate Painting I
Either semester. Three credits. Two 3-hour studio periods. Prerequisite: ART 164. Open to sophomores.

236. Intermediate Painting II
Either semester. Three credits. Two 3-hour studio periods. Prerequisite: ART 235. Open to sophomores.
Conceptually-oriented painting projects.
237.  **Advanced Painting I**  
Either semester. Three credits. Two 3-hour studio periods. Prerequisite: ART 236.  
Individually determined painting projects.

238.  **Advanced Painting II**  
Either semester. Three credits. Two 3-hour studio periods. Prerequisite: ART 237. May be repeated once with change in course content.  
Continuation of ART 237.

239.  **Aqua Media I**  
Either semester. Three credits. Two 3-hour studio periods. Prerequisite: ART 152. Open to sophomores.  
Introduction to the materials and methods of painting in aqua media.

240.  **Aqua Media II**  
Either semester. Three credits. Two 3-hour studio periods. Prerequisite: ART 239. Open to sophomores.  
Continuing study in aqua media.

255.  **Advanced Figure Drawing**  
Either semester. Three credits. Two 3-hour studio periods. Prerequisite: ART 204. May be repeated once.  
Advanced studies in figure drawing.

256.  **Digital Imaging**  
Either semester. Three credits. Prerequisite: ART 166 and 261C.  
Introduction to the use of the computer to digitize and manipulate photographic imagery.

257.  **Advanced Drawing**  
Either semester. Three credits. Two 3-hour studio periods. Prerequisite: ART 204 and consent of instructor. May be repeated with a change in course content to a maximum of 9 credits.  
Advanced studies in drawing. Course content varies with instructor.

260.  **Communication Design I**  
Either semester. Three credits. Two 3-hour studio periods. Prerequisite: ART 165, portfolio review and consent of instructor. Open to sophomores.  
Fundamentals of communication design.

261C.  **Introduction to Digital Media**  
Either semester. Three credits. Two 3-hour studio periods. Prerequisite: ART 111 and ART 130. Open to sophomores.  
Introduction to digital media.

262.  **Alternative Processes (Photography)**  
Either semester. Three credits. Two 3-hour studio periods. Prerequisite: ART 265. May be repeated once with a change of content. Open to sophomores. Craig photographic printmaking systems outside conventional silver imaging processes.

263.  **Color Photography**  
Either semester. Three credits. Two 3-hour studio periods. Prerequisite: ART 166. May be repeated once with a change of content. Open to sophomores.  
The processes and aesthetics of color photography.

264.  **Communication Design II**  
Either semester. Three credits. Two 3-hour studio periods. Prerequisite: ART 260.  
Creative, appropriate and effective communication design through the use of type and image.

265.  **Intermediate Photography**  
Either semester. Three credits. Two 3-hour studio periods. Prerequisite: ART 166 or consent of instructor. Open to sophomores.  
Principles and techniques of black-and-white photography in fine-art applications, with emphasis on darkroom work.

266.  **Advanced Photography**  
Either semester. Three credits. Two 3-hour studio periods. Prerequisite: ART 265 or consent of instructor. May be repeated once with a change of content.  
Advanced problems in the use of photography as an art medium.

267.  **Communication Design III**  
Either semester. Three credits. Two 3-hour studio periods. Prerequisite: ART 260. Prerequisite or corequisite: 264.  
Exploration of form, content, and function using various communication design methodologies.

269.  **Communication Design IV**  
Either semester. Three credits. Two 3-hour studio periods. Prerequisite: ART 267.  
Exploration of communication design as a social, political, and cultural activity.

270.  **Design Center**  
Either semester. Three credits. May be repeated to a maximum of six credits. Two 3-hour studio periods. Prerequisites: ART 267, portfolio review, and consent of instructor.  
Introduction to professional design practice.

271.  **Illustration**  
Either semester. Three credits. Two 3-hour or three 2-hour studio periods. Prerequisite: ART 153 and 164, or consent of instructor. Open to sophomores.  
Introduction to principles of illustration, media, and techniques.

272.  **Topics in Illustration**  
Either semester. Three credits. Two 3-hour studio periods. Prerequisite: ART 204 and 271 or consent of instructor. May be repeated with a change of course content up to 9 credits.  
Continuing problems in illustration. Projects may include book, editorial, reportage, or self-promotion illustration.

274.  **Communication Design Survey**  
Either semester. Three credits. Two 1½-hour class periods. Open to sophomores.  
A survey of the role and history of communication design.

276.  **Typography**  
Either semester. Three credits. Two 3-hour studio periods. Prerequisite: ART 165 and ART 261C. Open to sophomores.  
Introduction to typographic design.

277.  **Publication Design**  
First semester. Three credits. Two 3-hour studio periods. Prerequisite: ART 264.  
Introduction to publication design.

278.  **Digital Multimedia**  
Second semester. Three credits. Two 3-hour studio periods. Prerequisite: ART 264.  
Introduction to time-based communication design.

279.  **Art Outside the Mainstream**  
Either semester. Three credits. One 3-hour seminar period.  
An examination of the range of contemporary art produced by self-taught artists working outside the mainstream in the United States, Europe, and selected global areas.

280.  **Percussion Instrument Design and Fabrication**  
Second semester. Three credits. Two 3-hour studio periods.  
Design and fabrication of traditional and traditionally inspired percussion instruments including: Tocajon, Udu Drum, Slit Drum, Mbira, Barimbow, Rhythm Bells.

281.  **Introduction to Video Art**  
Either semester. Three credits. Two 3-hour studio periods. Prerequisite: ART 166 or consent of instructor.  
Introduction to techniques and aesthetics of video art.

283.  **Investigation of Special Topics**  
Either semester. Credits and hours by arrangement. Prerequisite: Consent of instructor. May be repeated for credit with a change in course content.  
Special topics. See Directory of Classes for title. Field trips may be required.

290.  **Materials and Techniques of Painting**  
Either semester. Three credits. Two 3-hour studio periods. Prerequisite: Consent of instructor.  
Media and techniques of traditional and experimental painting.

293.  **Foreign Study**  
Either or both semesters. Credits and hours by arrangement. Consent of department head required. Special topics taken in a foreign study program.

295.  **Studio Internship**  
Either semester. Three credits. Hours by arrangement. Open only with consent of instructor.  
Supervised practical experience in studio and studio related work.

Section one:  **Communication Design Studio Internship**  
Supervised practical experience in a commercial design studio, agency, or related work. Prerequisite: B average in communication design classes, ART 267, and consent of instructor.

Second section:  **Photography Studio Internship**  
Supervised practical experience in a commercial photography studio, agency or in related work. Prerequisite: B average in photography classes, ART 266 and consent of a photography instructor.

Section three:  **Art Studio Internship**  
Supervised practical experience in an art studio. Prerequisite: B average in major Upper Division course work and consent of instructor from the major.

296.  **Cooperative Education in Art**  
Either semester. Three credits. Hours by arrangement. Prerequisite: Upper Division standing. Open only with consent of Department Head.  
Practicum for students participating in the off-campus Cooperative Education Program.

297.  **Senior Project**  
Both semesters. Three credits. Hours by arrangement. Limited to advanced B.F.A. students seventh semester or higher. To fulfill graduation requirement for B.F.A. students, must be passed with grade of C or better.  
Project developed in student’s area of concentration, to be exhibited in the Annual Senior Show. A vigorous and consistent thematic body of work which articulates both technical and conceptual concerns required.

299.  **Independent Study**  
Either semester. Maximum of up to 6 credits. May be repeated for a total of 6 credits. Limited to advanced students 5th semester or higher. Must have department grade point average (DGPA) of at least 3.0 and no outstanding incompletes for any other 299. Exceptions only by approval of the department head.  
For advanced students to develop a special project in advanced studio art.

† Students taking this course will be assigned a final grade of S (satisfactory) or U (unsatisfactory).
250W. Art of the Northern Renaissance
Open to art history and art majors; others with consent of instructor.

251. Baroque Art
Either semester. Three credits.
Art and architecture of the seventeenth and early eighteenth centuries with emphasis on Italy, Netherlands, France and Spain.

251W. Baroque Art
Open to art history and art majors; others with consent of instructor.

252. Nineteenth Century European Art
Either semester. Three credits.
European art from Neo-Classicism to Realism.

252W. Nineteenth Century European Art
Open to art history and art majors; others with consent of instructor.

253. American Architecture
Either semester. Three credits.
American architecture from the colonial era to the present. Field trips may be required.

254. Nineteenth Century American Art
Either semester. Three credits.
Topics in American Art, 1770-1900.

254W. Nineteenth Century American Art
Open to art history and art majors; others with consent of instructor.

256. Native American Arts
(Also offered as ANTH 252.) Either semester. Three credits.
A topical survey of the arts of Native American cultures in the United States and Canada.

257. Early Medieval Art
Either semester, alternate years. Three credits.
Early medieval art from the fifth through the tenth centuries. Germanic metalwork, Hiberno-Saxon manuscripts, and the art of the era of Charlemagne and his successors.

258. Romanesque Art
Either semester, alternate years. Three credits.
Topics in medieval painting, architecture, and sculpture through the twelfth century.

259. Gothic Art
Either semester. Three credits.
Gothic art and architecture, with emphasis on the court styles of England and France.

260. The Early Illustrated Book
Either semester. Three credits.
The early history of the illustrated book, from antiquity through the introduction of printing.

261. History of Photography I
Either semester. Three credits.
Topics in the history of photography from 1839 to World War I.

262. History of Photography II
Either semester. Three credits.
Topics in the history of photography from World War I to the present.

267. History of Photography I
Either semester. Three credits.
Topics in the history of photography from 1839 to World War I.

268. History of Photography II
Either semester. Three credits.
Topics in the history of photography from World War I to the present.

270. The Artist and Society
Either semester. Three credits.
An investigation of the artist's professional function throughout history in different Western societies.

273. Art of the Italian Renaissance
Either semester. Three credits.
Italian art and architecture 1400-1600.

273W. Art of the Italian Renaissance
Open to art history and art majors; others with consent of instructor.

275. Mexican and Chicano Art, 19th Century - Present
Either semester. Three credits.
Topics in Mexican and Chicano art from Mexican Independence to the present.

275W. Mexican and Chicano Art, 19th Century - Present
Open to Art History and Art majors; others with consent of instructor.

276. Caribbean Art, 19th and 20th Centuries
Either semester. Three credits. Open to Art History and Art majors, others with consent of instructor.
A survey of art and visual production in the Caribbean from the 1804 Haitian Revolution to the present.

276W. Caribbean Art, 19th and 20th Centuries
Open to ARTH and ART majors; others with consent of instructor.

277. Art of Mesoamerica
Either semester, alternate years. Three credits.
A survey of art from Mexico and Central America 2000 BC-CE 1500. Cultures covered include Olmec, Zapotec, Maya, Toltec, and Aztec.

277W. Art of Mesoamerica
Open to art history and art majors; others with consent of instructor.

278. Colonial Mexican Art
Either semester, alternate years. Three credits.

278W. Colonial Mexican Art
Open to art history and art majors; others with consent of instructor.

279. Modern Latin American Art
Either semester. Three credits.
A thematic survey of Latin American art from the nineteenth century to the present.

279W. Modern Latin American Art
Open to art history and art majors; others with consent of instructor.

280. Early Christian and Byzantine Art
Either semester. Three credits.
Christian art and architecture of the late Roman empire and the Byzantine East up to the seventh century.

280W. Early Christian and Byzantine Art
Open to art history and art majors; others with consent of instructor.
281. Modern Art
Either semester. Three credits.
Topics in the art of the first half of the twentieth century.

281W. Modern Art
Open to art history and art majors; others with consent of instructor.

282. Architecture of the Twentieth Century
Either semester. Three credits.

283. Investigation of Special Topics
Either semester. Credits and hours by arrangement. May be repeated for credit with a change in course content.
Special topics. See Directory of Classes for title.

285. African Art
Either semester. Three credits.
A survey of African art from antiquity to present.

285W. African Art
Open to art history and art majors; others with consent of instructor.

286. The Art of China
Either semester. Three credits.
Survey of major art forms in China c. 2500 B.C. to the twentieth century.

286W. The Art of China
Open to art history and art majors; others with consent of instructor.

287. The Art of Japan
Either semester. Three credits.
A survey of major art forms in Japan, prehistoric to the present.

287W. The Art of Japan
Open to art history and art majors; others with consent of instructor.

288. Far Eastern Painting
Either semester, alternate years. Three credits. Recommended preparation: ARTH 280 or 287.
Major trends in painting in China from the Han Dynasty to the present; in Japan from the Nara Period to the present.

288. East Asia Since the Mid-Nineteenth Century
Either or both semesters. Credits and hours by arrangement.
Practicum for students participating in the off-campus Cooperative Education Program.

289. Independent Study
Either semester. Three credits. Required preparation: Two Upper Division courses in Art History or consent of instructor.
An introduction to the methods of Art Historical analysis.

293. Foreign Study
Either or both semesters. Credits and hours by arrangement. Consent of Department Head required.
Special topics taken in a foreign study program.

294. Field Studies Internship in Art History
Both semesters. Variable credit to a maximum of 12 credits. May be repeated for credit. Prerequisite: Junior standing, two 100-level Art History courses, two 200-level Art History courses and consent of instructor.
Supervised practical experience in museum and museum related work.
Section one: Wadsworth Atheneum Internship. Participation in Museum Studies Seminars, staff meetings and completion of individual project at the Atheneum. Application must be approved by Wadsworth Atheneum Education Department; deadlines are in April for first semester and November for second semester.

296. Cooperative Education in Art
Either semester. Three credits. Hours by arrangement. Prerequisite: Upper Division standing. Open only with consent of Department Head.
Practicum for students participating in the off-campus Cooperative Education Program.

297. Art Historical Methods
Either semester. Three credits. Required preparation: Two Upper Division courses in Art History or consent of instructor.
An introduction to the methods of Art Historical analysis.

299. Asian American Studies Institute (AASI)

Director, Asian American Studies Institute:
Roger N. Buckley
Office: Room 416, Beach Hall

215. Critical Health Issues of Asian Americans
First semester. Three credits. Palaniswamy
Critical health issues affecting specific Asian American sub-populations. Gender specific health problems and the cultural issues in these populations. Comprehensive analysis of major health problems and healthcare issues confronted by Asian Americans.

216. Asian Medical Systems
(Also offered as AH 216.) Second semester. Three credits. Palaniswamy
Examination of traditional medical systems of Asian origin and their prevalence in the United States. Topics to include popular medical systems: Ayurveda, Traditional Chinese Medicine, Chinese, Indian and Japanese Herbal Medicine; the values and beliefs of different models.

221. Sociological Perspectives on Asian American Women
(Also offered as SOCI 221.) Either semester. Three credits. Pakayastha
An overview of social structures and inter-group relations focusing on the experience of Asian American women.

221W. Sociological Perspectives on Asian American Women
(Also offered as SOCI 221W.)

239. Geography of Asian American Experience
(Also offered as GEOG 239.) First semester. Three credits. Li
Geographical perspective on issues facing Asian American communities: immigration, community formation, economic structure, race relations, and political participation. The changing dynamics of American ethnicity and study of the ethnouburbs. Diversity among Asian Americans, and comparison with other ethnic groups.

274. Asian American Literature
(Also offered as ENGL 274.) Either semester. Three credits. Prerequisite: ENGL 109, or either 110 or 111. Open to sophomores. Chow
Literature, theatre, film about Asian American communities and culture in the United States from the mid-nineteenth century to the present.

277. Modern India
(Also offered as HIST 277.) Second semester. Three credits. Buckley
An introduction to the history of India from the Mughal and European invasions of the 16th century to the present. India’s synthesis of Eastern and Western culture, traditional and new, will be the focus.

286. East Asia Since the Mid-Nineteenth Century
(Also offered as HIST 286.) Second semester. Three credits. Wang
The major problems and issues of traditional Chinese and Japanese history and historiography. Special emphasis on the “Great Tradition” in ideas of both civilizations.

286W. East Asia Since the Mid-Nineteenth Century
(Also offered as HIST 286W.)

288. East Asia Since the Mid-Nineteenth Century
(Also offered as HIST 288.) Second semester. Three credits. Wang
The reactions of East Asia to the Western threat, and the rise of Asian nationalism, communism, and fascism. Special attention to the tensions caused by the conflict of ideas.

288W. East Asia Since the Mid-Nineteenth Century
(Also offered as HIST 288W.)

294. Asian American Experience Since 1850
(Also offered as HIST 294.) Either semester. Three credits. Wang
Survey of Asian Americans in the United States since 1850. Responses by Asian Americans to both opportunities and discrimination.

298. Special Topics in Asian American Studies
Either semester. Credits and hours by arrangement. With a change in content, may be repeated for credit. Prerequisites and recommended preparation vary.

† Students taking this course will be assigned a final grade of S (satisfactory) or U (unsatisfactory).
199. Introduction to Biological Research
Either semester. Credits not to exceed 3. Hours by arrangement; three laboratory hours for each credit. May be repeated for credit with a change in content. Prerequisite: BIOL 107 or 108 and consent of instructor. Internship in Biology research.

295. Introduction to Undergraduate Research (Formerly offered as MCB 295.) Either or both semesters. One credit. Open to sophomores. Recommended preparation: BIOL 107 and 108, or equivalent. With a change in content, this course may be repeated for credit.
Introduction to the variety of research programs in the Life Sciences on the Storrs campus. Required of Sophomore Biology Honor students; also open to students interested in undergraduate research.

Biomedical Engineering (BME)
Program Director: Professor John Enderle
Department Office: 260 Glenbrook Road

210. Introduction to Biomedical Engineering (Also offered as CHE 272.) First semester. Three credits. Prerequisite: BIOL 107, Corerequisite: PHYS 151IQ and MATH 210IQ. Open to sophomores. For survey of the ways engineering and medical science interact. The art and science of medicine, and the process of medical diagnosis and treatment. Diagnostic instrumentation and measurements including medical imaging. Introduction to bioelectric phenomena, biomechanics, and biomaterials. Biochemical engineering. Computers in medicine. Molecular medicine and biotechnology.

221. Introduction to Biochemical Engineering (Also offered as CHEG 273 and as ENVE 283.) Second semester. Three credits. Recommended preparation: CHEG 224 and 251.
Enzyme and fermentation technology; microbiology, biochemistry, and cellular concepts; biomass production; equipment design, operation, and specification; design of biological reactors; separation processes for bio-products.

223. Fermentation and Separation Technologies Laboratory Second semester. Three credits. One class and two 3-hour laboratories. Prerequisite: BME 221. Introduction to techniques used for industrial mass culture of prokaryotic and eukaryotic cells, and methods used to extract useful products from these cultures. Metabolic processes, energetics, growth kinetics and nutrition of microorganisms. Synthesis of cellular material and end products. Heat exchange, oxygen transfer, pH control, sterilization and design of fermentors. Culture of eukaryotic cell mass. Immobilized enzyme and cell reactors. Product recovery methods of precipitation centrifugation, extraction filtration and chromatography.

251. Biosystem Analysis Second semester. Three credits. Prerequisite: BME 210. This course and ECE 202 may not be both taken for credit.
Fourier analysis, LaPlace analysis and Z-transforms. Techniques for generating quantitative mathematical models of physiological control systems; the behavior of physiological control systems using both time and frequency domain methods.

252. Biomedical Engineering Measurements First semester. Four credits. Prerequisite: BME 210 or ECE 272.

253. Physiological Control Systems Semester by arrangement. Three credits. Prerequisite: BME 251 or ECE 232.
Analysis of human physiological control systems and regulators through the use of mathematical models. Identification and linearization of system components. Systems interactions, stability, noise, and the relation of system malfunction to disease. The analysis and design of feedback systems to control physiological states through the automatic administration of drugs.

255. Bioinstrumentation Either semester. Three credits. Prerequisites: ECE 201 or ECE 220.
Modeling, analysis, design, and operation of transducers, sensors, and electrodes, for physiological systems: operational and instrumentation amplifiers for bioelectric event signal conditioning, interfacing and processing; A/D converters and hardware and software principles as related to sampling, storing, processing, and display of biosignals and digital computers.


271. Biomaterials Second semester. Four credits. Prerequisites: MMAT 201, BME 210, BME 261.
A lecture and laboratory course that examines the structure and properties of materials used in surgical implants and medical devices. Consideration is given to issues of mechanical properties, biocompatibility, degradation of materials by biological systems, and biological response to artificial materials. Particular attention will be given to the materials for the total hip prosthesis, dental restoration, and implantable medical devices.

The strategies and fundamental bioengineering design criteria behind the development of cell-based tissue substitutes, artificial skin, muscle, tendons, bone, and extracorporeal systems that use either synthetic materials or hybrid (biological-synthetic) systems. Topics include biocompatibility, biological grafts, gene-therapy-transfer, and bioreactors.

290. Biomedical Engineering Design I Both semesters. Three credits. Prerequisites: This course is taken by seniors in the semester before BME 291.
Discussion of the design process; project statement, specifications project planning, scheduling and division of responsibility, ethics in engineering design, safety, environmental considerations, economic constraints, liability, manufacturing, and marketing. Projects are carried out using a team-based approach. Selection and
analysis of a design project to be undertaken in BME 291 is carried out. Written progress reports, a proposal, an interim project report, a final report, and oral presentations are required.

291. Biomedical Engineering Design II
Both semesters. Three credits. Prerequisite: BME 290A.
Design of a device, circuit system, process, or algorithm. Team solution to an engineering design problem as formulated in BME 290, from first concepts through evaluation and documentation. Written progress reports, a final report, and oral presentation are required.

295. Special Topics in Biomedical Engineering
Semester, credits and hours by arrangement or announced. Prerequisite and/or consent: Announced separately for each course. With a change in topic, this course may be repeated for credit. Classroom and/or laboratory courses in special topics as announced for each semester.

299. Independent Study
Either semester. Credits and hours by arrangement or announced. Prerequisite: Consent of instructor. With a change in content, this course may be repeated for credit.
Individual exploration of special topics as arranged by the student with an instructor of his or her choice.

Business Administration (BADM)

198. Contemporary Issues in the World of Business
Either semester. One credit. May be repeated in different sections for up to three credits maximum. Open to freshmen and sophomores; others with consent of instructor. May not be used to satisfy Upper Division/major requirements of the School of Business Administration.
The world of business has changed. No longer can we refer to the cliche “business as usual.” Today’s business world is a complex, challenging and exciting place. Each section of this course will capture some aspect of that challenge and excitement. Students will be exposed to undercurrents that challenge and perplex today’s managers and executives around the globe. Students should consult the scheduling booklet for specific topics offered.

Business Law (BLAW)
Courses are open to juniors and seniors only.

271. Business Law
Either semester. Three credits.
A study of the interaction between the business community and the legal environment through a systematic analysis, including cases, of the procedural and substantive rules of law with special emphasis placed on the jurisprudence governing contracts, torts, and property. Business ethics are also considered.

272. Business Law
Alternate semesters. Three credits. Prerequisite: BLAW 271.
The course acquaints the student with the fundamental legal principles surrounding the law of sales and negotiable instruments.

273. Business Law
Alternate semesters. Three credits. Prerequisite: BLAW 271.
This course covers the basic legal principles of agencies, partnerships, and corporations. Partnerships and corporations are examined from both legal and functional viewpoints.

274. Real Estate Law
Alternate semesters. Three credits. Prerequisite: BLAW 271 or 275.
This course is designed to examine the legal aspects of land sale transactions. A study is made of typical documentation used in such transactions; the role of the real estate broker; the rights, liabilities and remedies of the buyer and seller arising out of their contract; sources and alternative forms of financing; basic tax devices; and development alternatives.

275. Business, Law and Society
Either semester. Three credits.
The meaning of law and the structure of the American legal system are studied with a view toward the impact of law upon the operation of American business. Philosophies of American business enterprise, as well as business ethics and morality, are examined and compared with the demands the law makes upon conduct of business people. Business and governmental relationships are explored, with special attention focused on governmental regulation of business by statutory and decision law.

277. Business Transactions and the Law
Either semester. Three credits. Prerequisite: BLAW 275. Not open to students who have passed BLAW 271.
This course provides an overview of how key business transactions and the law are related. Specific topics include contracts, sales, and negotiable instruments. Also covered are aspects of agency, partnerships, corporations, limited partnerships, limited liability companies, secured transactions, and bankruptcy. This course is primarily designed for accounting majors.

280. International Business Law
Alternate semesters. Three credits. Prerequisite: BLAW 271 or BLAW 275.
This course is designed to acquaint the student with international business law and with the legal aspects of international business transactions. In examining the legal considerations involved in doing business internationally, this course explores the law surrounding international dispute resolution, the international sale of goods, the European Community, The General Agreement on Tariffs and Trade, the regulation of imports and exports, and a variety of other topics relevant to the legal relationship between business and the international community.

289. Field Study Internship
Either or both semesters. One to six credits. Hours by arrangement. Prerequisite: Completion of Lower Division School of Business Administration Requirements and consent of instructor and Department Head. Designed to provide students with an opportunity for supervised field work relevant to one or more areas in business law. Students will work under the supervision of one or more professionals in the specialty in question. Student performance will be evaluated on the basis of an appraisal by the field supervisor and a detailed written report submitted by the student.

293. Foreign Study
Either or both semesters. Credits and hours by arrangement. Up to a maximum of six credits. Consent of Department Head required prior to student’s departure. Special topics taken in a foreign study program.
† Students taking this course will be assigned a final grade of S (satisfactory) or U (unsatisfactory).

296. Special Topics
Either semester. Credits and hours by arrangement. Prerequisite: Announced separately for each offering. With a change in content, may be repeated for credit.
Classroom course in special topics in law as announced in advance for each semester.

299. Independent Study
Either or both semesters. Credits by arrangement, not to exceed six in any semester. Open only with consent of instructor.
Individual study of special topics in law as mutually arranged between student and instructor.

Chemical Engineering (CHEG)

Head of Department: Professor Joseph J. Helble
Department Office: Room 204, Engineering II

For major requirements, see the School of Engineering section of this Catalog.

Students who do not have the suggested preparation for a course in the Chemical Engineering department are strongly advised to discuss their preparation with the instructor or the department Head before registering for the course.

203. Introduction to Chemical Engineering
First semester. Three credits. Recommended preparation: CHEM 128, MATH 116 or MATH 118, ENGR 150 or CSE 110 or CSE 123C. Open to sophomores.
Application of the principles of chemistry and physics to chemical processes; units, dimensions, and process variables; material balances; equations of state (ideal and real); single component equilibria; energy balances; non reactive and reactive processes; combined mass and energy balances.

211-212. Chemical Engineering Thermodynamics
Both semesters. Three credits each semester. Three class periods and one discussion period. Recommended preparation: MATH 210 and 211, CHEM 128, and CHEG 203 (or consent of Chemical Engineering Department Head). CHEG 211 and ME 235 may not both be taken for credit. CHEG 211 is open to sophomores. Consent of instructor and department head.
First semester: first and second law of thermodynamics; thermal and PVT properties of matter; exact differentials and thermodynamic identities; design and analysis of power cycles; analysis of refrigeration and liquefaction processes.
Second semester: properties of ideal and non-ideal mixtures; ideal and non-ideal phase equilibria; design of equilibrium flash separators; phase equilibria using equations of state; chemical equilibria; optimum condition for feasible reaction equilibria.

223-224. Transfer Operations
Both semesters. Three credits each semester. Three class periods and one discussion period. Recommended preparation: MATH 210 and 211, CHEM 128, and CHEG 203 (or consent of Chemical Engineering Department Head).
First semester: overall mass, energy, and momentum balances; fluid flow phenomena; theoretical and empirical relationships for design of incompressible fluid-flow systems; conductive heat transfer; heat transfer coefficients and design of heat exchange systems.
Second semester: radiation heat transfer, design of heat exchange equipment; evaporation; design of mass transfer processes including distillation and extraction; analysis and design of diffusional processes such as gas absorption and humidification.
225. Advanced Transfer Operations
An advanced study of transport phenomena, rate processes, and problems of a more complex nature.

237W. Chemical Engineering Laboratory
First semester. Three credits. Two 1-hour discussion periods. Two 3-hour laboratories. Recommended preparation: CHEG 212 and 224.
Open-ended laboratory investigations in chemical engineering focusing on fluid mechanics, heat transfer, thermodynamics, and combined heat and mass transfer; emphasis on student teamwork and on design of experiments to meet objectives; technical report writing; oral presentations.

239W. Chemical Engineering Laboratory
Open-ended laboratory investigations in chemical engineering focusing on reaction kinetics, reactor design, process control, and mass transfer; emphasis on student teamwork and on design of experiments to meet objectives; technical report writing; oral presentations.

241. Process Design and Economics
Chemical engineering process synthesis and design; comparison of alternative processing steps; instrumentation; cost estimation; economic analysis; process optimization; emphasis on conceptual design in application of chemical engineering principles.

243. Process Design and Economics
Second semester. Four credits. Recommended preparation: CHEG 212, CHEG 224, and CHEG 251. Not open for credit to students who have passed CHEG 242.
Chemical engineering process synthesis and design; comparison of alternative processing steps; instrumentation; cost estimation; economic analysis; process optimization; emphasis on conceptual design in application of chemical engineering principles; design of process equipment, computer-aided design of equipment and flow sheets; design and analysis of complete process plants.

245. Chemical Engineering Analysis
First semester. Three credits. Recommended preparation: CHEG 203 and MATH 210 and 211.
Mathematical and numerical methods for solving engineering problems; description and computer modeling of physical and chemical processes with ordinary and partial differential equations; treatment and interpretation of engineering data.

247. Introduction to Process Dynamics and Control
First semester. Three credits. Recommended preparation: CHEG 212 and 224 and MATH 210 and 211.
Chemical process modeling, dynamics, and analysis; measurement and control of process variables; design, and computer simulation of simple processes and control systems.

251. Process Kinetics
Theory of chemical rate; homogeneous, heterogeneous and catalytic systems. Analysis and design of batch and flow reaction systems; analysis of rate data; temperature and catalytic effects in reactor design; mass transport effects; non-ideal reactor design.

256. Polymeric Materials
Either semester. Three credits. Recommended preparation: CHEG 244. Not open for credit to students who have passed CHEM 290.
Structure, properties, and chemistry of high polymers; solution and phase behavior; physical states, viscoelasticity and flow; production and polymer processing; design of polymers for specific applications.

261. Introduction to Nuclear Engineering
First semester. Three credits. Recommended preparation: CHEG 211 and 223.
Nuclear physics, reactor kinetics, and the nuclear fuel cycle; classification and analysis of nuclear power reactors; environmental effects of nuclear power; analysis of severe nuclear accidents.

262. Engineering Entrepreneurship
Either semester. Three credits.
Students assume the role of engineer as entrepreneur and develop a business plan to launch a new technology as a business; course includes topics on intellectual property, venture capital, market analysis, advertising, incorporation, contracts and web development.

273. Introduction to Biochemical Engineering
(Formerly offered as CHEG 283.) (Also offered as BME 221 and as ENVE 283.) Second semester. Three credits. Recommended preparation: CHEG 224 and 251.
Enzyme and fermentation technology; microbiology, biochemistry, and cellular concepts; biomass production; equipment design, operation, and specification; design of biological reactors; separation processes for bio-products.

274. Bioremediation
Application of engineering and biological principles toward remediation of hazardous waste; degradation of toxic chemicals using genetically-engineered microorganisms; and biological contacting devices for waste remediation.

275. Fermentation and Separation Laboratory
Either semester. Three credits. Recommended preparation: Course work in biochemistry or microbiology.
Introduction to industrial mass culture of prokaryotic and eukaryotic cells and methods used to extract useful products from these cultures. Metabolic processes, energetics, growth kinetics and nutrition of microorganisms. Heat exchange, oxygen transfer, pH control, sterilization, design of fermenters and product recovery.

280. Introduction to Environmental Rate Processes
(Also offered as ENVE 280.) First semester. Three credits. Recommended preparation: CHEM 128.
Application of thermodynamics, chemical kinetics and transfer operations to environmental problems; water pollution control. Open only to students not majoring in chemical engineering.

281. Introduction to Water Pollution
(Also offered as ENVE 281.) Second semester. Three credits. Recommended preparation: CHEG 224.
Water purification and water quality control; aeration and mass transfer, biological mechanisms and kinetics; design of biological reactors and sludge treatment facilities; design and operation of physical purification methods; alternative processes for industrial wastewater treatment.

285. Introduction to Air Pollution
(Also offered as ENVE 285.) Second semester. Three credits. Recommended preparation: CHEG 211 or ME 233 or ME 238.
Gaseous pollutants and their properties; basic analytical techniques for air pollutants; particulate pollutants and their properties; equipment design for removal of gaseous and particulate materials; economic and environmental impact of air pollutants; federal and state regulations.

286. Energy Process Technology
(Formerly offered as CHEG 270.) Second semester. Three credits. Recommended preparation: CHEG 211 or ME 233 or 238.
Present and potential sources of energy; production and processing of fossil fuels; characteristics of energy utilization systems; design and analysis of power generation systems; design of building heating and cooling systems; solar energy technology.

295. Special Topics in Chemical Engineering
First semester. Credits and hours by arrangement or as announced. Prerequisite: Consent of instructor. This course may be repeated for credit.
Methods of conducting research; design of laboratory investigations and experiments; correlation and interpretation of experimental results; writing of formal, technical reports; oral presentations; independent student effort, initiative and resourcefulness are required.

Chemistry (CHEM)

Head of Department: Professor Gary Epling
Department Office: Room 151, Charles E. Waring Chemistry Building
For major requirements, see the College of Liberal Arts and Sciences section of this Catalog.

101. Chemistry for an Informed Electorate
First semester. Three credits. Three class periods. Not open to students who have passed CHEM 127, 129, 137, or 153. Knox
Provides a basic understanding of chemistry and its applications, in a conceptual fashion. Addresses topics in chemistry of everyday interest, including problems that chemistry solves and creates in our society. Background material includes atoms and molecules, chemical bonding, chemical compounds, basic reactions, states of matter, solutions, and energy. Concepts such as chemical synthesis, analysis and structure will be addressed on a “need to know” basis. Topics will be chosen from but not restricted to biochemistry, food chemistry, agricultural chemistry, nuclear chemistry, pharmaceutical chemistry, home care and personal products, pollution of air and water, plastics and polymers, geochemistry, chemistry of outer space. Designed for students in fields outside of the sciences.

122. Chemical Principles and Applications
Second semester. Four credits. Three class periods and one 1-hour discussion and one 2-hour laboratory per week. Not open for credit to students who have passed CHEM 127 or 129 or 137 or 153.
Brief but comprehensive survey of important chemical theories and applications of chemistry.
to provide a background for related fields in which a general rather than a detailed knowledge of the compounds of carbon is required.

142. **Organic Chemistry Laboratory**
First semester. One credit. One 4-hour laboratory period including discussion. Prerequisite or corequisite: CHEM 141. Not open to students who have passed CHEM 243.

155. **Introduction to Chemical Research**
Either semester. Credits, not to exceed 3 and hours by arrangement; three laboratory hours for each credit. Prerequisite: CHEM 127 or 129 or 137 or 151 or 153 and consent of instructor. Internship in research laboratories.

195. The **Science of Chemistry**
Second semester. One credit. One 1-hour class period. Readings, lectures, films and field trips exploring the field of chemistry and its scientific and social implications.

210. **Descriptive Inorganic Chemistry**
First semester. Two credits. Two class periods. Prerequisite: CHEM 128 or 130 or 138 or 154. Not open for credit to students who have passed CHEM 151. Introduction to bonding, structure, spectroscopy, physical properties, and reactivity of inorganic compounds.

214. **Intermediate Inorganic Chemistry**

215. **Inorganic Chemistry Laboratory**
Second semester. Three credits. One class period and two 3-hour laboratory periods. Prerequisite or corequisite: CHEM 214. The preparation, isolation, purification, and characterization of inorganic compounds; special techniques and instrumentation may be required.

216. Selected **Topics in Inorganic Chemistry**
Second semester. Three credits. Prerequisite: CHEM 214. A systematic study in special topics format of the theory, bonding, and structure of the transition metals and their compounds. The correlation of structure and electronic states with physical properties will be developed.

230Q. **Quantitative Analytical Chemistry**
Second semester. Four credits. Two class periods and two 3-hour laboratory periods. Prerequisite: CHEM 128 or 130 or 138 or 154. (Two credits for students who have passed CHEM 152 or 230.) Recommended preparation: CHEM 263. Open to sophomores. Fundamentals of analytical Chemistry. While it is a course for chemistry majors, it is also suitable for students in other technical fields who have an interest in learning quantitative analytical chemistry procedures applicable to analytical instrumentation. Traditional wet chemical techniques and instrumental methods. Quantitative chemistry and chemical computations.

234Q. **Instrumental Analysis I**
First semester. Four credits. Two class periods and two 3-hour laboratory periods. Prerequisite: CHEM 232 (or CHEM 152 or 230). Recommended preparation: CHEM 264. Instrumental analytical techniques including molecular spectroscopy, atomic spectroscopy, electrochemistry, separations, and introductory electronics. This course is an extension of the instrumental portion of CHEM 232.

235. **Instrumental Analysis II**
Second semester. Four credits. Three class periods and one 3-hour laboratory period. Prerequisite: CHEM 234. Analytical aspects of electron, X-ray, vibrational, and other spectroscopic methods. Analysis of surfaces. Advanced topics in data analysis and modern analytical methodology.

240. **Organic Chemistry Laboratory**
First semester. One credit. One 4-hour laboratory period. CHEM 240 is not open for credit to students who have passed CHEM 245. Prerequisite or corequisite: CHEM 243. This course is open only to Chemical Engineering majors or by consent of instructor. Open to sophomores.

Introduction to techniques, manipulations, calculations and spectroscopy.

242W. **Advanced Organic Chemistry Laboratory**
Either semester. Three credits. One class period and two 3-hour laboratory periods. Prerequisite: CHEM 245. Advanced techniques and fundamentals of organic synthesis and identification.

243. **Organic Chemistry**
Either semester. Three credits. (Two credits for students who have passed CHEM 141.) Prerequisite: CHEM 128 or 130 or 152 or 154. Open to sophomores. Structure and reactions of the simpler classes of the compounds of carbon.

244. **Organic Chemistry**

245. **Organic Chemistry Laboratory**
Either semester. Three credits. (Students who have passed CHEM 240 will receive only 2 credits for CHEM 245. Students who have passed CHEM 142 will receive only 2 credits for CHEM 245, but 3 credits will be used for calculating QPR scores.) Two 3-hour laboratory periods and one 1-hour discussion period. Prerequisite or corequisite: CHEM 244. Open to sophomores.

251Q. **Introduction to Quantum Chemistry**
First semester. Three credits. Prerequisite: CHEM 264. An introduction to quantum theory and its applications to atomic and molecular structure and spectroscopy.

256. **Physical Chemistry Laboratory**
First semester. One credit. One 3-hour laboratory period. Prerequisite or corequisite: CHEM 263. Not open for credit to students who have passed CHEM 265. This laboratory course is for students majoring in chemical engineering and cannot be counted toward the chemistry major group. Laboratory experiments in thermodynamics, kinetics and spectroscopy.

263Q-264Q. **Physical Chemistry**
Both semesters. Four credits each semester. Prerequisite: CHEM 128 or 130 or 152 or 154; PHYS 123, or 132, or 142, or 152; MATH 210 or 220 for CHEM 263; and MATH 211 or 221 for CHEM 264. A study of gases, liquids, solids, solutions, and thermodynamics in CHEM 263 and kinetics, atomic and molecular theory and spectroscopy in CHEM 264.

2655. **Physical Chemistry Laboratory (W,C)**
Either semester. Two credits. Two 3-hour laboratory periods. Prerequisite or corequisite: CHEM 264.

270W. **Technical Communications**
First or second semester. Three credits. Prerequisite: CHEM 243.
This course will cover various aspects of technical writing and oral presentation of technical reports. The student will be introduced to the broad spectrum of the chemical literature; various approaches to information retrieval, including computer searches, will be demonstrated. Short reports based on chemical literature will include references and bibliographies. A major paper on a technical topic will be evaluated and corrected at each stage of its development. An oral report based on this material will also be required.

280. Polymeric Materials
Second semester. Three credits. Prerequisite: CHEM 244. Not open for credit to students who have passed CHEG 256.

Structure, properties and chemistry of high polymers. Methods of production and applications.

291. Variable Topics
Either semester. Three credits. With a change in topic, may be repeated for credit. Prerequisites, required preparation, and recommended preparation vary.

295. Undergraduate Seminar
First semester. One credit. Open only with consent of instructor. With a change of subject, this course may be repeated once for credit.

Reports and discussions of topics relevant to further study in the field of chemistry.

296. Undergraduate Research
Either or both semesters. Credits, not to exceed 3 each semester, and hours by arrangement (three laboratory hours for each credit). Open only with consent of instructor.

Original investigation carried on by the student under the guidance of a staff member. The student is required to submit a brief report at the end of each semester.

297W. Thesis for Undergraduate Chemistry Majors
Either semester. Three credits. Hours by arrangement. Prerequisite: A minimum of three credits in CHEM 296 or 299. Open only with consent of instructor.

A formal thesis is required, based on original investigation carried on by the student.

298. Special Topics
Either semester. Credits and hours by arrangement. Within a change in content, may be repeated for credit. Prerequisites and recommended preparation vary.

299. Independent Study
Either or both semesters. Credits, not to exceed 3 per semester, and hours by arrangement. Open only with consent of instructor. With a change of subject, this course may be repeated for credit.

Civil & Environmental Engineering (CE)

Head of Department: Professor Erling Murtha-Smith
Associate Head of Department: Associate Professor Ramesh Malla

Department Office: Room 302, F.L. Castleman Building

For major requirements, see the School of Engineering section of this Catalog.

Courses in Applied Mechanics are listed under that heading, immediately following the Civil Engineering courses. Also see courses listed under Engineering.

222. Civil Engineering Materials
Second semester. Three credits. Two lectures. One 3-hour Laboratory. Prerequisite: CE 287 which may be taken concurrently. Accorsi, Davis, Frantz, Murtha-Smith.

Engineering properties of steel, Portland cement concrete, bituminous cement concrete, and timber; laboratory measurement of properties; interpretation of results. Written reports.

222P. Civil Engineering Materials
Must be taken with another P course in Civil Engineering to equal one W course.

230. Mechanics of Materials and Structures Laboratory
Two credits. One hour lecture and one 2-hour Laboratory. Prerequisite: CE 234 and CE 236, which may be taken concurrently, and CE 222. Murtha-Smith, Davis

Laboratory experiments to complement, reinforce and develop concepts learned in Mechanics of Materials, Basic Structural Analysis and Basic Structural Design. Topics include tension, torsion, flexure and buckling. Written reports.

234. Basic Structural Analysis
Second semester. Three credits. Prerequisite: CE 287. Accorsi, DeWolf, Epstein, Frantz, Leonard, Malla

Analysis of statically determinate structures; influence lines; deflection of trusses, beams, and frames; introduction to indeterminate analysis using consistent deformation and moment distribution; computer programming.

236. Basic Structural Design
Second semester. Four credits. Three class periods and one 3-hour Laboratory. Prerequisite: CE 287. DeWolf, Epstein, Malla, Murtha-Smith


237. Advanced Structural Analysis
First semester. Three credits. Prerequisite: CE 234. DeWolf, Epstein, Leonard, Malla

Approximate analysis techniques, analysis of indeterminate elastic structures using classical and matrix methods of analysis. Computer programming

238. Reinforced Concrete Structures Design
First semester. Three credits. Prerequisite: CE 234 and 236. DeWolf, Epstein, Frantz

Design for flexure, shear, torsion, and axial loads; two-way slabs; serviceability considerations. Applications to buildings.

239. Steel Structures Design
Second semester. Three credits. Prerequisite: CE 234 and 236. DeWolf, Frantz

Beam columns, composite members, plate girders, connections; introduction to plastic design. Applications to buildings. Written reports.

239P. Steel Structures Design
Must be taken with another P course in Civil Engineering to equal one W course.

240. Soil Mechanics and Foundations
First semester. Four credits. Three class periods and one 3-hour laboratory period. Prerequisite: CE 287 and CE 297, both of which may be taken concurrently. Demers

Fundamentals of soil behavior and its use as a construction material. Effective stress principle, seepage and flow nets, consolidation, shear strength, limit equilibrium analysis. Written reports.

240P. Soil Mechanics and Foundations
Must be taken with another P course in Civil Engineering to equal one W course.

241. Foundation Design
First semester. Three credits. Prerequisite: CE 240. Demers

Application of soil properties to design of foundations, retaining structures, excavation drainage, shallow footings, deep foundations, specifications, subsurface exploration.

242. Soils Engineering
Second semester. Three credits. Prerequisite: CE 240.

Earth structures, slope stability, consolidation and settlement of soil, vertical drains, surcharging, pressures on buried pipes, and tunnels, numerical solutions.

242P. Soils Engineering
Must be taken with another P course in Civil Engineering to equal one W course.

251. Civil Engineering Systems
(Also offered as ENVE 251.) First semester. Three credits. Open to sophomores. Agiannou, Garrison

Application of statistical principles to the analysis of problems. Topics covered include normal, poisson, and binomial distributions, chi square, comparison of means and variances, least square and regression analysis.

254. Transportation Facilities Design
Second semester. Three credits. Recommended preparation: CE 271 or consent of instructor. Open to sophomores. Garrison, Ivan

Design and horizontal and vertical curves, earthwork, runoff and simple drainage structures. Elements of traffic engineering and site development.

255. Case Studies in Transportation Engineering
(Also offered as CE 302.) First semester. Three credits. Prerequisite: CE 254. Ivan, Garrison

Analysis of transportation case studies in road design, metropolitan planning and corridor study. Application of transportation engineering and planning skills. Oral and written group reports, group discussions, individual written papers.

256. Advanced Civil Engineering Systems
Second semester. Three credits. Prerequisite: CE 251, or consent of instructor.

Optimization, decision and risk analysis, and simulation in design of civil engineering systems. Network analysis and project scheduling.

256P. Advanced Civil Engineering Systems
Must be taken with another P course in Civil Engineering to equal one W course.

260. Water Quality Engineering
(Also offered as ENVE 260.) Second semester. Three credits. Prerequisite: CE 263 and CE 297 or CHEG 223. Abboud, Smet

Physical, chemical, and biological principles for the treatment of aqueous phase contaminants; reactor dynamics and kinetics. Design projects.

262. Environmental Engineering Laboratory
(Formerly offered as CE 264.) (Also offered as Enve 262.) Second semester. Three credits. Two class periods and one 3-hour laboratory period. Prerequisite: CE 263 and CE 297 or CHEG 223 (which may be taken concurrently). Abboud, Smet

Aqueous analytical chemical techniques, absorption, coagulation/flocculation, fluidization, gas stripping, biokinetics, interpretation of analytical results, bench-scale design projects, written and oral reports.
262P. Environmental Engineering Laboratory
(Also offered as ENVE 262P.) Must be taken with another P course in Civil Engineering to equal one W course.

263. Environmental Engineering Fundamentals
(Also offered as ENVE 263.) First semester. Three credits. Prerequisite: CHEM 128 or 130 and MATH 211 (which may be taken concurrently). Open to sophomores. Hoag, MacKay, Nikolaidis, Smets


265. Hydraulic Engineering
(Also offered as ENVE 265.) Second semester. Three credits. Prerequisite: CE 297 or CHEG 223 and CHEG 224. Anagnostou, Nikolaidis, Ogden

Design and analysis of water and wastewater transport systems, including pipelines, pumps, pipe networks, and open channel flow. Introduction to hydraulic structures and porous media hydraulics. Computer applications.

266. Hydraulic Engineering Laboratory
(Also offered as ENVE 266.) Second semester. Two credits. One class period. One 2-hour Laboratory. Prerequisite CE 297.


267. Engineering Hydrology
(Also offered as ENVE 267.) First semester. Three credits. Prerequisite: CE 297 or CHEG 223 and CHEG 224. Anagnostou, Nikolaidis, Ogden


267P. Engineering Hydrology
Must be taken with another P course in Civil Engineering to equal one W course.

268. Limnology
(Also offered as EEB 247 and ENVE 268.) First semester. Three credits. Prerequisite: MATH 109 or 112 or 115 and an introductory course in CHEM (CHEM 122, 127, or 129); an introductory course in Biology is recommended.

Physical, chemical, and biotic interrelationships of freshwater habitats.

269. Selected Environmental Problems
Second semester. Three credits. Open to sophomores. Ecological effects of pollution and despoilment. Organized and rational study of specific environmental problems, including social, economic, political and legislative aspects.

271. Elementary Surveying
First semester. Four credits. Three lecture periods and one 3-hour Laboratory. Prerequisite: MATH 107 or MATH 112 or 115, or consent of instructor. Open to sophomores.

The theory and practice of plane surveying including: error analysis, measurement of horizontal distances, leveling, traverse and area computations, adjustments of traverses and level nets, adjustments of instruments, topographic mapping, state coordinate systems, and boundary surveys.

274. Photogrammetry
Second semester. Three credits. Two class periods. One 3-hour Laboratory. Prerequisite: CE 271. Offered in alternate years.

The fundamentals of aerial photogrammetry, including: flight planning, the geometry of the aerial photograph, ground control, radial line plotting, tilt, stereoscopy and parallax, stereoscopic measurements, and topographic mapping.

275. Route Surveying
Second semester. Three credits. Two class periods. One 3-hour Laboratory. Prerequisite: CE 271. Offered in alternate years.

Reconnaissance and route selection, simple, compound and reverse horizontal curves, spirals, vertical curves, earthwork, cross-sectioning, slope taking, and observations for the meridian.

276. Computer Aided Civil Engineering Design
Second semester. Three credits. One 3-hour class period. Prerequisite: CE 254, which may be taken concurrently, and CE 271.

Design of Civil Engineering projects using computer software to analyze engineering problems and create design drawings.

279. Environmental Modeling
(Also offered as ENVE 279.) Second semester. Three credits. Prerequisite: CE 263 and CHEG 223 or CE 297 or consent of instructor. Nikolaidis

Systematic approach for analyzing contamination problems. Systems theory and modeling will be used to assess the predominant processes that control the fate and mobility of pollutants in the environment. Assessments of lake eutrophication, conventional pollutants in rivers and estuaries and toxic chemicals in groundwater.

280W. Civil Engineering Projects
Either semester. Three credits. Two 3-hour laboratory periods. Prerequisite: Departmental consent required. This course can be taken no sooner than the semester in which the student completes the Professional Requirements for the B.S. degree.

Design of Civil Engineering Projects. Students working singly or in groups produce solutions to Civil Engineering design projects from first concepts through preliminary proposals, sketches, cost estimations, design, evaluation, oral presentation and written reports.

281. Engineering Economics
Second semester. One credit. Given as two 1-hour class periods weekly during first half of semester only. Prerequisite: Departmental consent required. Costs of Civil Engineering projects; components of cost estimating; comparison of alternate designs; cost/benefit analysis; useful life and depreciation; basic methods of project financing.

291. Civil and Environmental Engineering Professional Issues Seminar
Either semester. No credits. One 1-hour period. Open to sophomores. May be repeated.

Issues in the practice of Civil & Environmental Engineering: professional ethics, law/contracts, insurance/liability, global/societal issues (e.g., sustainable development, product life cycle), construction management and professional development.

294. Special Topics in Civil Engineering
Semester. Credits, and hours by arrangement or as announced. Prerequisite and/or consent: Announced separately for each course. Course may be repeated for credit.

Classroom or laboratory courses as announced for each semester. For independent study see Civil Engineering 299.

299. Independent Study for Undergraduates
Either or both semesters by arrangement. Credits by arrangement. Not to exceed 4 per semester. Open only with consent of supervising instructor. Course may be repeated for credit.

Designed for students who wish to extend their knowledge in some specialized area of civil engineering.

Applied Mechanics

211. Applied Mechanics I
Either semester. Three credits. Not open to students who have passed CE 213 or 214. Prerequisite: MATH 210, which may be taken concurrently, and ENGR 150 or CEE 110 or CSE 123C. Open to sophomores. Accorsi, Demars, Leonard, Malla, Uthigennant

Fundamentals of statics using vector methods. Resolution and composition of forces; equilibrium of force systems; analysis of forces acting on structures and machines; centroids; moment of inertia. Computer applications.

212. Applied Mechanics II
Either semester. Three credits. Not open to students who have passed CE 215. Prerequisite: CE 211, MATH 210. This course and CE 213 may not both be taken for credit. Open to sophomores. Epstein, Malla, Uthigennant

Fundamentals of dynamics using vector methods. Rectilinear and curvilinear motion, translation, rotation, plane motion; work, energy and power; impulse and momentum. Computer applications.

287. Mechanics of Materials
Either semester. Three credits. Prerequisite ENGR 150 or CEE 110, CE 211 or CE 214 and CE 215, which may be taken concurrently. Open to sophomores. Davis, Malla, Uthigennant

Simple and combined stress, torsion, flexure and deflection of beams, continuous and restrained beams, combined axial and bending loads, columns. Computer applications.

289. Intermediate Mechanics of Materials
Second semester. Three credits. Prerequisite: CE 287. This course and ME 229 may not both be taken for credit.

Stresses and strains, curved beams, torsion of non-circular sections, flat plates, strain-energy, deflections. Impact and energy loads, repeated stress, mechanical properties of materials and theories of failure, influence of stress concentration.

297. Fluid Mechanics
Either semester. Three credits. Prerequisite: CE 212 or CE 215, which may be taken concurrently, and MATH 210 and 211. This course and ME 250 may not both be taken for credit. Anagnostou, Ogden

Fluid properties, statics of fluids, analysis of fluid flow using principles of mass, momentum and energy conservation from a differential and control volume approach. Dimensional analysis. Application to pipe flow and open channel flow.
101. Greek Civilization
(Formerly offered as CLAS 101.) First semester. Three credits. A knowledge of Greek is not required. 
A survey of classical Greece, with emphasis on literature, thought, and influence on contemporary culture.

102. Roman Civilization
(Formerly offered as CLAS 102.) Second semester. Three credits. A knowledge of Latin is not required. 
A survey of classical Rome, with emphasis on literature, thought, and influence on contemporary culture.

103. Classical Mythology
(Formerly offered as CLAS 103.) Either semester. Three credits. A knowledge of Greek or Latin is not required. 
Origin, nature, and function of myth in the literature and art of Greece and Rome and the re-interpretation of classical myth in modern art forms.

104. The Greek and Latin Elements in English
(Formerly offered as CLAS 104.) Either semester. Three credits. A knowledge of Greek or Latin is not required. 
The historical relationship of English to Greek and Latin in vocabulary and structure. Greek and Latin prefixes, suffixes and bases, learned and applied to the analysis of unfamiliar words. Introduction to the specialized vocabularies of various academic areas.

105. Greek and Latin in Bioscientific Terminology
(Formerly offered as CLAS 105.) Either semester. Three credits. A knowledge of Greek or Latin is not required. 
The Greek and Latin elements most used in the technical vocabulary of the biological and health sciences, with practice in the analysis of representative terms.

193. Foreign Study
(Formerly offered as CLAS 193.)

241W. Greek and Roman Epic
(Formerly offered as CLAS 241W.) Either semester, alternate years. Three credits. Recommended preparation: CAMS 101 or 102 or 103. A knowledge of Greek or Latin is not required. 
A study of classical epic, with special emphasis on Homer’s Iliad and Odyssey and Vergil’s Aeneid, but including also other examples of the genre. Oral and literary epic, their social and political contexts, and the influence of classical epic on later literature.

242W. Greek and Roman Drama
(Formerly offered as CLAS 242W.) Either semester, alternate years. Three credits. Recommended preparation: CAMS 101 or 102 or 103. A knowledge of Greek or Latin is not required. 
Selected plays from the works of Aeschylus, Sophocles, Euripides, Aristophanes, Plautus, Terence, and Seneca. The origin and development of Greek drama, its transformation in the Roman period, and the influence of classical drama on later literature.

243. World of Late Antiquity
(Also offered as HIST 217.) (Formerly offered as CLAS 243.) Either semester. Three credits. 
The profound social and cultural changes that redefined the cities, the frontiers, and the economies of the classical world and led to the Middle Ages. Developments in the eastern and western Mediterranean lands between the second and seventh centuries, including: Neo-Platonism, the spread of Christianity, Rabbinic Judaism, and Islam.

244. Ancient Fictions
(Formerly offered as CLAS 244.) Either semester. Three credits. A knowledge of Greek and Latin is not required. 
This course will examine a range of novels and other fictions from the Greco-Roman world. Works read will include the Greek sentimental novels, the satirical Roman novels of Petronius and Apuleius, and a variety of other pagan, Jewish, and Christian fictions.

251. Greek Art
(Also offered as ARTH 243.) (Formerly offered as CLAS 251.) Either semester, alternate years. Three credits. 
Greek art and architecture from the ninth century B.C. to the first-century A.D.

252. Roman Art
(Also offered as ARTH 246.) (Formerly offered as CLAS 252.) Either semester, alternate years. Three credits. 
History of Roman art and architecture.

253. Ancient Near East
(Also offered as HIST 213.) (Formerly offered as CLAS 253.) Either semester. Three credits. 
The history of Near Eastern civilization from the Neolithic period to the Persian Empire. The birth of civilization in Mesopotamia and Egypt. The political and cultural achievements of ancient near-Eastern peoples.

254. Ancient Greece
(Also offered as HIST 214.) (Formerly offered as CLAS 254.) Either semester. Three credits. 
The history of Greece from Minoan and Mycenaean times into the Hellenistic period with special emphasis on the Fifth Century and the Golden Age of Athens.

255. Ancient Rome
(Also offered as HIST 216.) (Formerly offered as CLAS 255.) Either semester. Three credits. 
From the beginning of Rome to the reign of Justinian. The growth of the Roman Republic and Empire. Roman civilization and its influence upon later history.

256. Palestine under the Greeks and Romans
(Also offered as HIST 218, HIST 219, and JUDS 218.) Either semester. Three credits. Recommended preparation: HIST 213 or 214 or 216 or INTD 294 or HEB 202. 
The political, historical and religious currents in Greco-Roman Palestine. Includes the Jewish Revolts, sectarian developments, the rise of Christianity and the Talmudic academics.

257. Ancient Philosophy
(Also offered as PHIL 221.) Either semester. Three credits. Prerequisite: At least one of PHIL 101, 102, 103, 104, 105, 106. Open to sophomores. 
Greek philosophy from its origin in the Pre-Socratics through its influence on early Christianity. Readings from the works of Plato and Aristotle.

293. Foreign Study.
* 295. Variable Topics
* 298. Special Topics
* 299. Independent Study

Greek

171-172. Elementary Greek I and II
(Formerly offered as CLAS 171-172.) Both semesters. Four credits each semester. Four class periods. Not open for credit to students who have had three or more years of Greek in high school, except with Departmental consent.
An intensive introduction to ancient Greek. First semester: basic morphology, syntax, and vocabulary through simple readings from the New Testament; second semester: transition to classical Greek through selections from Xenophon, reading of Plato’s Apology complete.

193. Foreign Study

207. Greek Philosophical Writings
(Formerly offered as CLAS 207.) Either semester, alternate years. Three credits. Prerequisite: CAMS 172. 
Selections from Plato and Aristotle.

208. Homer
(Formerly offered as CLAS 208.) Either semester, alternate years. Three credits. Prerequisite: CAMS 172. 
Selections from the Iliad or Odyssey.

211. Greek Drama
(Formerly offered as CLAS 211.) Either semester, alternate years. Three credits. Prerequisite: CAMS 172. 
Selected plays of Aeschylus, Sophocles, Euripides, and Aristophanes.

212. Greek Historical Writings
(Formerly offered as CLAS 212.) Either semester, alternate years. Three credits. Prerequisite: CAMS 172. 
Selections from Herodotus and Thucydides.

214. Greek Lyric Poetry
(Formerly offered as CLAS 214.) Either semester, alternate years. Three credits. Prerequisite: CAMS 172. 
Selections from the early Greek lyric, elegiac, and iambic poets, including but not limited to Archilochus, Minnervus, Solon, Sappho, Alcaeus, Anacreon, Xenophon, Theognis, and Simonides.

(Formerly offered as CLAS 215.) Either semester, alternate years. Three credits. Prerequisite: CAMS 172. 
Selected readings, ordinarily including Acts of the Apostles and at least one Pauline letter.
123-124. Intermediate Latin I and II
(Formerly offered as CLAS 123-124.) Both semesters. Three credits each semester. Prerequisite: CAMS 122 or two years of Latin in high school.

Review of the essentials of grammar. Reading of classical Latin prose and poetry with emphasis on Cicero and Ovid or Vergil.

*193. Foreign Study

213. Ovid and Mythology
(Formerly offered as CLAS 213.) Either semester, alternate years. Three credits. Prerequisite: CAMS 124, or three or more years of Latin in high school.

Selections from Ovid, mainly from the Metamorphoses, and a study of the myths of Greece and Rome.

221. Survey of Classical Latin Literature
(Formerly offered as CLAS 221.) Either semester, alternate years. Three credits. Prerequisite: CAMS 124, or three or more years of Latin in high school.

Extensive reading of a relatively wide range of authors of representative classical Latin prose and poetry.

224. Vergil and the Roman Epic
(Formerly offered as CLAS 224.) Either semester, alternate years. Three credits. Prerequisite: CAMS 124, or three or more years of Latin in high school.

Books VII-XII of the Aeneid and a study of the relation of the Aeneid to earlier Greek epic and to the later epic tradition.

225. Latin Drama
(Formerly offered as CLAS 225.) Either semester, alternate years. Three credits. Prerequisite: CAMS 124, or three or more years of Latin in high school.

Selected plays of Plautus, Terence, and Seneca, with lectures on Roman theatre and the development of drama.

226. Latin Lyric Poetry
(Formerly offered as CLAS 226.) Either semester, alternate years. Three credits. Prerequisite: CAMS 124, or three or more years of Latin in high school.

Selections from the lyrics of Horace and Catullus, with lectures on metrical patterns and the influence of Greek lyrics.

227. Latin Historical Prose
(Formerly offered as CLAS 227.) Either semester, alternate years. Three credits. Prerequisite: CAMS 124, or three or more years of Latin in high school.

Selections from Sallust, Livy, and Tacitus.

230. Latin Philosophical Prose and Poetry
(Formerly offered as CLAS 230.) Either semester, alternate years. Three credits. Prerequisite: CAMS 124, or three or more years of Latin in high school.

Selections from Lucretius, Cicero, and Seneca.

231. Latin Elegiac Poetry
(Formerly offered as CLAS 231.) Either semester, alternate years. Three credits. Prerequisite: CAMS 124, or three or more years of Latin in high school.

Selections from Tibullus, Propertius, and Ovid’s Amores.

232. Medieval Latin
(Formerly offered as CLAS 232.) Either semester, alternate years. Three credits. Prerequisite: CAMS 124, or three or more years of Latin in high school.

Reading of texts from a number of periods and in a variety of styles, with consideration of morphological, syntactical, and semantic developments.

*293. Foreign Study

*295. Variable Topics

*296. Special Topics

*299. Independent Study

193. Foreign Study
(Formerly offered as CLAS 193.) Either or both semesters. Credits and hours by arrangement. May be repeated for credit. Consent of Department Head required, normally before the student’s departure.

Special topics taken in a foreign study program.

293. Foreign Study
(Formerly offered as CLAS 293.) Either or both semesters. Credits and hours by arrangement. May be repeated for credit. Consent of Department Head required, normally granted prior to the student’s departure. May count toward the major with consent of the advisor.

Special topics taken in a foreign study program.

295. Variable Topics
(Formerly offered as CLAS 295.) Either semester. Three credits. With a change in topic, may be repeated for credit. Prerequisites and recommended preparation vary.

296. Special Topics
(Formerly offered as CLAS 296.) Either semester. Credits and hours by arrangement. With a change in content, may be repeated for credit. Prerequisites and recommended preparation vary.

299. Independent Study
(Formerly offered as CLAS 299.) Either or both semesters. Credits and hours by arrangement. Open only with consent of instructor. With a change in content, may be repeated for credit.

Communication Sciences (COMS)

Head of Department: Professor Harvey R. Gilbert
Department Office: Room 213, Communication Sciences Building.

For major requirements, see the College of Liberal Arts and Sciences section of this Catalog.

102. The Process of Communication
Either semester. Three credits.

A study of modern communication theories and principles useful in understanding how people affect and are affected by others through communication.

105. Principles of Public Speaking
Either semester. Three credits.

Theory and performance in public speaking: overcoming apprehension; audience analysis; development of concepts; maximizing message impact; professional presentation skills; group projects; evidence; listening and speech evaluation.

135. Mass Communication Systems
Either semester. Three credits.

The history, organizational structure, economics and functioning of technologically-based communication systems and the relationship of these factors to mass communication issues and effects.

150. Introduction to Communication Disorders
First semester. Three credits. Robb

* See description at end of Classics and Ancient Mediterranean Studies section.

A survey of Audiology and Speech-Language Pathology.

201. Speech Science
First semester. Three credits. Three class periods.

Acoustic, anatomical, neurological and physiological principles fundamental to the understanding of voice and speech production.

202. Speech and Language Acquisition
Either semester. Three credits. Grela

How children learn their first language; the effects of language on their thinking and behavior.

204. Methods and Issues in Child Language Research
Second semester. Three credits. Two class periods, and child observations and individual conferences by arrangement. Prerequisite: COMS 202. Open only with consent of instructor.

Critical discussion of recent research in child language, and supervised individual research projects.

205. Interpersonal Communications
Either semester. Three credits. Prerequisite: COMS 102 or consent of instructor. VanLear

An introduction, analysis and critique of recent theories of interpersonal communication. Topics include person perception, theories of communication management, and the structural analysis of face to face communication behavior.

206W. Global Communication

International communication patterns; globalization of media industries; new technologies; communication in war and peace; political, economic, social and cultural effects.

207. Nonverbal Communication
First semester. Three credits. Recommended preparation: COMS 231Q. Back

Facial expression, body movement, spatial behavior and para-language, with a consideration of applications for information theory.

208. Communication and Change
First semester. Three credits. Recommended preparation: COMS 235 and 210. Snyder

The role of communication and communication technologies in social change, diffusion of new ideas, and education. Special application to third world development.

209. Cross-Cultural Communication

Communication behavior within and across cultures and subcultures.

210. Persuasion
Either semester. Three credits. Three class periods or two class periods with one discussion period. Prerequisite: COMS 102 or consent of instructor. Hamilton

Introduction to theories of attitude formation, change and reinforcement. Research is used to evaluate past and present models of persuasion.

211. Research Practicum in Communication
Either semester. Credits and hours by arrangement, with a maximum of three credits per semester. Prerequisite: At least 12 credits of 200-level Communication Sciences courses which must include COMS 231Q and consent of instructor. Should be taken during the senior year. May be repeated once for credit.
This course is designed to provide students with an opportunity to participate in a variety of supervised research activities in communication.

121. Internship in Communication
Either semester. Credits and hours by arrangement, with a maximum of three credits per semester. Prerequisite: At least 12 credits of 200-level Communication Sciences courses and consent of instructor. Should be taken during the senior year. May be repeated once for credit.

This course is designed to provide students with opportunity for supervised field work in a professional communication organization. Student’s performance will be evaluated both by the field supervisor and course instructor.

213W. Media, State, and Society
Either semester. Three credits. Prerequisite or corequisite: COMS 135 and 235.


214W. Advanced Nonverbal Communication
Second semester. Three credits. Prerequisite: COMS 207 or consent of instructor. Recommended preparation: COMS 205. Buck

Selected issues and research techniques current in the literature. Research projects of kinetic proxemic, and/or paralinguistic behaviors involved in communication.

215. Public Relations
Either semester. Three credits. Prerequisite: COMS 135, 231Q, and 235.

Practical applications of major theories of communication and mass media to public relations practiced by organizations. Based on readings, student research, and case histories.

216W. Small Group Communication
Either semester. Three credits. Prerequisite: COMS 205 or consent of instructor. Recommended preparation: COMS 210. VinLeak

Approaches, methods, and findings of research in small group communication and development of an ability to engage effectively in small group situations.

217. Organizational Communication
Second semester. Three credits. Prerequisite: COMS 205 and 231Q or consent of instructor.

Communication in formal organizations; horizontal and vertical communication; effectiveness of different organizational structures and channels; feedback; networks; norms and roles.

218. Communication Campaigns and Applied Research
Second semester. Three credits. Prerequisite: COMS 231Q, or STAT 100V or 110V. Recommended preparation: COMS 135, 235, and 210. Snyder

Application of media, persuasion, and social change theories to the design of communication campaigns, including focus groups, interviews and other background research. Students will work with community organizations.

219. Advanced Persuasion and Communication
Either semester. Three credits. Prerequisite: COMS 210 or consent of instructor. Recommended preparation: COMS 231Q and COMS 235.

Advanced consideration and criticism of selected modern persuasion theories and research in communications.

Course Descriptions 2

220. Communication Processes in Advertising

Covers communications theory relevant to advertising, with specific application to the creative elements of art and copy. Students create actual print advertisements and radio commercials.

222W. Government Communication
Either semester. Three credits. Prerequisite: COMS 102.

Communication in government processes. Communication theory and practical applications. Issue management, lobbying, interest-group strategies, government relations, grassroots action, and coalition building. Students may not pass this course without passing the written work.

224. Introduction to Semantics
Either semester. Three credits. Prerequisite: COMS 102 or consent of instructor.

The relationship among people, words, and meaning.

226. Gender and Communication
Either semester. Three credits. Prerequisite: COMS 102

Differences in male/female communication, and the role of discourse in the production of those differences. The politics of gender and communication.

230. Introduction to Research Literature in Communication
First semester. Three credits. Prerequisite: COMS 205, 210, 231Q and 235.

A survey of research in major sub-areas of communication.

231Q. Research Methods in Communication
Either semester. Three credits. Prerequisite: COMS 102 or consent of instructor.

The scientific approach as it specifically applies to communication.

233. Television Production
Either semester. Three credits. Prerequisite: COMS 102 and 135 and consent of instructor.

This course provides the student with hands-on broadcast and industrial video production. The students will rotate through all studio positions for a televised production and complete field shoots and editing for an electronic field production project. Preproduction skills such as proposal and script writing, storyboarding and budgeting will be included in each class project.

234. Information and Communication
Either semester. Three credits. Prerequisite: COMS 231Q or consent of instructor.

Approaches to studying communication including cybernetics, general systems theory, information theory, and human information processing.

235. Effects of Mass Media
Either semester. Three credits. Prerequisite: COMS 102 or consent of instructor.

An analysis of the roles of the mass media and of the effects they exert on individuals and society.

236. Protest and Communication
Either semester. Three credits. Prerequisite or corequisite: COMS 235. With a change in content, this course may be repeated once for credit.

Protest movement – past and current – in light of principles, models, and theories of communication.

COMMUNICATION SCIENCES

237. Design of Human Communication Systems
Either semester. Credits and hours by arrangement. Prerequisite: COMS 135. Recommended preparation: COMS 235. With a change in content, this course may be repeated once for credit.

Application of communication theory and principles of information science to the design of modern systems of communication, with consideration given to the physical and social settings in which they will be used.

238. Mass Media and Political Process

An introduction to the role of the mass media in the American political process. Topics include the relationships among the media, major political institutions, and citizenry; the interplay of the media, interest groups, and policymaking process; and the role of the media in elections and international crises.

239. New Communication Technologies

An overview of new communication technologies, their operation, future potential, dangers, and effects on social structure.

240. Visual Communications
Second semester. Three credits. Prerequisite: COMS 102, completion of at least one C course or permission of instructor. Recommended preparation: Completion of at least one Q course.

Theory of design and creation of graphics for professional and technical purposes, to complement or supplement written and spoken communications.

241. Sign Language: Theory and Practice
Second semester. Three credits.

Information about the history, structure and use of sign languages, and instruction in the basics of American Sign Language (ASL) and Signed English.

244. Introduction to Neurogenic Communication Disorders
Three credits. Prerequisites: COMS 201 and 202.

Coelho

Acquired and developmental neurogenic communication disorders. Brain mechanisms that underlie speech and language and their disorders.

247. Introduction to Phonetic Principles
Second semester. Three credits. Prerequisite: COMS 201. Robb

The analysis of speech through the application of phonetic theory.

248. Introduction to Audiology
Second semester. Three credits. Prerequisite: COMS 250. Cienkowski

An Introduction to the nature, causation, assessment and management of hearing impairment and the principles and techniques of public school conservation programs.

249. Introduction to Aural Rehabilitation
First semester. Three credits. Prerequisite: COMS 248.

An introduction to the effects of hearing impairment on communication. Communication strategies for adults and children with impaired hearing are discussed.

250. Audition
First semester. Three credits.

The response to acoustic stimuli including methodology and instrumentation.
Europe, from antiquity to the early modern period (1600).

201. Comparative Literature
(Formally offered as COML 201.) Either semester. Three credits. This course may be repeated for credit with a change of topic.

Lectures and discussion sessions devoted to the study of major literary questions which go beyond national boundaries. (No foreign language required.)

203. Comparative Studies in Cultural History
Either semester. Three credits. This course may be repeated for credit with a change of topic.

The comparative study of cultural movements in literature and the arts throughout history. The course will explore different areas of cultural practice — e.g., social, literary, political, aesthetic, anthropological, -- with an eye as to how they are shaped, and in turn shape, dominant institutions and values. Sample topics include: World War I and the emergence of Modernism; European Fascisms; Christian, Jewish, and Muslim culture in Medieval Spain; photography and the Colonial Encounter, etc. May be repeated with change of topic.

214. Introduction to World Cinema and Comparative Film Theory
Either semester. Three credits. Open to sophomores.

Introduction to the theory and criticism of film, applied to classics of world cinema. Comparative study of the development of cinematic techniques, and comparative approach to film as cultural production.

Computer Science and Engineering (CSE)

Interim Head of Department: Professor Reda Ammar
Department Office: Room 460, United Technologies Engineering Building

For major requirements, see the School of Engineering section of this Catalog.

(Coordinates and programming courses were formerly offered under the CSSE department abbreviation using the same course numbers.)

101C. Computers in Modern Society
Second semester. Three credits. Two class periods and two 1-hour program design periods. Not open for credit to students who have passed CSE 110C or CSE 123C or CSE 130C. Students who anticipate extensive study or use of computers in their future work should take CSE 110C-111, or CSE 123C-124C, or CSE 130C rather than this course. Ungar

Introduction to computer applications in the humanities, social sciences, business, and other fields. Influence of the computer on modern society and technology. Elements of computer usage in the solution of numeric and non-numeric problems including introduction to programming methods.

110C. Introduction to Numerical Computation
Either semester. Three credits. Two 1-hour class periods and two 1-hour program design periods. Prerequisite: MATH 110Q or MATH 113Q or MATH 115Q, which may be taken concurrently. This is a very demanding course. Students who have previous programming experience and have a high level of motivation for using computers in future work. Not open for credit to students who have passed CSE 110C or CSE 111 or CSE 123C or CSE 124C. Either CSE 110C-111 or CSE 123C-124 or CSE 130C is required of students planning on taking advanced CSE courses. Ungar

Design of algorithms to solve numerical and non-numerical problems. Top-down design techniques and structured programming. Design and implementation of programs using current programming languages.
201. **Computer Architecture**

Either semester. Three credits. Prerequisites: CSE 111 or 124C or 130. Not open to students who have credit for CSE 207 or CSE 241. Open to sophomores.

Structure and operation of digital systems and computers. Fundamentals of digital logic. Machine organization, control and data paths, instruction sets, and addressing modes. Hardwired and microprogrammed control. Memory systems organization. Discussion of alternative architectures such as RISC, CISC, and various parallel architectures.

207. **Digital Logic**

Either semester. Three credits. Three class periods and one 1-hour discussion period. Prerequisite: CSE 110C or 125C or 130C. Open to sophomores. Ammar, Lipsky, McCandless.

Representation of digital information. Introduction to the analysis and design of combinational and sequential logic networks using Boolean algebra and register transfer techniques. Structure and operation of digital systems and computers. Introduction to programming at the machine and assembler language level. Design projects.

208W. **Logic Design Laboratory**

Either semester. Two credits. One 1-hour lecture and one 2-hour laboratory period. Prerequisite: Secondary school physics or PHYS 101, and CSE 207 which may be taken concurrently. Open to sophomores. Barker, Greenshields, Ting.

Design and evaluation of combinational and sequential logic circuits. Debugging techniques. Use of computer facilities for circuit simulation, CAD and report preparation and presentation.

221. **Probabilistic Performance Analysis of Computer Systems**

Either semester. Three credits. Prerequisite: CSE 124C and one of STAT 220Q or 230Q or MATH 231Q. Ammar, Lipsky.

Introduction to the probabilistic techniques which can be used to represent random processes in computer systems. Markov processes, generating functions and their application to performance analysis. Models which can be used to describe the probabilistic performance of digital systems.

228. **Parallel Systems**

Either semester. Three credits. Prerequisite: CSE 201 or 243, and CSE 259, Greenshields.


230. **Introduction to Software Engineering**

Either semester. Three credits. Three class periods and one problem session. Prerequisite: CSE 254. Open to sophomores. Demurjian, Peters.

Software engineering concepts including the software life cycle and other software-development process models. Specification techniques, design methodologies, performance analysis, and verification techniques. Team-oriented software design and development, and project management techniques. Introduction to a modern programming language and the associated design and debugging tools. Homework and laboratory projects that emphasize design and the use/features of a modern programming language.

233. **Programming Languages**

Either semester. Three credits. Prerequisite: CSE 237.

The study of programming language features and programming paradigms. Data types, control, run-time environments, and semantics. Examples of procedural, functional, logical, and object-oriented programming. Features used for parallel and distributed processing. Classic and current programming languages and environments.

237. **Theory of Computation**

Either semester. Three credits. Prerequisite: CSE 254.

Formal models of computation, such as finite state automata, pushdown automata, and Turing machines, and their corresponding elements in formal languages (regular, context-free, recursively enumerable). The complexity hierarchy. Church's thesis and undecidability. NP completeness. Theoretical basis of design and compiler construction.

240. **Intermediate Computer Systems Laboratory**

Either semester. Three hours lecture and 4 hours laboratory. Prerequisite: CSE 111 or 124C or 130C, and CSE 241 which may be taken concurrently.

Chip level programming of microprocessor type systems. Topics covered include I/O ports, I/O devices and controllers, DMA channels, priority interrupts, networking, multitasking. Design projects.

241. **Computer Organization**

Either semester. Three credits. Prerequisite: CSE 207, and CSE 208W which may be taken concurrently. Ammar, Peters.

Fundamentals of computer organization. Instruction sets and addressing modes. The control path and microprogramming. The data path; fast arithmetic. The memory hierarchy, both logical and physical aspects. The input/subsystem; interrupts, DMA, structure and function. SIMD and MIMD parallelism. Modern architectural theories.

243. **Introduction to Computer Architecture and Hardware/Software Interface**

Either semester. Four credits. Three hours lecture and three hours laboratory. Prerequisite: CSE 207 and CSE 208W. Not open for credit to students who have credit for CSE 241. Ammar, Greenshields.

An integrated introduction to computer organization and the hardware/software interface as seen at the assembly-language level. Topics included: basic machine organization; instruction sets and addressing modes; CPU design; the control path and microprogramming; FSM design; the data path; integer and floating-point arithmetic; busses; the memory hierarchy; the I/O subsystem; RISC architectures; pipelining; basic performance analysis; fundamentals of networking. Lab activities include (but are not limited to): basic assembly language programming on a CICS and RICS processor; processor benchmarking; use of cache; polled, interrupt driven and DMA I/O files; optimizing code.

244. **Programming Language Translation**

Either semester. Three credits. Prerequisite: CSE 230 and 237. Santos.

Introduction to the formal definition of programming language syntax and semantics. Design and realization of programming language processing systems such as assemblers, compilers, and interpreters.

245. **Computer Networks and Data Communication**

Semester by arrangement. Three credits. Prerequisite: CSE 221 which may be taken concurrently. Ammar, Greenshields, Ting.

Introduction to computer networks and data communications. Network types, components and topology, protocol architecture, routing algorithms, and performance. Case studies including LAN and other architectures.

252. **Digital Systems Design**

(Also offered as ECE 252.) Either semester. Three credits. Prerequisite: CSE 210 or 243, Greenshields.

Design and evaluation of control and data structures for digital systems. Hardware design languages are used to describe and design alternative register transfer level architectures and control units with a micro-programming emphasis. Consideration of computer architecture, memories, digital interfacing timing and synchronization, and microprocessor systems.

254. **Introduction to Discrete Systems**

Either semester. Three credits. Prerequisite: CSE 111 or 124C or 130C. Not open for credit to students who have passed MATH 214Q. Open to sophomores. Selfridge.

Mathematical methods for characterizing and analyzing discrete systems. Modern algebraic concepts, logic theory, set theory, grammars and formal languages, and graph theory. Application to the analysis of computer systems and computational structures.

255. **Principles of Data Bases**

Either semester. Three credits. Prerequisite: CSE 259, Shin.

Fundamentals of data base design and data indexing techniques. Hierarchical, network, and relational data models. Data base design theory. Query languages, their implementation and optimization. Data base security and concurrent data base operations.

257. **Numerical Methods in Scientific Computation**

(Also offered as ECE 257.) Either semester. Three credits. Prerequisite: Either CSE 123C or 243 or consent of instructor. Peters, Roulier.

Introduction to the numerical algorithms fundamental to scientific computation. Equations solving, function approximation, integration, difference and differential equations, special computer techniques. Emphasis is placed on efficient use of computers to optimize speed and accuracy in numerical computations. Extensive digital computer usage for algorithm verification.

258. **Operating Systems**

Either semester. Three credits. Prerequisite: Either CSE 201 or 243. Demurjian, Santos.

Introduction to the theory, design, and implementation of software systems to support the management of computing resources. Topics include the synchronization of concurrent processes, memory management, processor management, scheduling, device management, file systems, and protection.

259. **Algorithms and Complexity**

Either semester. Three credits. Two class periods and two hours laboratory. Prerequisite: CSE 254. Peters, Selfridge.

Theoretical aspects of computer science. Equivalent models of computation, the role of mathematical induction, graph algorithms, complexity theory, computability, use of standard algorithmic techniques—such as divide-and-conquer. Investigation of novel examples from fields such as graphics, computational geometry, and artificial intelligence. Emphasis in lab will be on analysis of supplied software examples, although some original software development will also occur.

261. **Digital Hardware Laboratory**

(Also offered as ECE 281.) Second semester. Three credits. One 4-hour laboratory period. Prerequisite: CSE 201 or 243. Recommended preparation: CSE 252, Barker.

Advanced combinational and sequential circuit design and implementation using random logic and microprocessor based system. Hardware and software
interface to the basic system. Serial communication, user program loading and execution. Microcontrollers – familiarization and inclusion in design.

262. Software Engineering Laboratory
Second semester. Three credits. Four program design periods. Prerequisite: CSE 230. Demurjian, Peters
A major software design project addresses specification through delivery phases of the lifecycle. The major focus of the course is utilization and application of concepts from CSE 230 to a straightforward semester long project. This allows the student to explore programming-in-the-large with an emphasis on techniques for teamwork, walk through, design, documentation, implementation, and debugging. Data structures and algorithm alternatives for the design and implementation phases of the lifecycle are also stressed. Formal design presentations are required by all students.

263. Networking and Distributed Systems Laboratory
Second semester. Three credits. Four hour laboratory. Prerequisite: CSE 228 and 245. Greenshields
Software laboratory that explores selected issues in networking and distributed systems. Topics include: Berkeley sockets; TCP and IP; atm apis; latency and bandwidth; performance models; performance evaluation of different network fabrics; MPI, simple CORBA; performance characteristics of MPI, Java, RMI, and CORBA; implementation and evaluation of a client-server system.

265. Independent Design Laboratory
Either semester. Three credits. Prerequisite: CSE 230. May be taken twice for credit. Instructor and department head consent.
Experimental design project undertaken by the student by special arrangement with a faculty member of the Department of Computer Science and Engineering.

267W. Software Laboratory on Large Computers Semester by arrangement. Three credits. Two class periods and one 2-hour program design period. Prerequisite: CSE 240.
Investigation of instruction sets, internal data representations, interrupt systems, and the input/output system of a large computer available in the Computer Center. Assembler language, related job control language, supervision conventions, linkage methods, data storage techniques and access methods. Design projects.

268. Microprocessor Laboratory
First semester. Three credits. One 4-hour laboratory period. Prerequisite: CSE 201 or 243. Recommended preparation: CSE 252. Shvartsman
The design of microcomputer systems, including both hardware and software, for solving application problems. Hardware and software design and implementation techniques for interfacing microcomputers to other systems. Use of modern microcomputer software/hardware development facilities. Projects to design and apply microcomputer systems.

269. Computer Science Design Laboratory
Either semester. Three credits. One 4-hour laboratory period. Prerequisite: Announced separately for each course. With a change in content this course may be repeated for credit.
Design and implementation of complex software and/or hardware systems to solve problems posed by either student groups or the instructor.

Semester by arrangement. Three credits. Prerequisite: CSE 111 or 124C or 130C, and either MATH 227Q or 215Q and MATH 210Q. Not open for credit to students who have passed MATH 255. Peters, Roulier
Representation of two- and three-dimensional data, internal representation of data structures, transformations, mapping of data to graphics screen, graphics hardware. Programming projects are assigned.

278. Social, Ethical and Professional Issues in Computer Science and Engineering
Either semester. Three credits. Prerequisite: CSE 230. Engel
Study of areas in which computer science interacts with ethical issues, and issues of public policy. Topics of professional growth, development, and responsibility. Practice in the analysis of complex issues brought about by modern technology.

280. Digital Design Laboratory
(Also offered as ECE 280.) Second semester. Three credits. Four hours of laboratory. Prerequisite: Either CSE 252 or consent of instructor.
Digital designing with PLA and FPGA, A/D and D/A conversion, floating point processing, ALU design, synchronous and asynchronous controllers, control path; bus master; bus slave; memory interface; I/O interface; logic circuits analysis, testing, and trouble shooting; PBC; design and manufacturing.

282. Artificial Intelligence
First semester. Three credits. Prerequisite: CSE 259 or consent of instructor. McCartney
Design and implementation of intelligent systems, in areas such as natural language processing, expert reasoning, planning, robotics, problem solving and learning. Students will design their own versions of “classic” AI problems, and complete one substantial design project. Programming will be done primarily in Lisp, which will be covered briefly at the beginning of the course.

290. Computer and Electrical Engineering Design I
(Also offered as ECE 290.) Either semester. Two credits. This course is taken by seniors in the semester before CSE/ECE 291.
Discussion of the design process; project statement, specification, project planning scheduling and division of responsibility, ethics in engineering design, safety, environmental considerations, economic constraints, liability, manufacturing, and marketing. Projects are carried out using a team-based approach. Selection and analysis of a design project to be undertaken in CSE/ECE 291 is carried out. Written progress reports, a proposal, an interim report, a final report, and oral presentations are required.

291. Computer and Electrical Engineering Design II
(Also offered as ECE 291.) Either semester. Three credits. Prerequisite: CSE/ECE 290.
Design of a device, circuit, system, process, or algorithm. Team solution to an engineering design problem formulated in CSE/ECE 290, from first concepts through evaluation and documentation. Written progress reports, a final report, and oral presentations are required.

293. Computer Science and Engineering Design Project
Either semester. Three credits. Prerequisite: CSE 258 and either CSE 261 or 262 or 263 or 265 or 268 or 269.
This course is the second semester of the required major design experience. In one semester-long team project, students will propose, design, produce, and evaluate a software and/or hardware system. The project will culminate in the delivery of a working system, a formal public presentation, and written documentation. Oral and written progress reports are required.

298. Special Topics in Computer Science and Engineering
Semester and credits by arrangement. Prerequisite: Announced separately for each course. With a change in content, this course may be repeated for credit.
Classroom course in special topics as announced in advance for each semester.

299. Independent Study in Computer Science and Engineering
Semester by arrangement. Credits by arrangement, not to exceed 4 in any semester. Prerequisite: Consent of instructor and department head.
This course exposes the student to management principles and practices and the knowledge and skills necessary to develop an education project and to perform a research project.

Critical Languages Program (CRLP)
Head of Department: Professor David K. Herzberger
Department Office: Room 228, J.H. Arjona Building
Consult the Departmental Handbook for courses being offered in the appropriate semesters and further description of these courses.

101-102. Elementary Levels I and II
103-104. Intermediate Levels I and II
Either semester. Four credits each semester. Four 1-hour class periods and a 1-hour laboratory practice except for languages taught in the Self-Instructional module which have two 1-hour sessions with a native-speaking tutor and five 1-hour laboratory periods. Open only with consent of the Director.
Languages with low enrollment may be offered through the Self-Instructional Language Program (SILP) method involving intensive, independent study on the part of the student, supplemented by a native speaker who serves as a drill master or monitor during the period of study. The offering of a language course for any given semester will depend on a sufficient number of interested students (ordinarily at least five) and the availability of native speakers. Academic performance in the course will be evaluated by an outside examiner who is an instructor in the target language at another institution. When this is not feasible, an examiner with credentials equivalent to those of an outside examiner may be utilized. The capability of students to undertake a SILP course of study will be determined by the Program Director, who may utilize scores from the Modern Language Aptitude Test (MLAT). Students should plan to devote at least as much total time to a SILP course as to any other regular language course.

193. Foreign Study
Either or both semesters. Credits and hours by arrangement. May be repeated for credit. Consent of Department Head required, normally to be granted prior to the student’s departure.
Special topics taken in a foreign study program.

*NOTE: When American Sign Language is offered as a Critical Language it does not count toward fulfillment of the General Education Group I Foreign Language Requirement.
293. Foreign Study
Either or both semesters. Credits and hours by arrangement. May be repeated for credit. Consent of Director required, normally to be granted prior to the student’s departure. May count toward the major with consent of the advisor.

Special topics taken in a foreign study program.

295. Variable Topics
Either semester. Three credits. With a change of topic, may be repeated for credit. Prerequisites and recommended preparation vary.

298. Special Topics
Either semester. Credits and hours by arrangement. With a change in content, may be repeated for credit. Prerequisites and recommended preparation vary.

299. Independent Study
Either or both semesters. Credits and hours by arrangement. Open only with consent of Director. With a change in content, may be repeated for credit.

The most frequently offered languages in CRLP are:

- Arabic
- Japanese
- Chinese
- Korean
- Greek (Modern)
- Polish
- Hindi
- Vietnamese
- Hungarian

If there is sufficient student interest, additional languages may be offered.

Study Abroad
The University sponsors semester, academic year or summer programs in Tianjin, Beijing, Nanjing, Shanghai and Taipei. Courses are offered in Chinese language and area studies.

Cytotechnology (CYTO)
Cytotechnology Program Academic Coordinator: Associate Professor Denis A. Coble
Program Office: Room 306, Koons Hall
For major requirements, see the School of Allied Health section of this Catalog.

220. Cancer and Your Health
First semester. Three credits. Three hours of lecture. Prerequisite: One course in Biology or concurrent enrollment in a Biology course.

This course introduces students to cancer risk education, causes, early detection, prevention and public education.

221. Introduction to Cancer and Diagnostic Cytology
Second semester. Three credits. Three hours of lecture. Open only to Cytotechnology majors; others by consent.

This course introduces students to the microscopic study of cancer. The basic cytology and pathology of the female genital tract will be presented from a Woman’s Health Perspective.

243. Cytology of the Female Genital Tract
First semester. Six credits. Prerequisite: All other degree requirements must be completed. Open only to Cytotechnology majors.

This course provides the student with comprehensive knowledge of the female genital tract cytology and provides the skills necessary to identify accurately the cytologic changes associated with normal and abnormal cells of the female genital tract.

244. Cytology of the Respiratory Tract
First semester. Four credits. Prerequisite: All other degree requirements must be completed. Open only to Cytotechnology majors.

This course provides the student with comprehensive knowledge of respiratory tract cytology and provides the skills necessary to identify accurately the cytologic changes associated with normal and abnormal cellular changes in the respiratory tract.

245. Cytologic Techniques
First semester. Three credits. Prerequisite: All other degree requirements must be completed. Open only to Cytotechnology majors.

This course provides the student with both didactic knowledge and technical skills necessary to ensure optimum specimen preparation.

246. Cytology of the Alimentary Tract
Second semester. Three credits. Prerequisite: All other degree requirements must be completed. Open only to Cytotechnology majors.

This course provides the student with comprehensive knowledge of alimentary tract cytology and provides the skills necessary to identify accurately the cytologic changes associated with normal and abnormal cellular changes in the alimentary tract.

247. Cytology of Miscellaneous Fluids
Second semester. Four credits. Prerequisite: All other degree requirements must be completed. Open only to Cytotechnology majors.

This course provides the student with comprehensive knowledge of miscellaneous fluids cytology and provides the skills necessary to identify accurately the cytologic changes associated with normal and abnormal changes in miscellaneous fluids.

248. Cytology Aspiration Biopsy
Second semester. Three credits. Prerequisite: All other degree requirements must be completed. Open only to Cytotechnology majors.

This course provides the student with comprehensive cytology and provides the skills necessary to identify accurately the cytologic changes associated with normal and abnormal cellular changes in aspiration biopsies.

249. Senior Seminar in Cytotechnology
Second semester. Three credits. Prerequisite: All other degree requirements must be completed. Open only to Cytotechnology majors.

This course exposes the student to management principles and practices and the knowledge and skills necessary to develop an education project and to perform a research project.

250. Clinical Practicum
Second semester. Four credits. Prerequisites: CYTO 243, 244, 245, 247 and 248. Open only to Cytotechnology majors.

This course provides the student with clinical experience to complete the integration of didactic and laboratory components of Cytotechnology.

298. Special Topics
Either semester. Credits and hours by arrangement. Prerequisite: The completion of all Lower Division requirements in the Cytotechnology Program. Open only with consent of instructor. May be repeated for credit.

Application of the scientific method of inquiry to planning, implementing, evaluating, and reporting a study of a problem related to Cytotechnology.

299. Independent Study for Undergraduates
Either semester. Credits and hours by arrangement. Open only with consent of instructor. May be repeated for credit.

This course is primarily for students who wish to extend their knowledge in some specialized area in the field of Cytotechnology.

Diagnostic Genetic Sciences (DGS)

Diagnostic Genetic Sciences Program Director:
Martha B. Keagle
Program Office: Room 222, Koons Hall
For major requirements, see the School of Allied Health section of this Catalog.

222. Medical Cytogenetics
Both semesters. Four credits. Two 2-hour lectures. Prerequisite: MCB 203; MCB 200 or 213; all of which may be concurrent. Open to students in the Diagnostic Genetic Sciences Program; others who have met the prerequisites.

Birth defects, prenatal assessment, cell culture and harvest, staining and banding techniques, mechanisms of numerical and structural chromosome abnormality, numerical syndromes, duplication and deletion syndromes, the sex chromosomes, sex chromosome abnormalities, human chromosome nomenclature, mosaicism, genetic imprinting, cancer cytogenetics, molecular cytogenetic testing.

223. Laboratory in Cytogenetics
Both semesters. Three credits. One 3-hour laboratory period and 1-hour discussion. Four additional laboratory sessions are required during the first half of the semester. Prerequisite: DGS 222 which may be taken concurrently. Open only to students enrolled in the Diagnostic Genetic Sciences Program; others with consent of instructor.

Human chromosome morphology and identification, asetic technique, lymphocyte culture and harvest, chromosome banding, karyotyping and microscopic analysis of normal and abnormal cases.

224. Cancer Cytogenetics
Offered Summer I. Variable credits. Prerequisite: DGS 222. Open only to students enrolled in the Diagnostic Genetic Sciences Program; others with consent of instructor.

Chromosome instability syndromes, genetic basis of cancer, cytogenetics of solid tumors and hematologic malignancies, and nomenclature of acquired changes.

234. Diagnostic Molecular Technologies
Both semesters. Three credits. Prerequisite: MCB 200 or 213; and MLS 208 or MCB 211 which may be taken concurrently. Open only to students enrolled in the Diagnostic Genetic Sciences Program; others with consent of instructor.

DNA and RNA diagnostic technologies used in clinical settings; clinical applications in prenatal diagnosis; cancer management, transplantation, forensic medicine and microbiology.

235. Laboratory in Molecular Diagnostics
Both semesters. Four credits. Prerequisite: DGS 234 or MLS 217 which may be taken concurrently. Open only to students enrolled in the Diagnostic Genetic Sciences Program; others by consent of instructor.

DNA isolation, blotting techniques, fluorescent in situ hybridization, polymerase chain reaction and Genprobe assay.

241. Chromosome Imaging
First semester and Summer Session I. Two credits. Two hours of lecture and 1 hour of discussion. Prerequisites: DGS 222 and 223. Open only to DGS majors;
245. Contemporary Issues in Human Genetics
Both semesters. Three credits. Prerequisite: DGS 223 and DGS 222. Open only to students enrolled in the Diagnostic Genetic Sciences Program; others with consent of the instructor.
Advanced karotyping and microscopic diagnosis; report writing; historical perspective; recent advances and future trends in human genetics; ethical issues of genetic research, technological advances, genetic diagnosis and the practice of medical genetics; exploration of the lay person’s understanding of human genetics and genetic diagnosis.

260. Blotting Methods
Both semesters. Six credits. Prerequisite: DGS 234 and DGS 235. Open only to DGS molecular certificate students. Practicum experience with blotting technologies stressing complete Southern analysis.

261. Amplification Methods
Both semesters. Six credits. Prerequisite: DGS 234 and DGS 235. Open only to DGS molecular certificate students. Practicum experience in DNA and/or RNA amplification stressing polymerase chain reaction.

273. Research in Molecular Genetics
Both semesters. One credit. Prerequisites: DGS 234 and DGS 235. Open only to students enrolled in the Molecular Diagnostic Sciences Certificate Program; others with consent of the instructor.
Design and implementation of a research project in molecular genetics.

275. In Situ Hybridization Methods
Both semesters. Two credits. Prerequisites: DGS 234 and DGS 235. Open only to DGS molecular certificate students.
Practicum in fluorescence in situ hybridization or other in situ hybridization techniques.

276. Topics in Molecular Genetics
Both semesters. Two credits. Prerequisite: DGS 234 and DGS 235. Open only to students enrolled in the Molecular Diagnostic Sciences Certificate Program; others with consent of the instructor.
Exploration of an individual area of interest in molecular genetics.

277. Mutagenesis
Both semesters. Two credits. Prerequisite: DGS 234 and DGS 235. Open only to students enrolled in the Molecular Diagnostic Sciences Certificate Program; others with consent of the instructor.
Practicum experience in mutagenesis, including Ames assays and mammalian mutagenesis assays.

278. DNA Sequencing
Both semesters. Two credits. Prerequisite: DGS 234 and DGS 235. Open only to students enrolled in the Molecular Diagnostic Sciences Certificate Program; others with consent of the instructor.
Practicum experience in DNA sequencing.

279. Microbiological Applications of Molecular Diagnostics
Both semesters. Two credits. Prerequisite: DGS 234 and DGS 235. Open only to students enrolled in the Molecular Diagnostic Sciences Certificate Program; others with consent of the instructor.

Practicum experience in the application of molecular technologies to microbiology.

280. Bone Marrow Cytogenetics
Both semesters. Two credits. Prerequisite: In order to enroll in the course, the student must have earned a “C” or better in DGS 222 and DGS 223. Open only to Diagnostic Genetic Sciences majors. Clinical Staff
Culture, harvest, banding and analysis of leukemic bone marrow samples; chromosomal abnormalities associated with hematologic malignancies.

281. Peripheral Blood Cytogenetics
Both semesters. Four credits. Prerequisite: In order to enroll in this course, the student must have earned a “C” or better in DGS 222 and DGS 223. Open only to Diagnostic Genetic Sciences majors. Clinical Staff
Culture, harvest, banding and analysis of peripheral blood samples.

282. Practicum in Staining and Karotyping
Both semesters. One credit. Prerequisite: In order to enroll in this course, the student must have earned a “C” or better in DGS 222 and DGS 223. Open only to Diagnostic Genetic Sciences majors. Clinical Staff
Utilization and application of special staining and banding techniques, karotyping of normal and abnormal metaphases from all specimen types.

283. Practicum in Photomicroscopy/Imaging
Both semesters. One credit. Prerequisite: In order to enroll in this course, the student must have earned a “C” or better in DGS 222, DGS 223, and DGS 242. Open only to Diagnostic Genetic Sciences majors. Clinical Staff
Techniques of photomicroscopy, B/W film development, print enlargement, computer imaging.

284. Variable Topics in Cytogenetics
Both semesters. One credit. Prerequisite: In order to enroll in this course, the student must have earned a “C” or better in DGS 222 and DGS 223. Open only to Diagnostic Genetic Sciences majors. Clinical Staff
In-depth examination of a topic of the students’ choosing in the field of human genetics.

285. Research in Cytogenetics
Both semesters. One credit. Prerequisite: In order to enroll in this course, the student must have earned a “C” or better in DGS 222 and DGS 223. Open only to Diagnostic Genetic Sciences majors. Clinical Staff
Design and implementation of a research project in clinical cytogenetics.

286. Prenatal Cytogenetics
Both semesters. Four credits. Prerequisite: In order to enroll in this course, the student must have earned a “C” or better in DGS 222 and DGS 223. Open only to Diagnostic Genetic Sciences majors. Clinical Staff
Culture, harvest, banding and analysis of amniotic fluids, products of conception, and other fetal samples.

288. Special Topics
Either semester. Credits and hours by arrangement. Prerequisite: The completion of all Lower Division requirements in the Diagnostic Genetic Sciences Program. Open only with consent of instructor. May be repeated for credit.
Application of the scientific method of inquiry to planning, implementation, evaluating and reporting a study of a problem in cytogenetics.

289. Independent Study for Undergraduates
Either semester. Credits and hours by arrangement. Open only with consent of instructor. May be repeated for credit.
This course is designed primarily for students who wish to extend their knowledge in some specialized area in the field of diagnostic genetic sciences.
management role in patient care, nutrition education, and the integration of nutrition and food service units.

248. Applied Clinical Dietetics
Second semester. Six credits. 256-hour practicum. Prerequisite: DIET 235.
Application and synthesis of performance requirements in clinical dietetics. Practicum.

250. Dietetic Practice
Student defines objectives to extend knowledge in a specialized area of dietetics. Research project.

298. Special Topics
Either semester. Credits and hours by arrangement. Prerequisite: The student must have completed all other requirements in the Program in Dietetics. May be repeated for credit with a change in topic.
Application of the scientific method of inquiry to planning, implementing, evaluating, and reporting a study of a problem related to dietetics.

299. Independent Study for Undergraduates
Either semester. Credits and hours by arrangement. Open only with consent of instructor. May be repeated for credit.
The course is designed primarily for students who wish to extend their knowledge in some specialized area in the field of dietetics.

*Dramatic Arts (DRAM)*

Head of Department: Professor Gary M. English
Department Office: Room 242, Drama – Music Building
For major requirements, see the School of Fine Arts section of this Catalog.

101. Introduction to the Theatre
Either semester. Three credits.
Analysis of the functions of the theatre artists and their contributions to the modern theatre.

107. Theatre Production Studio
Either semester. Two credits. Two 2-hour studio periods. May be repeated to a maximum of eight credits.
Franklin, McCaw
Elements of costume, lighting, management and stagecraft with application to departmental productions.

108. Fundamentals of Theatrical Design
Either semester. Three credits. Saternow
Introduction to theories of theatrical design and their application.

110. Introduction to Film
Either semester. Three credits. Two class periods and one 2-hour laboratory period.
A basic study of film as both a means of communication and as an art form.

120. Production of the Speaking Voice
Either semester. Three credits. Stern
Study and practice in the development of an expressive, injury-free speaking voice capable of filling most performance spaces without amplification. Students concentrate on breathing technique, throat relaxation, resonance enhancement, and the use of variety in pitch and speaking rate. The course also integrates these technical voice skills with the principles of the inner acting process.

130. History of Drama I
First semester. Three credits. Not open for credit to students who have passed DRAM 180. McDermott
Dramatic literature and theatre history from Classical Greece through the Spanish Golden Age, including an examination of non-western theatre traditions, especially Japanese.

131. History of Drama II
Second semester. Three credits. Recommended preparation: DRAM 130. Not open for credit to students who have passed DRAM 181. McDermott, Molote
Dramatic literature and theatre history from the French Renaissance to Contemporary Theatre, including an examination of non-western theatre traditions, especially Chinese.

141. Oral Interpretation
Either semester. Three credits.
An intensive study of background and thought content of literary material and the development of techniques of oral interpretation.

143-144. Introduction to Acting
Both semesters. Three credits each semester. Concurrent enrollment in DRAM 149-150 required for all acting majors.
First semester: Basic acting techniques, including improvisation and the use of the stage environment. Second semester: continuation of basic techniques with emphasis on the presentation of scenes from contemporary plays.

149. Introduction to Movement for the Actor I
First semester. Three credits. Three 2-hour studio periods. Sabatine
Conditioning the body to increase stretch, strength, flexibility, and sensitivity. Exploration of movement concepts in space, time and energy values, and mind body and environment relationships.

150. Introduction to Movement for the Actor II
Second semester. Three credits. Three 2-hour studio periods. Sabatine
Continuation of Dramatic Arts 149. Emphasis on the organization of movement expression using essence theory of emotion, intentions, gestures and physical characterization through movement.

153. Theatre Jazz Dance I
Either semester. Three credits. Three 2-hour studio periods.
Basic techniques, styles, and composition of jazz dance. Emphasis placed on technique.

154. Theatre Jazz Dance II
Continuation of Dramatic Arts 153.

163-164. Introduction to Directing
Both semesters. Three credits each semester. Prerequisite: DRAM 143.
First semester: Emphasis on theory and play analysis from the director's point of view. Second semester: Emphasis on practical staging experience, including casting techniques and rehearsal and performance methods.

180. Masterpieces of the Drama: Aeschylus to Shakespeare
Either semester. Three credits.
A study of masterpieces of Greek, Roman and Elizabethan drama with emphasis on analysis of form and content and attention to staging conventions.

181. Masterpieces of the Drama: Molière to the Present
Either semester. Three credits. McDonald
A study of masterpieces of French 17th Century; English Restoration and 18th Century; European, English, and Japanese 19th Century; and European, English, African, and American 20th Century drama.

200. Scene Construction
First semester. Three credits. Recommended preparation: DRAM 107 (Stagecraft). McCaw
Basic techniques of constructing two dimensional and three dimensional scenery.

201. Rigging
Second semester. Three credits. Recommended preparation: DRAM 107 (Stagecraft). McCaw
Rigging systems and the basic techniques for flying scenery, with an emphasis on rigging safety.

203. Stage Management for the Theatre
Either semester. Three credits.
A study of the roles of the stage manager and assistant stage manager.

205. Scenographic Techniques for the Theatre
 Either semester. Three credits. Two 3-hour laboratory periods. Recommended preparation: DRAM 107 (Stagecraft). McCaw
A laboratory course for designers and technicians in the techniques of preparing a scene design for production in a shop. Drafting techniques, sheet layout, conventions and symbols are stressed.

206. CAD for the Theatre
Either semester. Three 2-hour laboratory periods. Recommended preparation: DRAM 205. Macaw
Computer Aided Drafting techniques for theatrical applications. Use of design software for creating various 2-D plans, including light plots, set designs and technical shop drawings.

207C-208. Lighting for the Theatre
Both semesters. Three credits each semester. Two class periods and one 2-hour laboratory period. Recommended preparation: DRAM 107 (Lighting), 108. Franklin

209 Principles of Design and Rendering
Either semester. Three credits. Two class periods and one 2-hour studio period. Recommended preparation: DRAM 108, Crow
Composition and color theory for designers as well as an exploration of graphic techniques in mixed media for expression of design ideas.

211-212. Scene Design
Both semesters. Three credits each semester. Two class periods and one 2-hour laboratory period. Prerequisite: DRAM 108, Saternow

213. Costume History
Either semester. Three credits. Two class periods and one 2-hour studio period. Crow
A slide survey class covering the origins and development of dress to the present day. Specifically African, Middle Eastern, an Euro-Centric dress, along with the societies and manners which created fashion.

214. Costume Design
Either semester. Three credits. Two class periods and one 2-hour studio period. Recommended preparation: DRAM 108 or consent of instructor. Crow

Emphasis on analysis of form and content and attention to staging conventions.

181W. Masterpieces of the Drama: Molière to the Present

191. Performance Techniques in Ethnic Arts
Either or both semesters. Credits and hours by arrangement. May be repeated for credit with a change in course content. Open only with consent of instructor.
Performance study and practice in selected areas of ethnic and minority dramatic arts. Topics to be alternated may include Afro-American dance, Black Heritage theatre, Indian dance.

200. Scene Construction
First semester. Three credits. Recommended preparation: DRAM 107 (Stagecraft). McCaw
Basic techniques of constructing two dimensional and three dimensional scenery.

201. Rigging
Second semester. Three credits. Recommended preparation: DRAM 107 (Stagecraft). McCaw
Rigging systems and the basic techniques for flying scenery, with an emphasis on rigging safety.

203. Stage Management for the Theatre
Either semester. Three credits.
A study of the roles of the stage manager and assistant stage manager.

205. Scenographic Techniques for the Theatre
 Either semester. Three credits. Two 3-hour laboratory periods. Recommended preparation: DRAM 107 (Stagecraft). McCaw
A laboratory course for designers and technicians in the techniques of preparing a scene design for production in a shop. Drafting techniques, sheet layout, conventions and symbols are stressed.

206. CAD for the Theatre
Either semester. Three 2-hour laboratory periods. Recommended preparation: DRAM 205. Macaw
Computer Aided Drafting techniques for theatrical applications. Use of design software for creating various 2-D plans, including light plots, set designs and technical shop drawings.

207C-208. Lighting for the Theatre
Both semesters. Three credits each semester. Two class periods and one 2-hour laboratory period. Recommended preparation: DRAM 107 (Lighting), 108. Franklin

209 Principles of Design and Rendering
Either semester. Three credits. Two class periods and one 2-hour studio period. Recommended preparation: DRAM 108, Crow
Composition and color theory for designers as well as an exploration of graphic techniques in mixed media for expression of design ideas.

211-212. Scene Design
Both semesters. Three credits each semester. Two class periods and one 2-hour laboratory period. Prerequisite: DRAM 108, Saternow

213. Costume History
Either semester. Three credits. Two class periods and one 2-hour studio period. Crow
A slide survey class covering the origins and development of dress to the present day. Specifically African, Middle Eastern, an Euro-Centric dress, along with the societies and manners which created fashion.

214. Costume Design
Either semester. Three credits. Two class periods and one 2-hour studio period. Recommended preparation: DRAM 108 or consent of instructor. Crow

Emphasis on analysis of form and content and attention to staging conventions.
An introductory class centering on the designer’s approach to the text, the creation of the designed look for the characters in the play, and the process of how to realize the costumes.

215. Sound for the Theatre
Either semester. Three credits.
Art of sound design for the theatre. Organizing and creating sound for production.

218C. Computer Rendering
Either semester. Three credits. Two class periods and one 2-hour studio period. Recommended preparation: DRAM 108 or consent of instructor. Crow
Computer rendering for the theatre in 2-D and 3-D format.

219. Advertising, Publicity, and Promotion in the Dramatic Arts
Either semester. Three credits. Open only with consent of instructor.
An introduction to the basic techniques of advertising copy, news releases, and feature stories.

220. Voice and Diction I
First semester. Three credits. Prerequisite: DRAM 120 and concurrent enrollment in DRAM 268. Stern
Study and practice in the continued development of breathing, phonation and resonance skills, with added attention being paid to non-regional pronunciation (including the standard sounds and symbols of the International Phonetic Alphabet), articulation (of colloquial and classical diction styles), and phrasing.

222. Voice and Diction II
Prerequisite: DRAM 220 and concurrent enrollment in DRAM 269. Stern
Continued exploration of voice production and elevated diction skills required for acting in classical and period styles. Particular attention is given to textual analysis, verse performance, and the specialized voice techniques required for highly emotional scenes.

230. Women in Theatre
Either semester. Three credits. Open to sophomores. McDermott
A study of theatre examining the changing depiction of women in drama and the increasing participation of women in all areas of theatrical activity. Women’s advancement in western and oriental theatre will be surveyed as a background for focusing on plays written in the 20th century.

230W. Women in Theatre

231. African-American Theatre
Either semester. Three credits. Open to sophomores. Molette
The significant developments in African American theatre and its antecedents and an examination of selected play scripts that exemplify those developments.

231W. African-American Theatre

235. Period Studies in Theatre
Either or both semesters. Three credits. Prerequisite: DRAM 131 or consent of instructor. May be repeated for credit with change in course content to a maximum of 9 credits. Subatine
Further work in techniques and styles of jazz dance. Projects in jazz choreography.

239. Theatre Dance I
First semester. Three credits. Prerequisite: DRAM 149, 150. Subatine
Stage movement and dances from Greek to Renaissance.

240. Theatre Dance II
Second semester. Three credits. Prerequisite: DRAM 239. Subatine
Stage movement and dances from the Renaissance through the Restoration.

241. Oral Interpretation of the Drama

242. Stage Make-Up
Either semester. Two credits. One class period and one 2-hour laboratory period. Open only with consent of instructor.

243. Acting Technique I
First semester. Three credits. Three 2-hour studio periods. Open only with consent of instructor. Open to sophomores. Hill
Voices of naturalism and realism: the study and practice of techniques utilized in the performance of modern realists.

244. Acting Technique II
Second semester. Three credits. Three 2-hour studio periods. Prerequisite: DRAM 243. Open to sophomores. McDonald
A continuation of the study and practice of techniques utilized in the performance of modern realists.

247-248. Puppetry
Both semesters. Three credits each semester. May be repeated for credit with change in course content to a maximum of 12 credits. Open only with consent of instructor. Open to sophomores. Roccoberton
First semester: Rod puppetry or Shadow theatre. Second semester: Hand puppetry or Mask theatre. Topics to alternate on a two-year rotation.

249. Acting for the Media
Either semester. Three credits. Credits and hours by arrangement. Open only with consent of instructor.
Study and practice in the principles and techniques of television performance and acting before the camera.

250. Musical Theatre Dance
First semester. Three credits. Three 2-hour studio periods. Recommended preparation: DRAM 154 or consent of instructor. May be repeated for credit with a change in course content to a maximum of 6 credits. Subatine
Tap, free style, folk and social dance forms used in musical theatre. Integration of dance with song.

251. The American Film
First semester. Three credits. Two class periods and one 2-hour laboratory period. May be repeated for credit with a change in course content to a maximum of 6 credits. A critical analysis of the American fiction film.

252. World Film
Second semester. Three credits. Two class periods and one 2-hour laboratory period. May be repeated for credit with a change in course content to a maximum of 6 credits. A critical analysis of representative world films.

257. Fundamentals of Television I
First semester. Three credits. Two 3-hour laboratory periods. Open only with consent of instructor.

258. Fundamentals of Television II
Second semester. Three credits. Two 3-hour laboratory periods. Prerequisite: DRAM 257.

259. Practicum in Dramatic Arts
Either or both semesters. Credits and hours by arrangement. Open only with consent of instructor. Open to sophomores.
Practical work in all areas of dramatic arts.

265. Stage Dialects
Either semester. Two credits. One class period and one 2-hour lab. Recommended preparation: DRAM 220 or consent of instructor. Stern
The study and practice of those dialects and accents most frequently required by American actors. Contents include, but are not limited to, Standard British, and a range of New York City and American Southern patterns.

266. Acting Technique III
First semester. Three credits. Three 2-hour studio periods. Prerequisite: DRAM 244 and consent of instructor, and concurrent enrollment in DRAM 220 and DRAM 239 required. McDonald
Poetic voices of world theatre: Greek, Elizabethan, and others.

269. Acting Technique IV
Second semester. Three credits. Three 2-hour studio periods. Prerequisite: DRAM 268 and consent of instructor, and concurrent enrollment in DRAM 222 and DRAM 240 required. McDonald
The study and practice of acting techniques utilized in the performance of Shakespeare’s plays.

272. Playwriting
Either or both semesters. Three credits. Open only with consent of instructor. May be repeated for credit with a change in course content to a maximum of 9 credits. McDermott
The analysis of the basic techniques in playwriting, and the reading and criticism of the students’ works in progress. Scripts of outstanding merit may be produced in the Studio or Mobius Theatres.

274-275. Film Writing
Both semesters. Three credits each semester. Open only with consent of instructor.
Theoretical and practical work in the content and form of the fiction scenario.

276. Acting Technique V
First semester. Three credits. Three 2-hour studio periods. Prerequisite: DRAM 269 and consent of instructor.
The study and practice of acting techniques utilized in a range of comic styles.

277. Acting Technique VI
Second semester. Three credits. Three 2-hour studio periods. Prerequisite: DRAM 276 and consent of instructor.
The study and practice of acting techniques utilized in the performance of modern non-realists.

278. Advanced Puppetry Techniques I
First semester. Three credits. Two 3-hour laboratory periods. May be repeated for credit with change in course content to a maximum of six credits. Open only with consent of instructor. Roccoberton
279. Advanced Puppetry Techniques II
Second semester. Three credits. Two 3-hour laboratory periods. May be repeated for credit with change in course content to a maximum of six credits. Open only with consent of instructor. Roccoberton
Advanced puppetry production techniques for television or laboratory practice in materials techniques.

282. Trends in Contemporary Theatre
Either semester. Three credits. Open to sophomores.
A study of the major trends in drama and theatrical production of the western world today.

282W. Trends in Contemporary Theatre

285. Trends in the Contemporary Puppet Theatre
Either semester. Three credits.
A study of the major trends in drama, design styles and production of the puppet theatre in the western world today.

286. Theatre Administration and Organization
Either semester. Three credits.
A survey of the organizational structure of the theatre in the United States, including community, university and regional theatres, and "on," "off," and "off-off" Broadway. Personnel, budgeting, unions and audience development will be covered.

291. Performance Techniques
Either or both semesters. Credits and hours by arrangement. Open only with consent of instructor. May be repeated for credit with a change in course content.
Performance study and practice in selected areas of dramatic arts.

293. Foreign Study
Either or both semesters. Credits and hours by arrangement. May be repeated for credit. Consent of Department head required, normally to be granted prior to the student’s departure. May count toward the major with consent of the advisor.
Coursework undertaken within approved Study Abroad programs, with a focus on the theatre history, dramatic literature and production in a particular country or region.

295. Environmental Theatre
Either or both semesters. Three credits. Three 2-hour studio periods. May be repeated for credit. Open only with consent of instructor.
An analysis of New Theatre concepts throughout the twentieth century, with workshops in performance.

296. Seminar
Either or both semesters. Credits and hours by arrangement. Open only with consent of instructor. May be repeated for credit.
Studies in selected areas of dramatic arts. Topics to be alternated.

299. Independent Study
Either or both semesters. Credits and hours by arrangement. Open only with consent of instructor. May be repeated for credit.
A reading or project course under the direction of an appropriate staff member.

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**EcoLOGY AND EVOLUTIONARY BIOLOGY 105**

**Ecology and Evolutionary Biology (EEB)**

Head of Department: Professor Gregory J. Anderson
Department Office: Room 314, Torrey Life Sciences Building

For major requirements, see the College of Liberal Arts and Sciences section of this Catalog.

200. Biology of Fishes
Second semester, alternate years. Four credits. Two 1 1/2-hour class periods, one three-hour laboratory period. Prerequisite: BIOL 108. Not open for credit to students who have passed RNR/NRME 200, 201 or 202 or MARN 200, 201 or 202. Schultze

An introduction to the biology of fishes, with an emphasis on adaptation and evolutionary diversification. Topics include the evolution of major groups, morphology, physiology, behavior, and population and community ecology. Laboratory periods will include field and laboratory exercises; field trips required.

203. Developmental Plant Morphology
(Also offered as EEB 303.) First semester, alternate years. Four credits. Two class periods and two 2-hour laboratory periods. Prerequisite: BIOL 108 or consent of instructor. Jones

Analysis of diversity in plant form: principles of plant construction and development.

204. Aquatic Plant Biology
(Also offered as EEB 304.) First semester, alternate years. Four credits. Two lectures and two 3-hour field/laboratory periods. Prerequisite: BIOL 108 or 110, or consent of instructor. Les

Field and laboratory-oriented study of the anatomy, morphology, ecology, physiology, systematics and evolution of vascular aquatic and wetland plants.

205. Current Issues in Environmental Science
(Also offered as GEOL 205.) Second semester, alternate years. Three credits. Open to honors students. Open to non-honors students only with consent of instructor. Prerequisite: 8 credits of college level science. Simon, Thorson

Readings and discussions of current issues in environmental science, emphasizing linkages between earth, oceans, atmosphere, and biosphere. Topics include: climate change; watershed changes; alternative energy; population growth; endangered biodiversity; genetically-engineered organisms; deforestation/restoration; risk assessment; tradeoffs; problem-solving; alternative futures.

214. Biology of the Vertebrates
First semester. Three credits. Two 1-hour lecture periods, with demonstrations. Prerequisite: Three credits of introductory Biology. Open to sophomores. Rubega, Schwenk, Wells

Evolutionary history and diversity of vertebrates with emphasis on classification, fossil history, feeding, locomotion, physiological ecology, reproduction, defense, and social behavior.

227. Biology of Plants
First semester. Three credits. Prerequisites: BIOL 108 or 110, or consent of instructor. Open to sophomores. L. Lewis

Structure, function, evolution, and ecology of plants. Importance of plants for ecosystems and human life.

238. Limnological Methods
Second semester. Three credits. One class period and two 3-hour field/laboratory periods. Prerequisite: Consent of instructor and CE 268 or EEB 247, either of which may be taken concurrently. This course and CE 207 may not both be taken for credit. Rich

Field and laboratory study of physical, chemical, and biotic elements of freshwater habitats. Field trips required.

240. Biology of Bryophytes and Lichens
(Also offered as EEB 340.) Second semester, alternate years. Four credits. Three class periods and one 3-hour laboratory period. Prerequisites: Six credits of 200-level biology or consent of instructor. Goffinet

Diversity, evolution, ecology, development and taxonomy of the bryophytes (mosses, liverworts and hornworts) and lichen-forming fungi.

243. Insect Classification and Identification
Second semester, alternate years. Four credits. Two 1-hour lecture periods and one 4-hour laboratory. Prerequisite: EEB 286 or consent of instructor. Not open for credit to students who have passed EEB 253, Henry

Insect classification, evolution, and phylogeny.

243W. Insect Classification and Identification
(Formerly offered as EEB 253.) Second semester, alternate years. Four credits. Two 1-hour lecture periods plus individual tutorial. Prerequisite: Consent of instructor. Henry

Content as in EEB 243; field, museum, and library research; requires major writing assignment.

244. General Ecology
Either semester. Four credits. Prerequisite: Six credits of college biology. Three lectures and one 2-hour discussion section. Open to sophomores. Adams, Cardon, Chazdon, Colwell, Silander, Turchin

Fundamental ecological dynamics of communities, populations and ecosystems, with emphasis in discussion sections on reading primary literature, problem-solving, and exposure to ecological research techniques.

244W. General Ecology
Four credits. Adams, Cardon, Chazdon, Colwell, Silander, Turchin

Content as in EEB 244; requires major writing assignment.

245. Evolutionary Biology
Either semester. Three credits. Prerequisite: Six credits of college biology and three credits of college chemistry. Open to sophomores. Cauna, Henry, Holstinger, Jockusch, Simon

Introduction to evolutionary mechanisms, biogeography, and the history of major groups of plants and animals.

245W. Evolutionary Biology
Four credits. Four class periods.

Content as in EEB 245; requires major writing assignment.

247. Limnology
(Also offered as CE 268 and ENVE 268.) First semester. Three credits. Prerequisites: MATH 109 or 112, or 115 and three or more credits in chemistry (CHEM 122, 127, or 129); three credits of introductory biology are recommended. Not open for credit to students who have passed CE 268. Rich

Physical, chemical, and biotic interrelationships of freshwater habitats (see also EEB 238).

249. Biology of the Honey Bee
Summer session, alternate years. Three credits. Two class periods and one 2-hour laboratory period. Prerequisite: Three credits of introductory biology. Open to sophomores.

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252. **Field Entomology**

Either semester. Three credits. Prerequisite: Three credits of introductory biology. Anderson

Students majoring in biological sciences, natural resources, agriculture, and those with an interest in the study of insects and related arthropods, are provided opportunities to engage in field entomology. Participating students will have the opportunity to collect and study representative insect species in diverse habitats. Majors and minors in the biological sciences and natural resources will have the opportunity to practice field identification, sampling, and population assessment techniques. Special topics in insect biology, such as insect genetic and evolutionary biology, will be incorporated into the field curriculum as appropriate. The course will be scheduled to coincide with field trips to sites such as forests, fields, and wetlands. Recommended preparation: BIOL 110 or BIOL 108 or consent of instructor.

256. **Plants and Civilization**

Either semester. Three credits. Prerequisite: Three credits of introductory biology. Anderson

Plants and animals used by people; origin, history, biology, distribution, and role in development of civilizations.

268. **Ecological Plant Geography**

Second semester, alternate years. Three credits. Three class periods and one weekend field trip. Prerequisite: EEB 244 or 245 and BIOL 108 or consent of instructor.

Geographical differences in vegetation composition and plant adaptation. A global perspective on effects of climate, soil, local conditions and ecosystem processes.

269. **Social Insects**

(Also offered as EEB 369.) Second semester, alternate years. Three credits. Prerequisite: Six credits of introductory biology. Adams

Behavior, ecology, evolution of social insects: ants, wasps, bees, and termites.

271. **Systematic Botany**

Second semester, alternate years. Four credits. Two class periods and two 2-hour laboratory periods. Prerequisite: BIOL 108 or BIOL 110. Les

Methods of field study and identification of birds; methods of bird banding. Different species of birds are described and studied. Each student will band at least one bird. Recommended preparation: BIOL 108 or BIOL 110.

272. **The Summer Flora**

Summer session. Three credits. Prerequisite: Three credits of college botany. Mehroff

Identification of Connecticut's native and exotic plants; lectures, laboratory and field study.

273. **Comparative Vertebrate Anatomy**

Second semester, alternate years. Four credits. Three class periods and one 3-hour laboratory period. Prerequisite: BIOL 108. Open to sophomores. Schwenk

Anatomy, development, functional morphology, and evolution of living vertebrates.

275. **Invertebrate Zoology**

First semester, alternate years. Four credits. Two class periods and two 4-hour laboratory period. Prerequisite: Six credits of introductory biology or permission of instructor. Caira

Body organization, functional morphology and evolution compared among major invertebrate phyla. Field trips required.

276. **Plant Anatomy**

First semester, alternate years. Four credits. Two class periods and two 2-hour laboratory periods. Prerequisite: BIOL 108 or 110 or consent of instructor. Jones

Internal structure of seed plants: development and environmental responses.

277. **Floristics of Vascular Plants**

First semester. Four credits. Two class periods and two 2-hour laboratory periods. Prerequisite: BIOL 110. Anderson

Taxonomy of common local vascular plants.

280. **Evolution of Green Plants**

(Also offered as EEB 380.) Second semester, alternate years. Four credits. Two one and a half class periods and one 3-hour laboratory period. Prerequisite: BIOL 108 or 110, or permission of instructor. Goffinet, L. Lewis

Introduction to morphological, ultrastructural, and molecular characters used for inferring evolutionary relationships of green plants, from green algae to flowering plants, with emphasis on evolutionary changes involved in the transition from aquatic to terrestrial habitats.

281. **Ornithology**

Second semester. Two credits. Two class periods. Not open for credit to students who have passed EEB 285. Rubega

Adaptations, habits, and importance of birds.

281W. **Ornithology**

(Formerly offered as EEB 285.) Second semester. Three credits. Prerequisite: Consent of instructor. Rubega

Content as in EEB 281; requires major writing assignment.

283. **Introduction to Animal Parasitology**

First semester, alternate years. Four credits. Two class periods and two 2-hour laboratory periods. Prerequisite: BIOL 108. Caira

Protozoan and metazoan parasites of humans and other animals.

284. **Medical Entomology**

Second semester, alternate years. Three credits. Two class periods and one 2-hour laboratory period. Prerequisite: BIOL 108. Schaefer

Identification and biology of disease-spreading poisonous, and parasitic arthropods.

284W. **Medical Entomology**

Four credits. Content as in EEB 284; requires major writing assignment.

286. **General Entomology**

First semester. Four credits. Two class periods and two 2-hour laboratory periods. Prerequisite: BIOL 108. Henry, Schaefer, Wagner

The biology of insects: anatomy, physiology, ecology, behavior, development, evolution, and diversity.

287. **Ornithology Laboratory**

Second semester. Two credits. One 4-hour laboratory period; required field trips. Prerequisite: consent of the instructor. Open only to students who are currently taking or have completed, EEB 281. Rubega

Methods of field study and identification of birds; functional morphology, preparation of study skins and specimens. Field trips, including at least one required day-long weekend trip.

288. **Concepts of Applied Entomology**

Second semester, alternate years. Four credits. Three class periods and one 3-hour laboratory period. Prerequisite: BIOL 108 or 110. Schaefer

Control, ecology, economics, damage assessment and detection of insect infestations.

289. **Variable Topics**

Either semester. Three credits. With a change of topic, may be repeated for credit. Prerequisites and recommended preparation vary.

290. **Biography of the Algae**

(Also offered as EEB 390.) First semester, alternate years. Four credits. Three lectures and one 4-hour laboratory. Prerequisite: BIOL 108 or 110 or consent of instructor. L. Lewis

Laboratory and field-oriented study of major groups of algae, emphasizing structure, function, evolution, systematics, and ecology.
Economics (ECON)

**Head of Department:** Professor Stephen M. Miller  
**Department Office:** Room 328, Monteith Building  
For major requirements, see the College of Liberal Arts and Sciences section of this Catalog.

### 101. Essentials of Economics  
Either semester. Three credits. Not open for credit to students who have passed ECON 102, 111, 112, or 113.

A one-semester general introduction to micro- and macroeconomics. Economic concepts to be taught include: opportunity costs, demand and supply, incentives, comparative advantage, inflation and employment policies, balance of international payments, and economic growth.

### 102. Principles of Economics (Intensive)  
(Formerly offered as ECON 113.) Either semester. Four credits. Four class periods. Recommended preparation: ECON 101. Not open for credit to students who have passed ECON 102, 111, 112, or 113. May not be taken concurrently with ECON 111 or 112.

Same core principles as ECON 111 and 112. One half macroeconomics and one half microeconomics. More demanding than ECON 111 and 112. Substitutes for ECON 111 or 112 as a prerequisite for all upper division courses. May or may not substitute for ECON 111 and 112 outside economics; check Catalog.

### 111. Principles of Macroeconomics  
Either semester. Three credits. May be taken before or after ECON 112. Not open for credit to students who have passed ECON 102 or 113. May not be taken concurrently with ECON 102.

The organization and function of the economic system as a total unit. Economic decisions, institutions, and policies that determine levels and rates of growth of production, employment, and prices. Topical subjects (e.g., government budget deficits and current interest-rate policy).

### 112. Principles of Microeconomics  
Either semester. Three credits. May be taken before or after ECON 111. Not open for credit to students who have passed ECON 102 or 113. May not be taken concurrently with ECON 102.

How the invisible hand of the market functions through the economic decisions of firms and individuals. How prices, wages and profits are determined, resources are allocated and income is distributed. Topical subjects (e.g., energy policy and health care).

### 201. Economic History of Europe  
Second semester. Three credits. Prerequisite: Either ECON 102, 111 and 112, or 113. (112 may be taken concurrently.) Open to sophomores. Cosgel, Langlois

Economic evolution of Europe from feudal times to the present, emphasizing the modern period: the rise of commerce, industry, and banking; the growth of population and the labor force; the changing position of agriculture; business fluctuations; and forms of economic organization.

### 201W. Economic History of Europe  
Open to sophomores.

### 202. Topics in Economic History and Thought  
Either semester. Three credits. Prerequisite: ECON 111 and 112, or 102 or 113, or consent of the instructor. May be repeated for credit, with change of topic. Carstensen, Cosgel, Langlois, Minkler, Szacma

Special topics in economic history, the history of economic thought, the philosophy and methodology of economics, or alternative economic theories.

### 202W. Topics in Economic History and Thought.  

#### 203. Economic History of the United States  
Either semester. Three credits. Prerequisite: Either ECON 111 and 112, or 102 or 113. (112 may be taken concurrently.) Open to sophomores. Carstensen

Issues in American economic development, including the political economy of the Constitution, the economics of slavery, the rise of modern corporations and the causes of the Great Depression.

### 203W. Economic History of the United States  
Open to sophomores.

### 204. Economic History of the Middle East  
Either semester. Three credits. Prerequisites: Either ECON 111 and 112, or 102 or 113. (ECON 112 may be taken concurrently.) Open to sophomores. Cosgel

Economic history of the Middle East, including the organization of rural and urban activity, relationship with Western Europe, and the roles of international trade, foreign capital, petroleum, and institutional structure in economic development.

### 204W. Economic History of the Middle East  
Open to sophomores.

### 205. History of Economic Thought  
First semester. Three credits. Prerequisite: ECON 111 and 112, or 102 or 113. Cosgel, Cunningham, Langlois

The evolution of economic ideas significant to their own times and to the state of current theory. Mainly nineteenth and twentieth century thinkers.

### 206. Philosophy and Economics  
(Also offered as PHIL 245.) Either semester. Three credits. Prerequisite: ECON 102, 111, or 112.

An examination of the normative assumptions and implications of modern economics (for example, the connections between Classical Utilitarianism and Welfare Economics). Attention to methodological controversies in contemporary economic theory.

### 207. Beyond Self-Interest  
Either semester. Three credits. Prerequisite: ECON 102, 111, or 112. Minkler

A contrast to the assumptions, values, methodology, and philosophical underpinnings of mainstream economic analysis. Altruism, role of social norms and culture, importance of work, moral assessment of economic systems, feminist and ecological economics.

### 207W. Beyond Self-Interest  

#### 208. Political Economy of Capitalism  
Either semester. Three credits. Prerequisite: ECON 102, 111, or 112. Minkler

Application of socialist economic theory to structural issues of capitalist societies: distribution of power; causes of poverty and discrimination; military spending; stagnation and growth.

### 212V. Empirical Methods in Economics I (Q,C)  
Either semester. Three credits. Two class periods and one 2-hour laboratory period. Prerequisite: ECON 102, 111 and 112, or 113; MATH 106Q or 110Q or 113Q or 115Q or 118Q; and STAT 100V. Open to sophomores. A course advised for all major students in economics. Couch, Lott, Ray

Introduction to the empirical testing of economic theories. Student projects testing simple economic models.

### 213Z. Empirical Methods in Economics II (W,Q,C)  
Second semester. Three credits. Prerequisite: ECON 212V. Lott, Ray

Analysis of economic time series, estimation of single- and simultaneous-equation economic models, and statistical decision theory.

### 214Q. Mathematical Economics  
Either semester. Three credits. Prerequisite: ECON 102, 111 and 112, or 113; MATH 106Q or 110Q or 113Q or 115Q or 118Q; Jeffley, Lott, Ray, Segerson

Application of mathematical techniques to economic problems. Methods studied: set theory, linear algebra, equilibrium analysis, unconstrained and constrained optimization, comparative statics, and linear programming.

### 216V. Operations Research (Q,C)  
Either semester. Three credits. Prerequisite: Either ECON 102, 111 and 112, or ECON 102, 112, or 113. Sacks

Extensive use of computer spreadsheets to find efficient solutions to problems faced by managers in both the public and private sectors. Optimization of input and output mixes, of delivery routes, and communication networks.

### 217. Information Technology for Economics  
Either semester. Three credits. Prerequisites: ECON 102, 111 and 112, or STAT 100V or 110V. Abking, Cosgel, Sacks

The presentation of economic data and testing of economic theory through the use of appropriate computer based tools. Analysis of microeconomics concepts such as the consumption function, influence of the money supply, budget deficits, and interest rates on macroeconomic equilibrium, and the tradeoff between unemployment and inflation. Analysis of microeconomic concepts such as demand, supply, elasticity, the achievement of equilibrium price and quantity, and the application of these to an analysis of several industries and the stock market. Analysis of historical data such as aggregate and specific price levels, sectoral shifts in the economy, and changes in income distribution.

### 218. Intermediate Microeconomic Theory  
Either semester. Three credits. Prerequisite: ECON 102, 111, or 112. Recommended preparation: ECON 111. Open to sophomores. ECON 218 or 218Q is required of all economics majors. Cosgel, Jeffley, Kimenyi, Lott, Miceli, Minkler, Randolph, Ray, Sacks, Segerson

Intermediate microeconomic theory, covering demand and supply, exchange and production, pricing, and welfare economics.

### 218Q. Intermediate Microeconomic Theory  
Prerequisite: ECON 102, 112, or 113. MATH 106Q or 110Q or 113Q or 115Q or 118Q. Recommended preparation: ECON 111. Open to sophomores. ECON 218 or 218Q is required for all economics majors. Randolph, Segerson

Applications of mathematical techniques to intermediate microeconomic theory.

### 219. Intermediate Macroeconomic Theory  
Either semester. Three credits. Prerequisite: ECON 102, 111, or 113. Recommended preparation: ECON 111. Open to sophomores. ECON 219 or 219Q is required of all economics majors. Not open for credit to students who have passed ECON 229 or 219Q. Abking, Allen, Cunningham, Miller, Morand

Intermediate macroeconomic theory, covering national income accounting: the determination of aggregate output, employment and price levels; elements of business cycles and economic growth.

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ECONOMICS 107
219Q. Intermediate Macroeconomic Theory
Prerequisite: ECON 102, 111, or 113; MATH 106Q or 110Q or 113Q or 115Q or 118Q. Recommended preparation: ECON 112. Open to sophomores. ECON 219 or 219Q is required for all economics majors. Ahking, Cunningham, Morand
Applies mathematical techniques to macroeconomic theory.

220. Economics of Taxation and Government Spending
Either semester. Prerequisite: ECON 102 or 112 or 113. Recommended preparation for students who have passed ECON 112: ECON 111. Open to sophomores. Critical issues in taxation and government expenditures. Emphasis on institutions and public policy. Topics include: rationale for and effects of progressive taxation, reform of the tax system, Social Security and Medicare, welfare reform, defense, and fiscal federalism.

223. Economics of Poverty
(Formerly offered as ECON 257.) First semester. Three credits. Prerequisite: ECON 111 and 112, or 102 or 113. Open to sophomores. Not open for credit to students who have passed ECON 257. Kimenyi
Analysis of poverty and income maintenance programs: theories of income distribution and comparison of public policies in the U.S. and other countries.

224. Women and Minorities in the Labor Market
(Formerly offered as ECON 279.) Either semester. Three credits. Prerequisite: ECON 111 and 112, or 102 or 113. Open to sophomores. Not open for credit to students who have passed ECON 279. Kimenyi, Randolph
Issues and problems confronting women and minorities in the workplace, using economic theory, institutional analysis, and empirical investigation. Historical background, allocation of time, discrimination, earnings determination, occupational structure, labor unions, and public policy.

225. Labor Economics
(Formerly offered as ECON 274.) Either semester. Three credits. Prerequisite: ECON 112 or 102 or 113. Recommended preparation: ECON 218. Open to sophomores. Not open for credit to students who have passed ECON 274. Barth, Couch, Kimenyi
Economics of labor: human capital theory, discrimination, unemployment, manpower policy, and trade unions.

225W. Labor Economics
(Formerly offered as ECON 274W.)

226. Labor Legislation
(Formerly offered as ECON 276.) Second semester. Three credits. Prerequisite: ECON 112 or 102 or 113. Open to sophomores. Not open for credit to students who have passed ECON 276. Barth
Legal status of labor, unorganized and organized, in legislation and court decisions. Emphasis on the labor contract, bargaining procedures, and union and employer tactics. Also, legislation dealing with wages, hours, child labor, old-age benefits, and accident and unemployment compensation.

228. Transitional Economies of Russia and East Europe
(Formerly offered as ECON 244.) Either semester. Three credits. Prerequisite: ECON 111 and 112, or 102 or 113. Open to sophomores. Not open for credit to students who have passed ECON 244. Allen
Economic transition of these formerly socialist economies into capitalist, market economies. Comparison of centrally planned and market economies. Problems of macroeconomic imbalance, economic distortions, shortages and repressed inflation. Means and timing of price liberalization, privatization, restructuring, currency convertibility, and building legal and financial institutions.

230. Money and Banking
Either semester. Three credits. Prerequisite: ECON 111 and 112, or 102 or 113. (112 may be taken concurrently.) Open to sophomores. Ahking, Cunningham, Lott, Miller
The nature of money, the origins of monetary standards and systems, the development and operation of commercial banking, the Federal Reserve System, and international monetary agencies.

232. Government and Industry
(Formerly offered as ECON 264.) Second semester. Three credits. Prerequisite: ECON 112 or 102 or 113. Open to sophomores. Not open for credit to students who have passed ECON 264. Langlois, Minkler, Sacks
Relations between government and business. Public policies enforcing, supplementing, or replacing competition in particular markets, studies of selected industries and legal cases.

233. Economics of the Oceans
Either semester. Prerequisite: ECON 302 or 113. Recommended preparation for students who have completed ECON 112: ECON 111. Open to sophomores. Economics of industries that use and manage ocean resources. Applications of industrial organization, law and economics, natural resource theory, and environmental economics.

237. Special Problems in Money and Banking
(Formerly offered as ECON 231.) Second semester. Three credits. Prerequisites: ECON 230, and 219 or 219Q. Recommended preparation: One of: MATH 106Q, 113Q, 115Q, 118Q, or 120Q. Not open for credit to students who have passed ECON 231. Ahking
Emphasis on public policy: commercial bank regulations; the relation of liquidity to economic fluctuations; government lending agencies; and central bank policies and credit control.

242. International Trade
Either semester. Three credits. Prerequisite: ECON 218 or 218Q. Recommended preparation: ECON 111 or 102, or 113. Recommended preparation: One of: MATH 106Q, 113Q, 115Q, 118Q, or 120Q. Allen
Economic basis of international trade, trade policies, and international economic organizations.

242W. International Trade

243. International Finance
Either semester. Three credits. Prerequisites: ECON 219 or 219Q. Recommended preparation: ECON 112, or 102, or 113, and one of: MATH 106Q, 113Q, 115Q, 118Q, or 120Q. Allen
Economics of foreign exchange markets, the balance of payments, capital flows, and international monetary arrangements.

247. Economic Development
First semester. Three credits. Prerequisites: ECON 111, or 102, or 113 and 218 or 218Q. Recommended preparation: One of: MATH 106Q, 113Q, 115Q, 118Q, or 120Q. Randolph
Economics of problems facing developing nations: theories of development, and strategies and policies to promote economic development.

247W. Economic Development

253. Public Finance
Either semester. Three credits. Prerequisites: ECON 218 or 218Q. Recommended preparation: ECON 111, 102, or 113, and One of: MATH 106Q, 113Q, 118Q, or 120Q. Kimenyi, Miceli, Sacks, Segerson

258. Contemporary Problems in Economics
Either semester. Three credits. Prerequisites: ECON 218 and 219 (one of which may be taken concurrently). Recommended preparation: One of: MATH 106Q, 113Q, 115Q, 118Q, or 120Q. Wright
Current issues of government economic policy, primarily microeconomics: energy, income maintenance, labor markets for minorities and women, government regulation, health care, and others.

258W. Contemporary Problems in Economics

259. Urban and Regional Economics
(Also offered as URBN 259.) Second semester. Three credits. Prerequisite: ECON 218 or 218Q. Recommended preparation: ECON 111, 102 or 113 and One of: MATH 106Q, 113Q, 115Q, 118Q, or 120Q. Wright
Economic analysis of the health sector: organization and provision of health care delivery systems; economic behavior of patients and providers; markets for health services; health-care finance and insurance; health-care policy; and cost-benefit analysis of health-care programs.

259W. Urban and Regional Economics

261. Health Economics
Either semester. Three credits. Prerequisite: ECON 218 or 218Q. Recommended preparation: One of: MATH 106Q, 113Q, 115Q, 118Q, or 120Q. Wright
Economic analysis of the legal system: organization and provision of legal health care delivery systems; economic behavior of patients and providers; markets for legal services; legal system finance and insurance; legal-care policy; and cost-benefit analysis of legal-care programs.

267. Organization of Industry
First semester. Three credits. Prerequisite: ECON 218 or 218Q. Recommended preparation: One of: MATH 106Q, 113Q, 115Q, 118Q, or 120Q. Langlois, Minkler
The nature of competition and economic organization. Competitive effects of business practices, and their influence on price, production, and technological change.

268. Economics of the Law
Second semester. Three credits. Prerequisite: ECON 218 or 218Q. Recommended preparation: ECON 111, or 102 and 113 and MATH 106Q, 113Q, 115Q, 118Q, or 120Q. Miceli
The law as an economic instrument. Primary focus on the Common Law, property, tort, and contract. Applications to pollution control, land-use, hazardous wastes, product liability, and worker safety. Ethical as well as economic approaches to the law.

275. Theory of Labor Markets
Either semester. Three credits. Prerequisite: ECON 112 or 102 or 113. Recommended preparation: ECON 218 and one of: MATH 106Q, 113Q, 115Q, 118Q, or 120Q. Barth, Couch, Kimenyi
Theoretical analysis of labor markets: labor supply and demand; wage differentials; human capital; and the inflation-unemployment tradeoff.

286W. Seminar in Economics
Either semester. Three credits. Prerequisites: ECON 218 and 219, one may be concurrent. Recommended preparation: One of: MATH 106Q, 113Q, 115Q, 118Q.
or 120Q.

Special topics in micro- and macroeconomic theory, applications, and testing. Recommended for capable students who are motivated to develop and extend their knowledge of economics in creative ways. Required for University Scholars in Economics, Economics Scholars, and Candidates for a Degree with Distinction in Economics.

289W. Senior Thesis in Economics
Either semester. Three credits. Hours by arrangement. Open only with consent of instructor. Prerequisite: ECON 286W or consent of the Department Honors Advisor.

The student should define a general subject area for the thesis before choosing a thesis advisor and seeking consent at the time of registration. The student should then submit a written proposal for the senior thesis to the advisor by the end of the semester preceding enrollment for thesis credit.

293. Foreign Study
Either or both semesters. Credits and hours by arrangement. May be repeated for credit. Consent of Department Head required, prior to the student’s departure. May count toward the major with consent of the advisor.

Special topics taken in a foreign study program.

1294. Internship – Field Study
Either semester. Two credits. Hours by arrangement. Consent of instructor is required. Students must have: nine credits of 200-level economics courses (six of which may be concurrent). Students must be at least 6th-semester and have a minimum GPA of 2.25 or a minimum of 2.5 in 200-level economics courses. Students must secure a satisfactory interim position before the end of the second week of the semester enrolled in the course. They should begin consultation with the instructor several months in advance. Does not count toward the economic major. Must be taken concurrently with ECON 295; no credit will be given for one course without the other. Sazama

Supervised field work of six-eight hours per week, relevant to some area of economics, with a business firm, government agency or non-profit organization. Evaluation by the field supervisor and by the instructor (based on a detailed written report submitted by the student).

295. Internship – Research Paper
Either semester. One credit. Hours by arrangement. Consent of instructor required. Students must have nine credits of 200-level economic courses (six of which may be concurrent). Students must be at least 6th-semester and have a minimum GPA of 2.25 or a minimum of 2.5 in 200-level ECON courses. Must be taken concurrently with ECON 294; no credit will be given for one course without the other. Sazama

Research paper of 3,000-4,000 words on approved topic related to the internship field study.

297. Variable Topics
Either semester. Three credits. With a change in topic, may be repeated for credit. Prerequisites and recommended preparation vary.

298. Special Topics
Either semester. Credits and hours by arrangement. With a change in topic, this course may be repeated for credit. Prerequisites and recommended preparation vary.

299. Independent Study
Either or both semesters. Credits and hours by arrangement. Open only to seniors with consent of instructor. A student may receive credit for no more than 6 credits of ECON 299.

Tutorial course to enable qualified students to round out their training in economics. Independent reading conferences and short research papers.

Education (EGEN)

294. Seminar/Clinic: The Student as Learner
First semester. One credit. Prerequisite: Open only to students in the Integrated Bachelor’s/Master’s Teacher Preparation Program.

Integration of the concepts of learning, special needs, and technology with clinical experiences.

295. Seminar/Clinic: The Student in the School Context
Second semester. One credit. Prerequisite: EGEN 294. Open only to students in the Integrated Bachelor’s/Master’s Teacher Preparation Program.

Integration of concepts of linguistic diversity, social and community issues, and exceptionality with clinical experiences.

296. Seminar/Clinic: Method of Teaching
First semester. Three credits. Prerequisite: EGEN 295. Open only to students in the Integrated Bachelor’s/Master’s Teacher Preparation Program.

Integration of concepts of learning assessment and exceptionality with area specific methods.

296W. Seminar/Clinic: Methods of Teaching
Second semester. Three credits. Prerequisite: EGEN 296 and open only to students in the Integrated Bachelor’s/Master’s Teacher Preparation Program.

Analysis of instructional concepts and implementation in the clinical setting. Relationship of instruction to theory and implications for instructional evaluation are stressed.

298. Honors Seminar
Either semester. Three credits. Restrictions: Students must be accepted by the School of Education Honors Committee as candidates for Degrees with Distinction, Honors Scholars, or University Scholars. Can be repeated for credit.

299. Independent Study: Honors Thesis Preparation
Either semester. Three credits. Restrictions: Students must be accepted by the School of Education Honors Committee as candidates for Degrees with Distinction, Honors Scholars, or University Scholars. Can be repeated for credit.

Education Curriculum and Instruction (EDCI)

Head of Department: Professor Mary Anne Doyle
Department Office: Room 336, Gentry Building

For major requirements, see the School of Education section of this Catalog.

201. Introduction to Teaching
First semester. One credit. Prerequisite: Open only to students in the Integrated Bachelor’s/Master’s Teacher Preparation Program.

Introduction to the University of Connecticut’s Integrated Bachelor’s/Master’s Teacher Preparation Program. Includes the philosophical and theoretical foundations of the program, its structure and components, the nature and purposes of schooling, the relationship of the school and society, and recent educational reform movements, including the work of the Holmes Group and John Goodlad’s National Network for Educational Renewal, and the nature and purposes of “reflective practice” for the educational professional.

204. Introduction to Bilingual-Bicultural Education
Semester by arrangement. Three credits. Doyle, Leach, Minaya-Rowe, Reagan

This course deals with cultural-historical background and processes of establishment and implementation of bilingual-bicultural education program.

211. Curriculum and Teaching of Reading
Semester and hours by arrangement. Variable credits, not to exceed three. Prerequisite: EGEN 294 and EGEN 295 or consent of instructor. Doyle, Irwin, Meagher, M. Weinland

An introduction to the principles and practices of teaching reading in the elementary school. Field experience may be included.

212. Introduction to Outdoor Education
Semester and hours by arrangement. Three credits. Goodkind

An introduction to the elements and philosophy of outdoor education. The development of knowledge, understanding and appreciation of educational values inherent in the natural environment.

220. Teaching the Language Arts in the Elementary School
Second semester. Three credits. Prerequisite: Open only to Elementary Education and Elementary Special Education/Elementary Education students. Doyle, Irwin

A study of current theory and approaches to teaching the language arts effectively by connecting the teaching of speaking, listening, reading, and writing and by integrating this instruction with children’s literature and content learning. Field experiences may be included.

221. Teaching Reading and Writing in the Elementary School
First semester. Three credits. Prerequisite: Open only to Elementary Education and Elementary Special Education/Elementary Education students. Doyle, Irwin

An introduction to the teaching of reading and writing in the elementary school. Field experiences may be included.

222. Teaching Mathematics in the Elementary School
First semester. One credit. Prerequisite: Open only to Elementary Education and Elementary Special Education/Elementary Education students. DeFranco

A study of current approaches to teaching and learning school mathematics. Opportunities will be provided for participants to develop an awareness and knowledge of the Standards for Teaching School Mathematics.

223. Teaching Science in the Elementary School
First semester. One credit. Prerequisite: Open only to Elementary Education and Elementary Special Education/Elementary Education students. DeFranco

A study of curriculum materials, laboratory experiences and teaching techniques in science.
224. Teaching Social Studies in the Elementary School
First semester. One credit. Prerequisite: Open only to Elementary Education and Elementary Special Education/Elementary Education students.
A study of the organization of learning experiences and teaching methods emphasizing the social sciences as the foundation of the social studies.

231. Foundations of Education: Social Context of Schooling
Second semester. One credit. Prerequisite: Open only to students in the Integrated Bachelor’s/Master’s Teacher Preparation Program. Weibust
Social nature of schools: standards, values, socialization, social function of schooling.

232. Foundations of Education: Philosophical Tools for Teachers
Second semester. One credit. Prerequisite: Open only to students in the Music Education Teacher Preparation Program. Reagan
Philosophical trends in schooling, and applications of philosophy for prospective teachers.

258. Methods in Elementary School Music
Semester by arrangement. Three credits. Prerequisite: Satisfactory progress in applied music, and consent of instructor.

260. Methods of Foreign Language Instruction, Pre K-12
First semester. Three credits. Prerequisite: Open only to students in the Integrated Bachelor’s/Master’s Teacher Preparation Program. Munnepbach
Selection and organization of learning experiences, instructional activities and materials, and methods of teaching foreign language in pre K-12 settings. Course activities include a combination of lecture, seminar and clinical experiences in local schools.

262. Directed Observation and Participation
Credits by arrangement, not to exceed three. Open only with consent of instructor. This course may be taken for more than one semester.
This course gives prospective teachers an opportunity to see secondary and elementary school teachers and pupils in action, to discuss with supervisors and teachers problems related to work in designated fields, and to study school resources from the standpoint of good teaching.

265. General Teaching Methods
First semester. One credit. Prerequisite: Open only to students in the Integrated Bachelor’s/Master’s Teacher Preparation Program.
An introduction and overview of teaching roles and responsibilities. Topics include setting goals and objectives; planning lessons and units; teaching inductively, deductively and interactively; selecting appropriate instructional media; organizing time, space, materials and learners in groups of varying sizes; assigning homework, practice and review, and evaluation techniques.

266. Instruction and Curriculum in the Secondary School
Semester and hours by arrangement. Variable credit not to exceed 6. Prerequisite: Open only to students in the Integrated Bachelor’s/Master’s Teacher Preparation Program.
A study of the selection and organization of learning experiences, instructional materials and teaching methods. Course activities will include a combination of lecture, seminar, and clinical experiences in local schools.

272. The Teaching of Reading in Middle and High Schools
Semester and hours by arrangement. Variable credit. Prerequisite: Open only to students in the Integrated Bachelor’s/Master’s Teacher Preparation Program. Irwin
Methods of teaching reading to middle and high school students.

273. Teaching Reading and Writing in the Content Areas
Second semester. Two credits. Prerequisite: Open only to students in the Integrated Bachelor’s/Master’s Teacher Preparation Program. Mirza
A study of the role of reading and writing in the learning of the content areas taught in secondary schools.

276. Directed Student Teaching
Either semester. Credits and hours by arrangement. Prerequisite: Open only to students in the Integrated Bachelor’s/Master’s Teacher Preparation Program. Application, signed by the advisor, must be made to the Coordinator of Student Teaching for the fall semester prior to March 1; for the spring semester prior to October 1.
Student teaching in selected elementary schools. Provides opportunities for students to observe teaching, to develop teaching skills through practice, and to engage in other school activities for which secondary teachers are responsible.

277. Directed Student Teaching
Either semester. Credits and hours by arrangement. Prerequisite: Open only to students in the Integrated Bachelor’s/Master’s Teacher Preparation Program. Application, signed by the advisor, must be made to the Coordinator of Student Teaching for the fall semester prior to March 1; for the spring semester prior to October 1.
Class meetings providing orientation to student teaching followed by teaching in schools supervised by a member of the staff of the Curriculum and Instruction Department. It is the policy of the department to extend its practice-teaching opportunity to a point sufficient to indicate adequately a student’s teaching ability and aptitude.

278. Computer Literacy
Either semester. Variable credit, not to exceed three. Prerequisite: Admission to School of Education or consent of instructor.
This course will provide an Introduction to the nature, functioning and application of microcomputers. The major languages typically used with microcomputers will be surveyed.

286. Variable Topics
Either semester. Credits and hours by arrangement. Open only with consent of instructor. May be repeated for credit.

289. Independent Study for Undergraduates
Either semester. Credits and hours by arrangement. Prerequisite: Open only to juniors and seniors with appropriate background for the study of education. Students must present the instructor with a problem well laid out for investigation. May be repeated for credit with a change in content.
Designed primarily for qualified students who wish to extend their knowledge in some specialized area.

Education Kinesiology (EKIN)
Head of Department: Professor Carl M. Maresh
Department Office: Room 223, Sports Center
For major requirements, see the School of Education section of this Catalog.
All EKIN 200 level courses are open to EKIN majors only or by consent of instructor.

160. Courses in Lifetime Sports Program (Formerly offered as ESLE 160.) Either semester. One credit. Two 1-hour laboratory periods. Repeatable with change of activity or change of level of activity. Not to exceed 2 credits. Students majoring in Kinesiology may repeat five times for a total of six credits in six different topics.
A variety of lifetime sports and skills are offered. The teaching of each activity will be geared to individual, dual, and team sport activities.

161. Introduction to Athletic Injuries I
Fall semester. First seven weeks. One credit. Open to all students. Pre-athletic Training students enroll as sophomores. Mansell
A survey class to explore general considerations of recognizing and treating athletic injuries. This section covers training and conditioning, nutrition, environment, and legal issues.

162. Introduction to Athletic Injuries II
Fall semester. Second seven weeks. One credit. Open to all students. Pre-athletic Training students enroll as sophomores. Mansell
A survey class to explore general considerations of recognizing and treating athletic injuries. This section covers tissue healing, rehabilitation, modalities, taping, and bandaging.

163. Introduction to Athletic Injuries III
Spring semester. First seven weeks. One credit. Open to all students. Pre-athletic Training students enroll as sophomores. Mansell
A survey class to explore general considerations of recognizing and treating athletic injuries. This section covers the lower extremity.

164. Introduction to Athletic Injuries IV
Spring semester. Second seven weeks. One credit. Open to all students. Pre-athletic Training students enroll as sophomores. Mansell
A survey class to explore general considerations of recognizing and treating athletic injuries. This section covers the upper extremity, head, face, neck, abdomen, thorax, and spine.

201. The Camping Experience
(Formerly offered as ESLE 201.) Second semester. Three credits. Prerequisite: Open only to students in Kinesiology Programs. Morrone
A study of the various aspects of camping: the staff; camps; program; site and facilities; management, business and finance; support services; and marketing.

203. History, Trends, and Professional Orientation of Recreational Service
(Formerly offered as ESLE 203.) Second semester. Three credits. Prerequisite: Open only to students in Kinesiology Programs. Svedin
Historical background of the recreational service movement; the significance of recreational service in society; and professional opportunities in the field of recreational service.

204. Principles of Recreational Service
(Formerly offered as ESLE 204.) First semester. Three credits. Prerequisite: Open only to students in Kinesiology Programs. Servedio
205. Introduction to Therapeutic Recreational Service
(Formerly offered as ESLE 205.) First semester. Three credits. Prerequisite: Open only to students in Kinesiology Programs. Shovers
Recreational Rehabilitation for special populations. The practice of therapeutic recreational service for clients in treatment centers or communities.

227. Psychomotor Development Activities
(Formerly offered as ESLE 227.) First semester. Three credits. Open to sophomores.
Selection and implementation of physical activities, guided by motor skill development of children.

228. Motor Learning
(Formerly offered as ESLE 228.) First semester. Three credits. Prerequisite: Open only to students in Kinesiology Programs. Garrett
Learning of motor skills: practice, feedback, motor programs, transfer, memory, retention.

230. Nature and History of Sport
(Formerly offered as ESLE 230.) First semester. Three credits. Prerequisite: Open only to students in Kinesiology Programs. Hurwitz
Historical perspective of sport: ancient and modern Olympics, physical education, collegiate sports, participation by women.

234. Rehabilitation of Athletic Injuries
(Formerly offered as ESLE 234.) First semester. Three credits. Prerequisite: Open only to students in Athletic Training. Casa
The multi-dimensional approaches to rehabilitation of athletic injuries. The restoration of strength, range-of-motion, neuromuscular control, balance, cardiovascular endurance, and other components will be covered as it applies to specific athletic injuries.

236. Sport and Society
(Formerly offered as ESLE 236.) First semester. Three credits. Prerequisite: SOCI 107 or 107W, or SOCI 115 or 115W and open only to students in Kinesiology Programs. Yiannakis
Sport as an institution. Sociological issues involving gender, race, and intercollegiate, professional, and children’s sports.

236W. Sport and Society
(Formerly offered as ESLE 238.) Second semester. Three credits. Prerequisite: Open only to students in Kinesiology Programs. Tomporowski
Psychological perspectives of sport participation. Motivation, self-confidence, attentional focus, anxiety/ arousal levels.

239. Therapeutic Modalities for Athletic Training.
(Formerly offered as ESLE 239.) First semester. Three credits. Prerequisite: Open only to students in Athletic Training.
Methods and modalities to enhance athletic performance. Includes therapeutic and corrective techniques, ergogenic aids, and protective bracing.

241. Physiological Systems in Human Performance
(Formerly offered as ESLE 241.) First semester. Three credits. Prerequisite: PNB 264-265 and open only to students in Kinesiology Programs. Armstrong, Maresch, Van Heest
An organ systems approach to optimal human performance including metabolism, energy transfer, nerve transmission, muscle contraction, endocrine control, and cardiopulmonary physiology.

250. Clinical Instruction for Athletic Trainers I
First semester. Three credits. Prerequisite: Open only to students in Athletic Training.
Hands on instruction/demonstration/practice/ implementing of basic emergency procedures, training room procedures, and taping/bracing/wound care procedures. Also, the first of four practical field experiences.

251. Clinical Instruction for Athletic Trainers II
Second semester. Three credits. Prerequisite: Open only to students in Athletic Training.
Hands on instruction/demonstration/practice/ implementing of basic rehabilitation modalities and conditioning procedures. Also, the second of four practical field experiences.

252. Clinical Instruction for Athletic Trainers III
First semester. Three credits. Prerequisite: Open only to students in Athletic Training.
Hands on instruction/demonstration/practice/ implementing of basic evaluation and treatment procedures of specific body regions. Also, the third of four practical field experiences.

253W. Current Research in Athletic Training
Second semester, even years. Three credits. Prerequisite: Open only to students in Athletic Training. Casa
Acquaint students with the recent research in the field, the components of conducting and publishing research in the field, and preparation for research endeavors at the graduate level.

254. Athletic Training Administration
Second semester, even years. Three credits. Prerequisite: Open only to students in Athletic Training. Casa
Administrative/Management concerns for the athletic trainer. Insurance, budgeting, counseling, facility design, hiring, record keeping, and other issues will be covered.

256. Physical Activity and Health
(Formerly offered as ESLE 256.) First semester. One credit. Required of undergraduate students in the teacher preparation program leading to teacher certification.
Physical fitness concepts that relate to health.

257. Strength and Conditioning for Athletic Trainers
(Formerly offered as ESLE 257.) Second semester. Three credits. Prerequisite: Open only to students in Athletic Training. Casa
The focus of this class is the prevention of athletic injuries via the proper implementation of strength and conditioning principles. To include frequency, intensity, recovery, periodization, components of a fitness program, ergogenic aids, and protective bracing.

258. Mechanisms and Adaptations in Sport and Exercise
(Formerly offered as ESLE 258.) Second semester. Four credits. Prerequisite: PNB 264-265 and open only to students in Kinesiology Programs. Armstrong, Maresch, Van Heest
An applied approach to the physiological mechanisms and adaptations influencing sport and exercise: optimal nutrition, body composition, exercise training, ergogenic aids, aging, cardiovascular health, and environmental factors.

259. Fitness Management
(Formerly offered as ESLE 259.) Second semester. Three credits. Prerequisite: Open only to students in Kinesiology Programs. Van Heest
Health fitness programming; a management perspective.

259W. Fitness Management

260. Assessment of Athletic Injuries
(Formerly offered as ESLE 260.) Second semester. Three credits. Prerequisite: Open only to students in Athletic Training. Casa
Techniques and procedures that athletic trainers use to evaluate injuries to the extremities. Includes history, observation, palpation, special tests, manual muscle testing, blood flow, nerve function, and other injury specific skills.

261. Fitness Testing and Programming
(Formerly offered as ESLE 261.) First semester. Three credits. Prerequisite: Open only to students in Kinesiology Programs.
Physical fitness assessment and individualized fitness programs.

262. Directed Observation and Participation
(Formerly offered as ESLE 262.) Credits by arrangement. Prerequisite: Open only to students in Kinesiology Programs. May be taken more than one semester, but total credits cannot exceed three. Prior to registration, students must apply for Directed Observation and provide for their own transportation.
Mentors include educators, recreationists, athletic trainers, sport professionals.

263. Applied Anatomy and Kinesiology
(Formerly offered as ESLE 263.) Spring semester. Three credits. Prerequisite: Open only to students in Kinesiology Programs.
Human anatomy and its application to physical activity, exercise and sport. Van Heest

272. Sport Biomechanics
(Formerly offered as ESLE 272.) First semester. Three credits. Prerequisite: PHYS 1010 or 121Q, PNB 264-265 and open only to students in Kinesiology Programs. Garrett
Qualitative analysis of linear and angular motion, force and torque, momentum, energy, equilibrium, projectiles, aerodynamics.

273. Special Physical Education: Adapted, Corrective, Developmental
(Formerly offered as ESLE 273.) First semester. Four credits. Three class periods and laboratory/clinic periods by arrangement. Prerequisite: PNB 265 and open only to students in Kinesiology Programs. Castogno
Physical activity for persons with disabilities.

280. Recreational Services for the Mentally III
(Formerly offered as ESLE 280.) First semester. Three credits. Prerequisite: Open only to students in Kinesiology Programs. Shovers
Planning, implementation, programming, evaluation, and treatment team functions for clients, using systematic practice.

281. Introduction to Sport Marketing
(Formerly offered as ESLE 281.) Second semester. Three credits. Prerequisite: ECON 111, 112 and open only to students in Kinesiology Programs.
This course introduces the basic concepts, principles, and tools for sport marketing.

282. The Sociology of Leisure
(Formerly offered as ESLE 282.) Second semester. Three credits. Prerequisite: SOCI 107 or 107W or SOCI 115 or 115W and open only to students in Kinesiology Programs. Yiannakis
An examination of the functions of leisure (tourism) for society and the individual, with special
emphasize on life satisfaction, self actualization over the life course, gender issues, and societal constraints with regard to leisure satisfaction.

283. The Organization of Recreational Services
(Formerly offered as ESLE 283.) Second semester. Three credits. Prerequisite: Open only to students in Kinesiology Programs. Servedio
Programming activities in public and private agencies emphasizing personnel needs, facilities, marketing, and organization.

284. Introduction to Recreational Service Administration
(Formerly offered as ESLE 284.) First semester. Three credits. Prerequisite: Open only to students in Kinesiology Programs. Servedio
Management practices, legal issues, budgeting, and supervision.

285. Therapeutic Recreational Service for the Physically Disabled and the Neurologically Impaired
(Formerly offered as ESLE 285.) Second semester. Three credits. Prerequisite: Open only to students in Kinesiology Programs. Shivers
Adaptive programming for clients with permanent disabilities.

286. Issues in Sport
(Formerly offered as ESLE 286.) Either semester. Three credits. Prerequisite: Open only to students in Kinesiology Programs. Morrone
Contemporary issues in sport and physical education: leadership, communication, time management, future trends.

289. Leadership in Recreational Services
(Formerly offered as ESLE 289.) Second semester. Three credits. Prerequisite: Open only to students in Kinesiology Programs. Shivers
Group dynamics and interpersonal behavior theories with leadership techniques for field application.

289W. Leadership in Recreational Services

290. Internship
(Formerly offered as ESLE 290.) Either semester or summer. Variable credits. Prerequisite: In accordance with departmental policy, students will have completed all academic course work in their concentration excluding Sport Medicine/Athletic Training prior to undertaking the internship. May be repeated for credit. Open only to students in Kinesiology Programs.
Field service or experiences in cooperating agencies.

292. Emergency Procedures in Athletic Training
(Formerly offered as ESLE 292.) First semester. Three credits. Prerequisite: Open only to students in Athletic Training. Casa
Evaluation and treatment skills for athletic injuries to the head, face, neck, trunk, spine, thorax, and abdomen. Acute first-aid considerations in life-threatening situations will also be covered in-depth.

295. Introduction to Honors Research
Both semesters. Three credits. Prerequisite: Open only to Honors Students in Kinesiology Programs.
The student will meet with EKIN faculty members and attend laboratory/program staff meetings to survey the opportunities available for future Honors Thesis research.

296. Honors Literature Review
Both semesters. Three credits. Prerequisite: Open only to Honors Students in Kinesiology Programs.
The student will identify specific Honors Thesis research questions and will write a library research paper that will serve as the thesis Literature Review.

297W. Honors Thesis
Both semesters. Three credits. Prerequisite: Open only to Honors Students in Kinesiology Programs.
The student will collect and interpret data and will write the Honors Thesis, completing work begun during EKIN 296.

298. Variable Topics
(Formerly offered as ESLE 298.) Either semester. Credits and hours by arrangement. Open only with consent of instructor. May be repeated for credit with a change in content.

299. Independent Study for Undergraduates
(Formerly offered as ESLE 299.) Either semester. Open only to seniors with consent of the Department Head. May be repeated for credit with a change in content.
Laboratory or library research to expand understanding of a specialized topic in sport, leisure, or exercise sciences.

Educational Leadership (EDLR)

Head of Department: Associate Professor Patrick B. Mullarney

Department Office: Room 406, Gentry Building

For major requirements, see the School of Education section of this Catalog.

250. Experiential Learning and Education
First semester. Three credits.
Experiential learning, individual values, personality characteristics. Learning as a life-long process, adult transition research.

251. Introduction to Organizations and Human Resources Education
Either semester. Three credits.
Theories and principles of organizations and organizational behavior as they relate to human resources development in education.

252. Introduction to Management and Human Resources Education
Either semester. Three credits.
Issues and tasks of human resources management (HRM) in educational settings. Theory and practice.

253. Introduction to Planning and Evaluation and Human Resources Education
Either semester. Three credits.
Planning and evaluating human resources management subsystems in educational settings, staffing, organizational development, compensation and benefits, labor relations, communication, training and development, supervision and information systems.

254. Introduction to Budget Planning and Human Resources Education
Either semester. Three credits.
Comprehensive budgeting, profit planning and control applied to human resources development. Fiscal management problems, budget planning in educational programs.

255. Contemporary Labor Issues
Either semester. Three credits. May be repeated for credit, not to exceed 6 credits.

Labor issues in work organization, employees, and the labor movement. Patterns of jobs and career problems of labor organizations. Role of multi-national corporations in changing the job mix, collective bargaining.

256. College Freshmen: Their Characteristics and Their Adjustment to College Life
Second semester. Three credits. Prerequisite: Consent of instructor.
Personal and social characteristics of college freshmen; adjustment to college life. Techniques for successful transitions.

257. Student Organization Leadership
Three credits. Prerequisite: Consent of instructor.
Examination of leadership issues and development of skills in leading organizations. Experiential application to student’s current co-curricular involvement in UConn clubs and organizations.

258. Practicum: Black Experience in Education
Either semester. Not to exceed three credits. Hours by arrangement. Prerequisite: Consent of instructor.
Experiences, cooperatively arranged by the department, with an educational agency that addresses issues and problems of importance to Black people.

259. Variable Topics
Either semester. Credits and hours by arrangement. Open only with consent of instructor. May be repeated for credit with a change in content.

260. Independent Study for Undergraduates
Either semester. Credits and hours by arrangement. Prerequisite: Open only to students in Kinesiology Programs. Shivers
Adaptive programming for clients with permanent disabilities.

Educational Psychology (EPSY)

Head of Department: Professor Scott W. Brown
Department Office: Room 210, Gentry Building

For major requirements, see the School of Education section of this Catalog.

206. Introduction to Exceptionality
Either semester. Three credits. Prerequisite: PSYC 132. Roberts
This course considers the nature of exceptionalities as well as current policy and programs in the schools and community.

207. Exceptionality I
Second semester. One credit. Prerequisite: Open only to students in the Integrated Bachelor’s/Master’s Teacher Preparation Program. Karan
Characteristics of students with exceptionalities.

208. Exceptionality II
First semester. One credit. Prerequisite: Open only to students in the Integrated Bachelor’s/Master’s Teacher Preparation Program. Campbell
Educational programming for learners with special needs.

210. Collaborative Program Planning in Special Education
First semester. Three credits. Prerequisite: Open only to Elementary Special Education/Elementary Education students. Campbell, Karan, Norlander-Case, Roberts
Covers basic knowledge and skills related to collaboration with families, paraprofessionals, other teachers, and professionals from other disciplines, including specialized services for children with disabilities (E.G., Health, Assistive Technology, Related Services). Introduction to library and computer resources for school leaders.

212. Diagnosis, Assessment, and Program Planning
First semester. Three credits. Prerequisite: Open only to Elementary Special Education/Elementary Education students. Madaus, McGuire, Norlander-Case
Diagnosis of students with special needs, use of test data in planning instruction and report writing.

221. Educational Psychology
Either semester. Three credits. Prerequisite: PSYC 132. Brown, Kulkowich, Young
The psychology of learning and teaching, and the study of the nature and development of children and adolescents.

226. Field Study in Education
Semester by arrangement. Credits and hours by arrangement. Open only with consent of instructor.
Active study through visitation and participation in educational and/or rehabilitation environments. Participation in appropriate lectures and seminars is required. Students must be prepared to provide own transportation.

230. Peer Counseling
Either semester. Three credits. Prerequisite: Consent of instructor.
This course will focus on the development of those communication skills which are necessary for effective peer and paraprofessional counseling. Several theories of interpersonal communication, experiential learning and self-psychology will also be covered.

240. Technology in Education
Both semesters. One credit. Open to first year students in the teacher preparation program. Prerequisite: Open only to students in the Integrated Bachelor/ Master’s Teacher Preparation Program. Pannambekar, Young
The use of educational technology in the education profession. Emphasis is placed on computer technology, software evaluation and instructional devices.

250. Learning I
First semester. One credit. Prerequisite: PSYC 132 and open only to students in the Integrated Bachelor/ Master’s Teacher Preparation Program. Brown, Reis, Young
Theory and practices of learning.

251. Learning II
First semester. One credit. Prerequisite: Open only to students in the Integrated Bachelor/Master’s Teacher Preparation Program. Brown, Reis, Young
Theory and practices of learning.

252. Assessment of Learning I
First semester. One credit. Prerequisite: Open only to students in the Integrated Bachelor/Master’s Teacher Preparation Program. Archambault, Kulkowich, O’Connell
Theory and practices of the assessment of learning.

253. Assessment of Learning II
First semester. One credit. Prerequisite: Open only to students in the Integrated Bachelor/Master’s Teacher Preparation Program. Archambault, Kulkowich, O’Connell
Theory and practices of the assessment of learning.

262. Directed Observation and Participation
Credits by arrangement, not to exceed three. Open only with consent of instructor. Prior to registration, students must apply for Directed Observation. This course may be taken more than one semester. McGuire
This course gives prospective professionals the opportunity to observe Special Education Teachers and/or Rehabilitation Specialists working with the handicapped. Students must be prepared to provide own transportation.

277. Directed Student Teaching: Special Education
Either semester. Credits and hours by arrangement. Prerequisite: Open only to Elementary Education/Elementary Special Education students. Application must be made to the Coordinator of Student Teaching for the fall semester prior to March 1; for the spring semester prior to October 1. Abdulaziz, Campbell, Norlander
Practicum experience with mentally retarded, learning disabled and/or emotionally disturbed students.

289. Variable Topics
Either semester. Credits and hours by arrangement. Open only with consent of instructor. May be repeated for credit.

299. Independent Study for Undergraduates
Either semester. Credits and hours by arrangement. Prerequisite: Open only to juniors and seniors with appropriate background for the study of education. Students must present the instructor with a problem well laid out for investigation. May be repeated for credit with a change in content.
Designed primarily for qualified students who wish to extend their knowledge in some specialized area.

Electrical and Computer Engineering (ECE)

Head of Department: Professor A.F.M. Anwar
Department Office: Room 312, A.B. Bronwell Building (Engineering III)

For major requirements, see the School of Engineering section of this Catalog.

201. Fundamentals of Circuit Analysis
(Formerly offered as EE 201.) Either semester. Three credits. Three class periods and one discussion period. Prerequisite: MATH 211 and PHYS 152, both of which may be taken concurrently. Open to sophomores. This course and ECE 220 may not both be taken for credit.

202. Signals and Systems
(Formerly offered as EE 202.) Either semester. Three credits. Three class periods and one discussion period. Prerequisite: ECE 201 or ECE 220.
Representation of signals in the time and frequency domains. Fourier series. Fourier and Laplace transform methods for analysis of linear systems. Introduction to state space models. Introduction to sampling and discrete systems analysis via z transforms.

204. Electronic Devices and Circuits
(Formerly offered as EE 204.) Either semester. Three credits. Prerequisite: ECE 201. This course and ECE 239 may not both be taken for credit.
Physical electronics underlying the operation of modern solid-state devices. Diodes and diode circuits. The bipolar junction transistor and field-effect transistors. Models of transistors. Applications of transistors to integrated circuits such as operational amplifiers and logic gates.

205. Electromagnetic Fields and Waves
(Formerly offered as EE 205.) Either semester. Three credits. Prerequisite: PHYS 152 and MATH 210 and 211. Not open for credit to students who have received credit for ECE 206.
Application of electric and magnetic field theory to engineering problems involving conductors, dielectrics, semiconductors, magnetic materials, the motion of charged particles, and wave propagation. Relationship between fields and circuit parameters in the context of transmission lines and radiation.

209W. Electrical Circuit Design Laboratory
(Formerly offered as EE 209W.) Either semester. Two credits. One 2-hour laboratory period and one 1-hour discussion period. Prerequisite: ECE 201, which may be taken concurrently. Open to sophomores.

215. Digital Integrated Circuits
(Formerly offered as EE 215.) Semester by arrangement. Three credits. Prerequisite: ECE 204 and CSE 207.
Switching, timing, wave shaping, and logic circuits to generate waveforms and functions used in pulse systems, instrumentation and computers. Emphasis is on integrated circuits.

220. Electrical and Computer Engineering Principles
(Formerly offered as EE 220.) First semester. Three credits. Prerequisite: MATH 210 and 211, which may be taken concurrently, and PHYS 152. This course and ECE 201 may not both be taken for credit.
Basic concepts of circuit analysis as applied to electronic circuits and electromechanical devices, including measuring instruments.

228. Fiber Optics
(Formerly offered as EE 228.) First semester. Three credits. Prerequisite: ECE 205 or ECE 207 or PHYS 255.
Application of Maxwell’s equations and geometric optics first to two-dimensional dielectric waveguides and then to cylindrical fibers. Ray and mode theory, eigenvalues, Goo-Haenchen shift, Step-index, graded-index, and single-mode fibers. Splitters, couplers, sources, detectors and optical design. Fiber manufacturing techniques.

229. Fiber Optics Laboratory
(Formerly offered as EE 229.) Second semester. Three credits. One four-hour laboratory period. Prerequisite: ECE 228.
Hands-on design and measurement of fiber-optic applications. Fiber-optic communications and fiber-optic sensors. Structured experiments and design projects centered around available equipment.

230. Electrical Instrumentation
(Formerly offered as EE 230.) First semester. Three credits. Prerequisite: ECE 202, ECE 204 and CSE 207.
232. Systems Analysis
(Formerly offered as EE 232.) Either semester. Three credits. Prerequisite: ECE 202.

233. Basic Feedback Control Theory
(Formerly offered as EE 233.) First semester. Three credits. Prerequisite: ECE 232.

234. Digital Control Systems
(Formerly offered as EE 234.) Second semester. Three credits. Prerequisite: ECE 232.

240. Electronic Circuits and Applications
(Formerly offered as EE 240.) Second semester. Three credits. Prerequisite: ECE 204 and 232.
Analysis and design of linear amplifiers. The effects of feedback in tuned, video, and operational amplifiers. Noise, stability, and frequency compensation. Applications encompass active filters, oscillators, phase lock loops and nonlinear operations such as multiplication, modulation, sampling, and analog-to-digital conversion.

241. Communication Systems
(Formerly offered as EE 241.) First semester. Three credits. Prerequisite: ECE 202 and STAT 224Q or consent of instructor.

242. Digital Communications and Networks
(Formerly offered as EE 242.) Second semester. Three credits. Prerequisite: ECE 202 and STAT 224Q or consent of instructor.

245. Micro/Opto-electronic Devices
(Formerly offered as EE 245.) Second semester. Three credits. Prerequisite: ECE 204 or consent of instructor.
Principles and applications of contemporary solid state devices such as light-emitting diodes, injection lasers, solar cells, p-n-p-n diodes, SCR and Triacs, IMPATT diodes, Schottky devices, bipolar and MOS transistors, MESFETs and MODFETs, and fundamentals of integrated circuits.

246. Introduction to Dielectric and Magnetic Materials
(Formerly offered as EE 246.) Semester by arrangement. Three credits. Prerequisite: ECE 205 or ECE 206.

247. Introduction to Digital Signal Processing
(Formerly offered as EE 247.) Second semester. Three credits. Prerequisite: ECE 202.
Discrete-time signals and systems. The z-transform. Digital filters; stability, frequency response, canonical realizations and state equations. Fourier methods for discrete signal representation; Fourier transform of sequences, the discrete Fourier transform, and the FFT. Design of linear digital filters in time and frequency domains. Spectrum analysis and filtering via the FFT.

249. Very Large Scale Integrated Circuit (VLSI) Design and Simulation
(Formerly offered as EE 249.) First semester. Four credits. Two-hour lecture and three-hour laboratory period. Prerequisite: ECE 215 or consent of instructor, and ECE 245. Not open for credit to students who have passed ECE 248 or ECE 269.
Design of MOS transistors, including short channel effects in sub-micron devices; scaling laws; fabrication technologies. Layout of NMOS and CMOS logic gates; power-delay calculations. Design of static and/or dynamic memories. Laboratory emphasizes schematic capture, simulation, timing analysis; layout of custom IC’s; use of VHDL; scaling laws and design of 0.25 micro circuits.

252. Digital Systems Design
(Also offered as CSE 252.) (Formerly offered as EE 252.) Either semester. Three credits. Prerequisite: CSE 201 or 243.
Design and evaluation of control and data structures for digital systems. Hardware design languages are used to describe and design alternative register transfer level architectures and control units with a micro-programming emphasis. Consideration of computer architecture, memories, digital interfacing timing and synchronization, and microprocessor systems.

257. Numerical Methods in Scientific Computation
(Also offered as CSE 257.) (Formerly offered as EE 257.) Either semester. Three credits. Prerequisite: Either CSE 123C or 243 or consent of instructor.
Introduction to the numerical algorithms fundamental to scientific computation. Equation solving, function approximation, integration, difference and differential equations, special computer techniques. Emphasis is placed on efficient use of computers to optimize speed and accuracy in numerical computations. Extensive digital computer usage for algorithm verification.

261. Analog Electronics Design Laboratory
(Formerly offered as EE 261.) Either semester. Three credits. One class period and one 4-hour laboratory period. Prerequisite: CSE 208W, ECE 209W, ECE 202 and ECE 204, which may be taken concurrently or consent of instructor.
Introductory design laboratory. Use of personal computers to design and measure performance of analog electronic circuits and systems. Design with both integrated circuits and discrete components.

Design of active filters, effects of feedback, broadbanding, oscillator design, A/D and D/A conversion systems, and low-noise amplifier design.

262W. Electrical and Computer Engineering Laboratory B
(Formerly offered as EE 262W.) Either semester. Three credits. One 4-hour laboratory. Prerequisite: ECE 205 or ECE 207, and 262W.
Design and experimental evaluation of circuits and systems useful in communication, control, and other applications. Typical subject areas are: transmission lines, microcircuits, antennas, AM/FM transmitters and receivers, TV cameras and receivers, communication between computers, laser communication, fiber-optics, pulse-code modulation, acoustics, hearing, rotating machines, servomechanisms, and microprocessors.

263. Communications Systems Design Laboratory
(Formerly offered as EE 263.) Either semester. Three credits. Prerequisite: ECE 262 and consent of instructor. May be taken twice for credit.
Experimental design project undertaken by the student by special arrangement with a faculty member of the Department of Electrical and Computer Engineering.

266. Microprocessor Applications Laboratory
(Formerly offered as EE 266.) First semester. Three credits. One class period and one 4-hour laboratory. Prerequisite: ECE 262, and ECE 232 which may be taken concurrently.
Design of software and interface hardware to use a microcomputer as an on-line, real-time element in data acquisition, filtering and control systems. Use of clocks, DAC’s, ADC’s, speech synthesis modules, and movement generators. Design project. Written and oral presentations of laboratory results.

267. Systems Laboratory
(Formerly offered as EE 267.) Second semester. Three credits. One 4-hour laboratory period. Prerequisite: ECE 232 and ECE 262.
Real-time digital control and signal processing systems. Typical topics include liquid level control, velocity and position control, digital filters, image processing, and power control electronics. Written and oral presentations of laboratory results.

268. Micro/Opto-electronic Devices and Circuits Fabrication Laboratory
(Formerly offered as EE 268.) Second semester. Three credits. One class period, and one 4-hour laboratory period. Prerequisite: ECE 245, ECE 215 or consent of instructor.
Semiconductor wafer preparation and characterization including: determination of carrier concentration, mobility, and lifetime; oxidation, diffusion, metallization, mask layouts, and photolithographic techniques as employed in the realization of discrete devices (e.g., bipolar and MOS transistors, solar cells) and integrated circuits; design of basic IC components such as transistors, resistors, and capacitors; monolithic fabrication of single digital/analogue circuits. Design project. Written and oral presentations of laboratory results.
271. Physiological Control Systems
(Formerly offered as EE 271.) Semester by arrangement. Three credits. Prerequisite: ECE 232.
Analysis of human physiological control systems and regulators through the use of mathematical models. Identification and linearization of system components. System interactions, stability, noise, and the relationship of system malfunction to disease. The analysis and design of feedback systems to control physiological states through the automatic administration of drugs.

272. Introduction to Biomedical Engineering
(Also offered as BME 210.) (Formerly offered as EE 272.) First semester. Three credits. Prerequisite: BIOL 107. Co-requisite: PHYS 151Q and MATH 210Q. Open to sophomores.

280. Digital Design Laboratory
(Also offered as CSE 280.) (Formerly offered as EE 280.) Second semester. Three credits. Four hours of laboratory. Prerequisite: Either CSE 252 or consent of instructor.
Digital designing with PLA and FPGA, A/D and D/A conversion, floating point processing, ALU design, synchronous and asynchronous controllers, control path; bus master; bus slave; memory interface; I/O interface; logic circuits analysis, testing, and trouble shooting; PBC; design and manufacturing.

281. Digital Hardware Laboratory
(Also offered as CSE 261.) (Formerly offered as EE 281.) Second semester. Three credits. One 4-hour laboratory period. Prerequisite: CSE 201 or 243. Recommended preparation: CSE 252. Barker
Advanced combinational and sequential circuit design and implementation using random logic and microprocessor based system. Hardware and software interface to the basic system. Serial communication, user program loading and execution. Microcontrollers – familiarization and inclusion in design.

290. Computer and Electrical Engineering Design I
(Also offered as CSE 290.) (Formerly offered as EE 290 and EE 297.) Either semester. Two credits. Prerequisite: This course is taken by seniors in the semester before ECE 291.
Discussion of the design process; project statement, specifications, project planning, scheduling and division of responsibility; ethics in engineering design, safety, environmental considerations, economic constraints, liability, manufacturing, and marketing. Projects are carried out using a team-based approach. Selection and analysis of design project to be undertaken in CSE/EE 291 is carried out. Written progress reports, a proposal, an interim project report, a final report, and oral presentations are required.

291. Computer and Electrical Engineering Design II
(Also offered as CSE 291.) (Formerly offered as EE 291 and EE 270.) Either semester. Three credits. Prerequisite: CSE/ECE 290. Hours to be arranged.
Design of a device, circuit, system, process, or algorithm. Team solution to an engineering design problem as formulated in CSE/EE 290, from first concepts through evaluation and documentation. Written progress reports, a final report, and oral presentation are required.

292. Information Processing Systems Laboratory
Second semester. Three credits. Prerequisite: ECE 262P.
Laboratory experiments in signal processing, real-time digital filters, image processing, imaging systems, data acquisition using detectors, pattern recognition, communication receivers, and system performance evaluation. Emphasis is on real-time information processing systems with interface between sensors and computer/processors. Applications of analog and digital techniques to design, implementation and testing of real-time information processing systems.

295. Special Topics in Electrical and Computer Engineering
(Formerly offered as EE 295.) Semester by arrangement. Credits by arrangement. Prerequisite: Announced separately for each course. With a change in content, this course may be repeated for credit.
Classroom and/or laboratory course in special topics as announced in advance for each semester.

299. Independent Study in Electrical and Computer Engineering
(Formerly offered as EE 299.) Semester by arrangement. Credits by arrangement. Prerequisite: Consent of instructor. With a change in content, this course may be repeated for credit.
Individual exploration of special topics as arranged by the student with course instructor.

Engineering (ENGR)

Dean: Amir Faghi
Assistant Dean for Undergraduate Education: M.E. Wood
Office: Room 304, EII Castleman Building
Director of Undergraduate Advising: David Jordan
Office: Room 326, EII Castleman Building

1100. Orientation to Engineering
First semester. One credit. Fifteen class periods of lecture, and eight seminar and discussion periods. Not open for credit to upper division students in the School of Engineering. Not open for credit to students who have passed ENGR 150.
A series of orientation lectures on the many fields of engineering, followed by a series of seminars and discussions in engineering discipline-specific sections on engineering topics.

150C. Introduction to Engineering I
Either semester. Three credits. Two lecture periods and one 2-hour discussion period. Not open for credit to upper division students in the School of Engineering. Not open for credit for students who have passed ENGR 100 or 166.
Introduction to engineering and the engineering profession. Topics include: problem solving, design projects, group work, oral and written reports, Fortran computer programming, and engineering graphics.

151. Introduction to Engineering II
Either semester. Three credits. Two lecture periods and one 2-hour discussion period. Prerequisite: ENGR 150C or CSE 110C, and MATH 110Q or 113Q or 115Q, which may be taken concurrently. Not open for credit to upper division students in the School of Engineering. Not open for credit for students who have passed ENGR 100 or 166.

† Students taking this course will be assigned a final grade of S (satisfactory) or U (unsatisfactory).
#112W. Classical and Medieval Western Literature
(Formerly offered as ENGL 114 at the regional campuses.) Prerequisite: ENGL 110 or 111 or both 105 and 109; the latter may be taken concurrently.

113. Renaissance and Modern Western Literature
Second semester. Three credits. Prerequisite: ENGL 105 or 110 or 111. Not open for credit to students who have passed ENGL 115 at the regional campuses. Literature in the European tradition from the Renaissance through the modern periods.

#113W. Renaissance and Modern Western Literature
(Formerly offered as ENGL 115 at the regional campuses.) Prerequisite: ENGL 110 or 111 or both 105 and 109; the latter may be taken concurrently.

120. Major Works of Eastern Literature
Either semester. Three credits. Prerequisite: ENGL 105 or 110 or 111.

127. Major Works of English and American Literature
Either semester. Three credits. Prerequisite: ENGL 105 or 110 or 111.

127W. Major Works of English and American Literature
(Formerly offered as ENGL 128 at the regional campuses.) Prerequisite: ENGL 110 or 111 or both 105 and 109; the latter may be taken concurrently.

146. Creative Writing I
Either semester. Three credits. Prerequisite: ENGL 105 or 110 or 111.

First course in creative expression in fiction, poetry, and other forms.

193. Foreign Study
Either or both semesters. Credits and hours by arrangement. May be repeated for credit. Consent of Department Head or advisor may be required prior to the student’s departure. Special topics taken in a foreign study program.

200. Children’s Literature
Either semester. Three credits.

The best literature available to children, including works by major writers and forms such as fable, folk tale, fairy tale, nursery rhyme, and short story.

201. Literature for High School Students
Either semester. Three credits. Designed primarily for English education majors. May not be used to meet the English major requirement. An introduction to the guidance of high school reading in literature.

204. Milton
Either semester. Three credits.

The lyric, epic and dramatic poetry of Milton, with some consideration of his prose writing.

205. British Literature I
Either semester. Three credits. Open to sophomores. Prerequisite: ENGL 105 and 109, or either 110 or 111. British literature, medieval through 18th century. Intended to provide preparation for more advanced courses in British literature. This course is strongly recommended for English majors.

206. British Literature II
Either semester. Three credits. Open to sophomores. Prerequisite: ENGL 105 and 109, or either 110 or 111. British literature, 19th to 20th centuries. Intended to provide preparation for more advanced courses in British literature. This course is strongly recommended for English majors.

209W. Advanced Composition for Prospective Teachers
Either semester. Three credits. Open to sophomores. Designed primarily for English education majors. May not be used to meet the English major requirement. Advanced training in composition, with consideration of the problem of teaching writing.

210. Poetry
Either semester. Three credits. Open to sophomores.

A study of the techniques and conventions of the chief forms and traditions of poetry in English.

211. Modern Poetry in English
Either semester. Three credits.

Poetry of the 20th century, from the major modernist innovators to significant contemporaries.

212. The Modern Novel

216. The Short Story
Either semester. Three credits. Open to sophomores.

The short story as a literary form with study of significant Continental, British, and American writers.

217. Studies in Literature and Culture
Either semester. Three credits. May be repeated for credit with a change in topic. Open to sophomores. An examination of social and cultural aspects of printed literature and of its relationship to other media. Contents will vary by section.

218. Literature and Culture of the Third World
Either semester. Three credits. May be repeated for credit with a change in topic. Open to sophomores. The literature of regions outside North America and Europe. Contents of the course will vary according to regional focus.

219. Drama
Either semester. Three credits. Open to sophomores.

An introduction to the chief forms and traditions of dramatic literature through the study of a broad range of major works.

220. Medieval English Literature
Either semester. Three credits. Open to sophomores. Readings in the literature of the English Middle Ages — lyrics, narratives, dramas, and didactic forms.

220W. Medieval English Literature

221. Renaissance English Literature
Either semester. Three credits. Open to sophomores. Writers studied include More, Spenser, Shakespeare, Donne, Jonson, and Milton.

221W. Renaissance English Literature

222. Restoration and 18th-Century English Literature
Either semester. Three credits. Open to sophomores. Includes such writers as Dryden, Pope, Swift, Johnson, Burney, and Austen.

222W. Restoration and 18th-Century English Literature

223. Romantic and Victorian English Literature
Either semester. Three credits. Open to sophomores. Includes such writers as Austen, Wordsworth,
Readings in Old English, Middle English, and Early Modern with a survey of the main developments in the language since Anglo-Saxon times.

246. Creative Writing II
Either semester. Three credits. Open only with consent of instructor. May be repeated for credit with a change in topic.

For student writers of proved ability who wish training in techniques of fiction or verse. Emphasis on poetry.

247. Writing Workshop
Either semester. Three credits. Open only with consent of instructor or Department Head. May be repeated for credit with a change in topic.

For student writers of proved ability who wish training in techniques of fiction or verse. Emphasis on prose fiction.

248W. Writing Tutorial
Either semester. Three credits. Hours by arrangement.

This course may be taken only in conjunction with specially designated sections of English courses numbered 200 or above and may be repeated once for credit in conjunction with a different course.

Intensive supervised practice in writing about literature.

249S. Advanced Expository Writing
Either semester. Three credits. Three class periods.

Writing on topics related, usually, to students' individual interests and needs.

249W. Advanced Expository Writing
Honors Course Sequence
The Honors course sequence, ENGL 250 through ENGL 258, is recommended for students in the Honors Program but is also open to other qualified students.

Most courses are weekly seminars on major writers and topics relating to intellectual and cultural backgrounds of English and American literature.

250. Honors I: Approaches to Literature
First semester. Three credits. Hours by arrangement. Open only with consent of instructor. May be repeated to satisfy the ENGL 110 or 111 requirement. Not open for credit to students who have passed ENGL 109 or 110 or 111. May not be used to meet the English major requirements.

Study of a variety of approaches to literature and of their critical assumptions.

251W. Honors II: American Literature
Second semester. Three credits. Hours by arrangement. Open only with consent of instructor.

Early writers and Romantics through Twain and James.

252W. Honors III: American Literature
First semester. Three credits. Hours by arrangement. Open only with consent of instructor.

Realism, naturalism, modern American authors.

253W. Honors IV: English Literature
First semester, alternate years. Three credits. Open only with consent of instructor. Hours by arrangement.

Medieval through Jacobean literature.

254W. Honors V: English Literature
First semester, alternate years. Three credits. Hours by arrangement. Open only with consent of instructor. Seventeenth and eighteenth century to Romantics.

255W. Honors VI: English Literature
Second semester, alternate years. Three credits. Hours by arrangement. Open only with consent of instructor. Nineteenth century literature.

256W. Honors VII: English Literature
Second semester, alternate years. Three credits. Hours by arrangement. Open only with consent of instructor. Twentieth century literature.

258. Honors VIII: Honors Thesis
Either semester. Credits and hours by arrangement. Open only with consent of instructor. All Honors students writing an Honors Thesis must register for this course in their last semester after consultation with the director of their thesis and the English department advisor to Honors Students, who is the instructor of record.

264. Studies in Individual Writers
Either semester. Three credits.

Concentrated study in one or two authors writing in English. May be repeated for credit with a change in topic.

266. Studies in Criticism
Either semester. Three credits.

Studies in the history and theories of literary criticism.

267. Studies in Literature
Either semester. Three credits. May be repeated for credit with a change in topic.

Intensive study of various limited topics, such as a particular literary theme, form, or movement, to be announced from semester to semester.

268W. Seminars in Literature
Either semester. Three credits. May be repeated for credit with a change in topic.

Advanced exploration of various limited topics, such as a particular literary theme, form, or movement, to be announced from semester to semester. Small classes with an emphasis on writing.

270. American Literature to 1880
Either semester. Three credits. Open to sophomores.

American literature from the beginnings: Poe, Emerson, Thoreau, Hawthorne, Melville, Whitman, Douglass, Stowe, Dickinson, Twain, and others.

270W. American Literature to 1880
First semester. Three credits. Open to sophomores.

Modern and contemporary American literature: James, Wharton, Dreiser, Cather, Frost, Hemingway, Fitzgerald, Faulkner, Morrison, and others.

271W. American Literature Since 1880
Either semester. Three credits. Open to sophomores.

Modern and contemporary American literature: James, Wharton, Dreiser, Cather, Frost, Hemingway, Fitzgerald, Faulkner, Morrison, and others.

272. Native American Literature
Either semester. Three credits. Open to sophomores.

Tilmon, Makowski
Examination of the literatures of pre-contact, post-contact, and contemporary indigenous American cultures.

274. Asian Literature
(Also offered as AASI 274.) Either semester. Three credits. Open to sophomores. Chow
Literature, theatre, film about Asian American communities and culture in the United States from the mid-nineteenth century to the present.

276W. Black American Writers I
First semester. Three credits.

Critical and historical examination of the literature of black American writers from Phyllis Wheatley to the present.

277W. Black American Writers II
Second semester. Three credits.

Extensive readings in the works of four or five contemporary black American writers.
285. Women in Literature Before 1900
First semester. Three credits.
Analysis of the representation of women in a variety of works from different countries.

286. Women in Twentieth-Century Literature
First semester. Three credits.
Analysis of the representation of women in a variety of works from different countries.

289. Independent Study
Either semester. Credits and hours by arrangement. Open only with consent of instructor and approval of either the department head, or the department undergraduate coordinator. May be repeated for credit with a change of topic.
Supervised reading and writing on a subject of special interest to the student. (Recommended for distinction candidates in English.)

Environmental Engineering (ENVE)

Program Coordinator: Nikolaos P. Nikolaidis
Office: Room 315, F.L. Castleman Building

10. The Environmental Debate I
Second semester. One credit. May be repeated for credit (maximum of 3 credits). Open only with consent of instructor.
Structured review of environmental issues and active debate during class time. Presentation of current environmental issues by environmental professionals and experts.

110. The Environmental Debate II
Second semester. One credit. May be repeated for credit (maximum of 3 credits).
Structured review of environmental issues and active debate during class time. Presentation of current environmental issues by environmental professionals and experts.

251. Civil Engineering Systems (Also offered as CE 251.) First semester. Three credits. Open to sophomores. Anagnostou, Garrison
Application of statistical principles to the analysis of problems. Topics covered include normal, poisson, and binomial distributions, chi square, comparison of means and variances, least square and regression analysis.

260. Water Quality Engineering (Also offered as CE 260.) Second semester. Three credits.
Prerequisites: CE 263 and 297. Aboud, Hoag, Smets
Physical, chemical, and biological principles for the treatment of aqueous phase contaminants; reactor dynamics and kinetics. Design projects.

262. Environmental Engineering Laboratory (Also offered as CE 262.) Second semester. Three credits. Two class periods and one 3-hour laboratory period.
Prerequisites: CE 263 and 297 or CHEG 223 (which may be taken concurrently). Aboud, Smets
Aqueous analytical chemical techniques, absorption, coagulation/flocculation, fluidization, gas stripping, biokinetics, interpretation of analytical results, bench-scale design projects, written and oral reports.

262P. Environmental Engineering Laboratory (Also offered as CE 262P.) Must be taken with another P course in Environmental Engineering to equal one W course.

263. Environmental Engineering Fundamentals
(Also offered as CE 263.) First semester. Three credits.
Prerequisites: CHEM 120 or 130 and MATH 211 (which may be taken concurrently). Open to sophomores. Hoag, MacKay, Nikolaidis, Smets

265. Hydraulic Engineering (Also offered as CE 265.) Second semester. Three credits.
Prerequisites: CE 297 or CHEG 223 and CHEG 224. Anagnostou, Nikolaidis, Ogden
Design and analysis of water and wastewater transport systems, including pipelines, pumps, pipe networks, and open channel flow. Introduction to hydraulic structures and porous media hydraulics. Computer applications.

266. Hydraulic Engineering Laboratory (Also offered as CE 266.) Second semester. Two credits.
One class period. One 2-hour laboratory. Prerequisite: CE 297.

267. Engineering Hydrology (Also offered as CE 267.) First semester. Three credits.
Prerequisites: CE 297 or CHEG 223 and CHEG 224. Anagnostou, Nikolaidis, Ogden

268. Limnology (Also offered as CE 268 and as EEB 247.) First semester. Three credits.
Prerequisites: MATH 109 or 112 or 115 and an introductory course in CHEM (CHEM 122, 127, or 129); an introductory course in Biology is recommended.
Physical, chemical, and biotic interrelationships of freshwater habitats.

Prerequisites: CHEM 128 or 130, MATH 211 or consent of instructor. MacKay, Nikolaidis
Quantitative variables governing chemical behavior in environmental systems. Thermodynamics and kinetics of acid/base, coordination, precipitation/dissolution, and redox reactions. Organic chemistry nomenclature.

279. Environmental Modeling (Also offered as CE 279.) Second semester. Three credits.
Prerequisite: CE 263 and CHEG 223 or CE 297 or consent of instructor. Nikolaidis
Systematic approach for analyzing contamination problems. Systems theory and modeling will be used to assess the predominant processes that control the fate and mobility of pollutants in the environment. Assessments of lake eutrophication, conventional pollutants in rivers and estuaries and toxic chemicals in groundwater.

280. Introduction to Environmental Rate Processes (Also offered as CHEG 280.) First semester. Three credits. Recommended preparation: CHEM 128.
Application of thermodynamics, chemical kinetics and transfer operations to environmental problems; water pollution control. Open only to students not majoring in chemical engineering.

281. Introduction to Water Pollution (Also offered as CHEG 281.) Second semester. Three credits. Recommended preparation: CHEG 224.
Water purification and water quality control; aeration and mass transfer, biological mechanisms and kinetics; design of biological reactors and sludge treatment facilities; design and operation of physical purification methods; alternative processes for industrial wastewater treatment.

283. Introduction to Biochemical Engineering
(Also offered as BME 221 and as CHEG 273.) Second semester. Three credits. Recommended preparation: CHEG 224 and 251. Wood
Enzyme and fermentation technology; microbiology, biochemistry, and cellular concepts; biomass production; equipment design, operation, and specification; design of biological reactors; separation processes for bio-products.

285. Introduction to Air Pollution
(Also offered as CHEG 285.) Second semester. Three credits. Recommended preparation: CHEG 211 or ME 233 or ME 238. Heible
Gaseous pollutants and their properties; basic analytical techniques for air pollutants; particulate pollutants and their properties; equipment design for removal of gaseous and particulate materials; economic and environmental impact of air pollutants; federal and state regulations.

290. Environmental Engineering Design I
First semester. Three credits. To be taken during the senior year.
Basic aspects of environmental engineering design from data acquisition through preliminary design, cost estimating and final specifications. Report writing will be an integral part of the course.

291. Environmental Engineering Design II
Second semester. Three credits. Prerequisite: ENVE 290. To be taken during the senior year.
Implementations of protocols and techniques covered in Course I to a specific environmental scenario. Instructors will supply initial conditions and performance expectations. Reporting writing will be an integral part of the course.

295. Special Topics in Environmental Engineering
Semester. Credits, and by arrangement as announced. Prerequisite and or consent: Announced separately for each course. Course may be repeated for credit. Classroom or laboratory course on specific topics as announced.

296. Thesis
Either semester. Three credits. Prerequisite: Consent of instructor.
Designed to extend student knowledge in a specialized area of environmental engineering and introduction to research.

299. Independent Study
Either or both semesters. Credits by arrangement, not to exceed six in any semester. Open only with consent of instructor.
Individual study of special topics in law as mutually arranged between student and instructor.

European Studies (ES)

Program Advisor for Center for European Studies: Ludmilla Burns
Office: Room 5, Human Development Center

293. Foreign Study
Either or both semesters. Credits and hours by arrangement. May be repeated for credit. Consent of Director required, normally to be granted prior to the student’s departure. With a change in content, may be repeated for credit.

295. Special Topics in European Studies
Either or both semesters. Three credits. With a change in topic, may be repeated for credit.
Intensive study of specialized topics related to Europe, not ordinarily covered in the undergraduate curriculum; normally one-time offerings taught by distinguished visiting scholars and/or jointly appointed faculty.

298. Variable Topics
Either or both semesters. Credits to a maximum of three.
Intensive study of specialized topics relating to Europe not ordinarily covered in the curriculum. With change in topic, may be repeated for credit.

299. Independent Study
Either semester. Credits and hours by arrangement. Requires independent study Authorization Form from European Studies faculty.
For thesis preparation or other intensive research project relating to Europe. May be repeated for credit. Sponsored by the Center for European Studies.

Finance (FNCE)

Head of Department: Professor Thomas J. O’Brien
Department Office: Room 402, School of Business Administration

For major requirements, see the School of Business Administration section of this Catalog.
Courses in the department are open to juniors and seniors only with the exception of FNCE 198.

198. Contemporary Issues in Finance
Semester by arrangement. One credit. May be repeated for credit in different sections in combination with FNCE 298.

203. Applications in Financial Management
First and/or second semester. Three credits. Prerequisite: FNCE 201.

205. Global Financial Management
Either semester. Three credits. Prerequisite: FNCE 201.
Focuses on the detailed study of: (1) exchange rate determination, (2) operation of the foreign currency and global capital markets, and (3) hedging both transaction and economic exposure to exchange rate changes.

206. Financial Services
First and/or second semester. Three credits. Prerequisite: FNCE 201.
Study of the role of financial services companies in the money and capital markets, funds acquisitions, investment and credit extension.

206P. Financial Services
Must be taken with FNCE 203P to equal one W requirement.

217. Economics for Global Business Decisions
First and/or second semester. Three credits. Prerequisite: FNCE 201 (may be taken concurrently).
Impact of globalization of the world economy on business and financial decisions. Trade, balance of payments, tariff policies, international economic institutions, exchange rates, capital flows.

221. Risk Management and Insurance
Either semester. Three credits.
A study of the concept of risk and its treatment by insurance. It covers why the individual or corporation purchases insurance, what constitutes an intelligent insurance plan and what products are available in the insurance marketplace.

223. Health Insurance
Second semester. Three credits. Prerequisite: FNCE 221 or permission of instructor.
This course will provide a detailed overview of health insurance from the perspective of insurance company owners, employers, and individual consumers of health insurance services. Emphasis is given to individual and group health insurance product management and to the relationship between product characteristics and insurance company investments, financing, and marketing decisions. Managed care techniques, benefit package design and cost sharing mechanisms are assessed in the context of resolving incentive conflicts and meeting cost-containment objectives. Evaluation of insurance company financial strength and the impact of regulation on company management and behavior are considered in detail.

224. Social Insurance
Second semester. Three credits.
An examination of causes, effects and proposed remedies for financial insecurity resulting from occupational injuries, unemployment, old age and premature death, and general illness. Emphasis is placed on the role of the government in dealing with these economic problems.
225. Life Insurance and Retirement Security
First semester. Three credits. Prerequisite: FNCE 221 or permission of instructor.
Focuses on the basic principles underlying life insurance, annuities, and other methods of saving for financial security. Emphasis is given to the following general topics—the need for life insurance and annuities, individual retirement planning, employer provided group insurance and pensions, types of life insurance and annuity contracts, deferred compensation plans, the mathematics of life insurance, company operations, regulation, settlement options and life insurance programming.

228. Risk Management: Property and Liability Exposures
First semester. Three credits. Prerequisite: FNCE 221.
This course critically examines the risk management process introduced in FNCE 221. Emphasis is on the identification and treatment of pure loss exposures faced by commercial and institutional entities. Available risk management treatment techniques are identified and discussed. Analysis of applicable commercial property and liability insurance coverages is stressed.

228W. Risk Management: Property and Liability Exposures
Open only to juniors and seniors with consent of instructor.
Either or both semesters. Credits by arrangement. May be repeated for credit. Consent of Department Head required, prior to the student’s departure.

230. Real Estate Principles
Either semester. Three credits.
Overview of the personal, social and business aspects of real estate. Emphasis on home purchase decisions, location analysis, market characteristics and investment decision-making.

232. Real Estate Investments
First or second semester. Three credits. Prerequisite: FNCE 201 (may be taken concurrently). Risk-return analysis for alternate types of real estate investments. Techniques and applications of investment decision-making and value estimation. Lease analysis, cash flow, forecasting, appraisal techniques, discounted cash flow modeling, portfolio management, and equity securitization including real estate investment trusts.

232W. Real Estate Investments
Open only to Finance Department Honors Students with consent of instructor and Department Head.
Either or both semesters. Credits and hours by arrangement. May be repeated for credit. Consent of Department Head required, prior to the student’s departure.

233. Real Estate Finance
First or second semester. Three credits. Prerequisite: FNCE 201 (may be taken concurrently). Investment characteristics of mortgages and the structure and operation of mortgage markets—both primary and secondary, including the role of securitization. Risk and return characteristics of various mortgage instruments, both residential and commercial, are analyzed from the perspective of both the borrower and lender. Tools for measuring and managing the risks of portfolios of mortgages and mortgage-backed securities are introduced.

234. GIS Applications and Use of the Internet in Real Estate Markets
First or second semester. Three credits.
How does a business decide where to relocate? Specialized Geographic Information Systems (GIS) are now used to make retail, office, and industrial location decisions. The Internet opens new sources of timely information. This gives decision-makers unprecedented power to manage data and analyze risks. Students gain hands-on experience with GIS and Internet through projects organized around real estate problems.

238. Field Study Internship
Summer session. One to three credits. Hours by arrangement. Prerequisite: Students enrolled in the Real Estate Intern program must have earned a “C” or better in Finance 230. For all others, completion of Finance 201 and at least one other finance course related to the internship area, with a grade of “C” or better in each course. Consent of instructor and Department Head prior to beginning the internship;

239. Senior Thesis in Finance
Either semester. Three credits. Hours by arrangement. Open only to Finance Department Honors Students with consent of instructor and Department Head.

296W. Senior Thesis in Finance
Either semester. Three credits. Hours by arrangement. Open only to Finance Department Honors Students with consent of instructor and Department Head.

296W. Independent Study
Either or both semesters. Credits by arrangement. May be repeated for credit. Consent of Department Head required, prior to the student’s departure.

296W. Foreign Study
Head of Department: Professor David K. Herberger
Department Office: Room 228, J.H. Arjona Building
Consult the Modern and Classical Languages Department listing in this Catalog for requirements for Majors in French.
Consult the Departmental Handbook for courses offered and further description of these courses.

161-162. Elementary French I and II
Both semesters. Four credits each semester. Four class periods and a one-hour laboratory period. The fourth class period is devoted to culture and society and reinforces through these areas the linguistic skills taught in the preceding classes. Not open to credit to students who have had three or more years of high school French, except with Departmental consent.

Elementary French grammar. Emphasis is on the skills of speaking, oral and written comprehension, reading of simple texts and writing.

163-164. Intermediate French I and II
Both semesters. Four credits each semester. Four class periods and a one-hour laboratory period. The fourth class period is devoted to culture and society. Prerequisite: FREN 162 or 173 or two years of high school French.

165-166. French for Reading Knowledge
Either semester. Three credits per course. Open only to seniors and graduate students. Not open for credit to undergraduates who have had FREN 161-162 or 172-173. May not be used to meet the undergraduate foreign language requirement or as a prerequisite for other French courses.
Basic French grammar and intensive practice in reading expository prose in a variety of subjects, for use as a research tool and in preparation for the Ph.D. reading examination.

169. Studies in the French-Speaking World
Either semester. Three credits. Conducted in English.
Recent trends in French life. Selected materials to acquaint students with the French contribution to the changing face of modernity. Weekly topics include: popular culture, women in France, cultural myths, the Francophone world, regionalism, decolonization and racism, etc.

171. French Cinema
Either semester. Three credits. One 3-hour class period. Readings, viewings and lectures in English. May not be used to meet the foreign language requirement.
Weekly screenings of French films from the first comedies and surrealism to the New Wave and the young filmmakers of the 1990’s. Introduction to film history, analysis, and interpretation of films.

172 through 175. Intensive French I-IV
Both semesters. Eight credits each semester. Two hours a day, four days a week, plus a 2-hour laboratory practice. Open only with consent of instructor.
Intensive coverage of two years in two semesters.
French 172-173 (fall) covers the same material as 161-162; French 174-175 (spring) covers the same material as 163-164.

193. Foreign Study
Either or both semesters. Credits and hours by arrangement. May be repeated for credit. Consent of Department Head required, normally before the the student’s departure.
Special topics taken in a foreign study program.
210. **French Art and Civilization**
First semester. Three credits. Recommended preparation: FREN 164 or 175 or three years of high school French or consent of instructor.
Development of French history through the innovations of art; modern perspectives on historical and cultural events. Some lectures by and discussions with experts from Anthropology, Music, Political Science, History, and Art History. Strong audio-visual support.

211. **Contemporary France**
Second semester. Three credits. Recommended preparation: FREN 164 or 175 or three years of high school French or consent of instructor.
An interdisciplinary course analyzing the politics, economics, social structures and cultural life of France today. France in relation to Western Europe as well as to a broader international framework. Some lectures by and discussions with experts from Anthropology, Music, Political Science, History, and Art History.

215. **Practical Translation**
Either semester. Three credits. Recommended preparation: FREN 267 or 268 or consent of instructor.
The course is primarily designed to acquaint students with the practical aspect of translating by working on a variety of articles on politics, science, business, and the arts.

216. **Advanced Translation**
Either semester. Three credits. Prerequisite: FREN 215 or consent of instructor. *Gordon, Meléhy*
Translation of literary texts, comparative stylistic analysis, and creation of film subtitles in French and English. Study of important works of literary translation coupled with practical exercises.

217. **Business French**
Either semester. Three credits. Recommended preparation: FREN 164 or 175 or three years of high school French or consent of instructor.
Study of commercial French style and documents. Designed primarily for students aiming at careers in multinational business and foreign service. Prepares the student for the level I and level II examinations administered by the Paris Chamber of Commerce.

218. **Francophone Studies**
Either semester. Three credits. Recommended preparation: FREN 261 or 262 or 210 or 211 or consent of instructor.
The literature and cultural and social issues of French-speaking countries in North Africa, West Africa, the Caribbean, the Pacific and of Francophone communities in the U.S.

220. **Theater Studies**
Either semester. Three credits. Recommended preparation: FREN 261 or 262 or consent of instructor.
A study of French dramatic texts and genres (tragedy, comedy, etc.). Popular theatre. The theory and practice of performance in contemporary France. The semiotics of stage production. Use of audio-visual material.

221. **Forms and Topics in French Fiction**
Either semester. Three credits. Recommended preparation: FREN 261 or 262 or consent of instructor.
The study of a specific topic emerging from the French literary tradition. Questions of form, narrative and discourse in the novel, nouvelle and short story. Aesthetic categories such as realism, avant-garde, modernism.

222. **Poetry**
Either semester. Three credits. Recommended preparation: FREN 164 or 175 or three years of high school French or consent of instructor.
Examples of poetry of different epochs ranging from the epic to the lyric to the limerick.

223. **French Film and Theory**
Either semester. Three credits. One class period. Recommended preparation: FREN 261 or 262 or 210 or 211 or consent of instructor.

224. **Issues in Cultural Studies, the Media, and the Social Sciences**
Either semester. Three credits. Recommended preparation: FREN 211 or consent of instructor.
A selection of some of the most important world issues debated in France today in the writing of political figures, historians, sociologists, journalists, promoters of cultural activity.

230. **The Middle Ages: Myths and Legends**
Either semester. Three credits. Recommended preparation: FREN 261 or 262 or consent of instructor.
Founding myths and legends of Occidental culture, including a socio-cultural approach. Strong audio-visual component.

231. **The Renaissance**
Either semester. Three credits. Recommended preparation: FREN 261 or 262 or consent of instructor.
Important changes in France during the 16th century; parallel evolution in visual and performing arts.

232. **French Classical Culture and Society**
Either semester. Three credits. Recommended preparation: FREN 261 or 262 or consent of instructor.
Exploration of cultural and social issues through literature, performing arts, and paintings. Women, the Salons and social changes, discourses on love, Versailles and the Sun King, myths and tragedy, the birth of the modern subject.

233. **The 18th Century: Travelers, Philosophers, and Libertines**
Either semester. Three credits. Recommended preparation: FREN 261 or 262 or consent of instructor.
The most important texts and figures of the Enlightenment: Montesquieu, Voltaire, Diderot, and Rousseau.

234. **Romanticism, Realism, Fin de Siècle: 19th-Century Literature**
Either semester. Three credits. Recommended preparation: FREN 261 or 262 or consent of instructor.
The literary and artistic innovations that made France the center of 19th-century culture. The Fantastic, Realism, Naturalism, and Decadence.

235. **French Modernity: 20th-Century Literature**
Either semester. Three credits. Recommended preparation: FREN 261 or 262 or consent of instructor.
The literary and artistic trends marking Modern period of the 20th century. Surrealism, the Absurd, Existentialism, Oulipo, Francophone literature.

250. **Global Culture in French I**
Either semester. Three credits. Recommended preparation: FREN 164 or 175 or three years of high school French or consent of instructor.
Intense study of oral French. Learning of oral techniques of communication in conjunction with weekly topics of conversation associated with various Francophone cultures. Rigorous and active oral practice through dialogues, interviews, roundtables, and oral reports.

251. **Global Culture in French II**
Either semester. Three credits. Recommended preparation: Four years of high school French or FREN 250 or consent of instructor.
Extensive practice in oral French based mainly on authentic cultural materials. Emphasis on perfecting language skills for self expression and communication, on developing new vocabulary, and on recognizing and working with linguistic differences associated with various francophone cultures.

257. **French Phonetics**
Either semester. Three credits. Recommended preparation: FREN 164 or 175 or three years of high school French or consent of instructor.
A systematic study of the sounds of French with exercises in pronunciation and phonetic transcription.

258. **French Language: From Old French to Modern Slang**
Either semester. Three credits. Recommended preparation: FREN 261 or 262 or consent of instructor.
French language through the ages, from the very first literary texts written in “Old French” to the modern variations corresponding to different linguistic levels.

261. **From the Holy Grail to the Revolution: Introduction to Literature**
Either semester. Three credits. Recommended preparation: FREN 164 or 175 or three years of high school French or consent of instructor.
Texts from the Middle Ages to the 18th-Century, including Arthurian legend, Renaissance poetry, Classical theater, and philosophy of the Enlightenment.

262. **From the Romantics to the Moderns: Introduction to Literature**
Either semester. Three credits. Recommended preparation: FREN 164 or 175 or three years of high school French or consent of instructor.
Study of poetry, theater and prose fiction that marks the evolution from the psychology of the romantic hero and heroine to Existentialist philosophy and the New Novel.

267. **Grammar and Culture**
Either semester. Three credits. Recommended preparation: FREN 164 or 175 or three years of high school French or consent of instructor.
The study of French and Francophone culture through fiction, non-fiction, journalism and film. Emphasis on perfecting both oral and written expression through discussion, presentations, and composition on assigned topics.

268. **Grammar and Composition**
Either semester. Three credits. Recommended preparation: FREN 164 or 175 or three years of high school French or consent of instructor.
Advanced study of French texts and extensive written practice in a variety of forms ranging from compositions, essays, summaries and film reviews.

269. **Advanced French Grammar**
First or second semester. Three credits. Three hours per week. Recommended preparation: French 268 or equivalent.
Intensive course in French grammar through a variety of fictional and non-fictional texts.

270W. **French Literature and Civilization in English**
Either semester. Three credits.
Representative works of French literature, on a particular theme. How literary forms articulate the ideas and values of different periods.
272. Introduction to Literary Theory and Critical Writing
Either semester. Three credits. Recommended preparation: FREN 268 or consent of instructor.
Oral and written approaches to the study of texts, from, for example, thematic, structural, semiotic, sociological and psychoanalytic perspectives. Emphasis is on analysis and synthesis as well as developing critical writing abilities.

280. Women’s Studies in French
Either semester. Three credits. Recommended preparation: FREN 261 or 262 or 210 or 211 or consent of instructor.

281. Quebec Studies
Either semester. Three credits. Recommended preparation: FREN 261 or 262 or 210 or 211 or consent of instructor.
Study of French-Canadian society and its literary and artistic production. Special attention will be given to current issues.

282. French Moral Thought
Either semester. Three credits. Recommended preparation: FREN 261 or 262 or consent of instructor.
Study of moral thought in French prose from Montaigne to Rousseau.

293. Foreign Study
Either or both semesters. Credits and hours by arrangement. May be repeated for credit. Consent of Department Head required, normally to be granted prior to the student’s departure. May count toward the major with consent of the advisor. Special topics taken in a foreign study program.

295. Variable Topics
Either semester. Three credits. With a change in topic, may be repeated for credit. Prerequisites and recommended preparation vary.

298. Special Topics
Either semester. Credits and hours by arrangement. With a change in content, may be repeated for credit. Prerequisites and recommended preparation vary.

299. Independent Study
Either or both semesters. Credits and hours by arrangement. Open only with consent of instructor. With a change in content, may be repeated for credit.

STUDY ABROAD PROGRAM IN FRANCE
The University sponsors an academic program at the University of Paris in France. A program description can be found in this Catalog within the Modern and Classical Languages Departmental listing. College of Liberal Arts and Sciences.

General Studies (GS)
Bachelor of General Studies and Non-Degree:
Room 114, Merlin Bishop Center
For major requirements, see the College of Continuing Studies section of this Catalog.

200. BGS Continuous Registration
Either semester. No credit.
A course without academic credit for which BGS students must register when not taking credit courses at any college or university for use in the BGS program during a particular semester.

201. BGS External Study
Either semester. No credit. Open only with consent of BGS advisor.
A course without academic credit for which a BGS student must register when taking approved credit courses at another college or university for transfer back into the BGS program at the University of Connecticut.

240. Marketing Concepts and Practices into the 21st Century
Either semester. Three credits. Not applicable to SBA degree requirements.
Discussion of marketing concepts, processes, strategies and management within context of product/service organizations both in the profit and the non-profit sector whether large or small.

241. Financial Statement Analysis for Non-Financial Managers
Either semester. Three credits. Not applicable to SBA requirements.
Concepts and principles to enable non-financial managers to intelligently read and analyze financial reports.

296. BGS Internship
Either semester. Credits and hours by arrangement. Open only with consent of instructor and BGS mentor/advisor. With a change in content, may be repeated for credit.

297. BGS Summary Project
Either semester. Three credits. Open only with consent of BGS mentor/advisor. A project demonstrating the student’s educational accomplishments and ability to synthesize the disciplines studied into a coherent whole.

298. Variable Topics
Either semester. Credits and hours by arrangement. With a change in content, may be repeated for credit.

299. Independent Study
Either semester. Credits and hours by arrangement. Open only with consent of instructor and BGS mentor/advisor. With a change in content, may be repeated for credit.

Geography (GEOG)

Head of Department: Professor Dean Hanink
Department Office: Room 422, College of Liberal Arts and Sciences Building
For major requirements, see the College of Liberal Arts and Sciences section of this Catalog.

104. Introduction to Geography
(Formerly offered as GEOG 150.) Either semester. Three credits. Two class periods and one 1-hour discussion laboratory period.
Principles, concepts and methods of modern geography are developed both in general form and specific case studies. Examples pertaining to both the human and physical environment will be discussed.

105. Climate, Weather, and the Environment
Either semester. Three credits.
Interactions between weather and climate and the human and natural environment. Emphasis on understanding the linkages between natural processes and societal/environmental issues.

130. The City in the Western Tradition
(Also offered as URBN 130.) Either semester. Three credits.
A broad discussion of the role and structure of the city in the western tradition from the Classical period to contemporary America. Special emphasis will be placed on the mechanisms by which cities and ideas about them have been diffused from one place to another and on the changing forces that have shaped the western city.

160. World Regional Geography
Either semester. Three credits.
Study of geographic relationships among natural and cultural environments that help to distinguish one part of the world from another. Analysis of selected countries as well as larger regions, with specific reference to the non-western world.

193. Foreign Study
Either or both semesters. Credits and hours by arrangement. May be repeated for credit. Consent of Department Head or advisor may be required prior to the student’s departure.
Special topics taken in a foreign study program.

200. Economic Geography
Either semester. Three credits. Open to sophomores.
Examination of the relationship among economic, cultural, and geographic processes which affect the patterns, structure, and growth or decline of economic activities. The global extent of the agricultural, manufacturing, and service sectors is presented with particular emphasis on the interdependency of non-western and western economies.

204. Global Issues in Human Geography
First semester. Three credits.
Geographic perspectives on global issues focusing on the relationships between human behavior/activities, and the physical, economic, and cultural environments.

205. Introduction to Physical Geography
Either semester. Three credits. Open to sophomores.
The physical elements and processes of the lithosphere, hydrosphere and atmosphere are considered in relation to one another and to the distribution of the world’s environments. Emphasis on the basic concepts and theories of physical geography.

210. Social Uses of Space
(Formerly offered as GEOG 211.) Second semester. Three credits.
Identification of social space (regions) at varying scales from neighborhood to national, and movement within and among these social spaces. Attention also to geographical aspects of social identity, including territoriality and community, and problems of locating social facilities.

210W. Social Uses of Space

215. Climate and Weather
First semester. Three credits.
Analysis of atmospheric processes giving rise to weather systems and climactic patterns. The dynamic integration of atmospheric systems is emphasized.

231. Location Analysis
The study of issues and approaches in location analysis. Topics include location, theory and models, impacts of locational choice, systems analysis, evaluation of service areas, land use allocation, accessibility and locational conflict. Implications for planning and public policy are stressed.

232. Principles and Applications of Physical Geography
First semester. Four credits. Recommended preparation: GEOG 205 or 215. Not open for credit to students who have passed GEOG 214 or 232W.
Laboratory and field study of the physical
environment. Techniques, methodologies, and basic concepts of physical geography.

233. Urban Geography
(Also offered as URBN 233.) First semester. Three credits. Not open for credit to students who have passed GEOG 212 or URBN 212.
Analysis of the growth, distribution, and functional patterns within metropolitan areas. Application of urban geographical concepts to city planning problems.

234. The Geography of Economic Development
Second semester. Three credits. Prerequisite: GEOG 200.

Analysis of processes and patterns of economic organization and spatial change at the international, national and intra-national scales. Examines development from both linear (neo-classical) and structuralist (political economy) perspectives, and emphasizes relationships between advanced and developing economies within the context of the global economy.

236. Human Modifications of Natural Environments
Either semester. Three credits. Not open for credit to students who have passed GEOG 206.
A geographical and historical interpretation of the changing relationships between culture and environment. Emphasis on the modification of the biophysical environment by preagricultural, agricultural and urban societies in Europe, southwest Asia, and North America.

237. Environmental Planning and Management
The basic elements of the conflict between human environments and natural systems are considered, along with the methods of analysis and resolution of problems caused by that conflict. Emphasis on public policy related to environmental issues.

238. Applied Population Geography
Either semester. Three credits. Recommended preparation: GEOG 104 (formerly GEOG 150) or 200.
The study of the composition and growth of small-area populations with respect to public and private sector decision making in more developed societies. Basic concepts and techniques for analyzing local populations are presented in the context of significant population issues in the United States.

239. Geography of Asian American Experience
(Also offered as AASI 239.) First semester. Three credits.
Geographical perspective on issues facing Asian American communities: immigration, community formation, economic structure, race relations, and political participation. The changing dynamics of American ethnicity and study of the enthoburb. Diversity among Asian Americans, and comparison with other ethnic groups.

240C. Cartographic Techniques
Second semester. Four credits. One 2-hour lecture and two 2-hour laboratory periods. Open to sophomores.
A laboratory-oriented Introduction to computer-based map design and compilation. Concepts of scale, symbolization, map balance, and layout are emphasized for both general and thematic mapping.

242Q. Geographic Data Analysis
Second semester. Four credits. Three class periods and one 2-hour laboratory. Recommended preparation: 100-level STAT.
An introduction to the use of quantitative methods in conducting research, with particular emphasis on the processing and analysis of geographic data.

245V. Introduction to Computer Assisted Cartography (Q,C)
Second semester. Four credits. Three class periods and one 2-hour Laboratory. Recommended preparation: GEOG 242 or equivalent.
Introduction to numerical cartography and a review of standard computer-assisted mapping programs. Emphasis is given to data compilation for machine presentation of cartographic information. Exercises will introduce students to a variety of input and output display media.

246C. Introduction to Geographic Information Systems
The study of the fundamental principles of geographic information systems (GIS). Topics include history of the field, components of a GIS, the nature and characteristics of spatial data, methods of data capture and sources of data, database models, review of typical GIS operations and applications. Laboratory exercises provide experience with common computer-based systems.

248C. Applications of Geographic Information Systems
Second semester. Four credits. One 2-hour lecture and two 2-hour laboratory periods. Prerequisite: GEOG 246 or consent of the instructor. Not open for credit to students who have passed GEOG 247.
Applications of geographic information systems. Particular attention to land use planning and resource management.

249. Selected Topics in Geographic Information Systems
Either semester. Two credits. May be repeated once for credit with change in content. Recommended preparation: GEOG 242Q.
Selected problems in geospatial decisionmaking and the most commonly used GIS functions, databases, and analyses for decision support.

252. The American Landscape
Second semester, alternate years. Three credits.
The changing attitudes toward the American environment from pre-Columbian times to the twentieth century, and the consequences of those attitudes for the development of contemporary landscapes in the United States.

252W. The American Landscape

253. Geography of Russia and Eastern Europe
First semester, alternate years. Three credits.
Interactive study of geographic patterns in Russia, Eastern Europe and Central Asia including analyses of climate and resources; population, culture, and urbanization; economic development; and political organization in an historical and contemporary framework.

254. Contemporary Europe: A Geography
Either semester. Three credits.
An introduction to the Europe (including the European republics of the former U.S.S.R.). Emphasis on the economic, political, and social forces both maintaining national identities and shaping a unified Europe.

255. Geography of Latin America
Second semester. Three credits.
An integrative study of the physical, historical, social, political and economic geography of Latin America. Particular emphasis on patterns, processes and problems of spatial economic change in the region.

255W. Geography of Latin America

258. Geography of Africa
Second semester. Three credits.
Problems of economic, political, social and spatial integration in Africa. Focus on past and contemporary patterns of change (including associated conflicts) examined within the context of the broader global economy.

274. Urban and Regional Planning
Either semester. Three credits. Recommended preparation: GEOG 200 or consent of instructor. Open only with consent of instructor.
Urban and regional planning, with emphasis on (1) duties of local planners, especially land use planning, and (2) the political context for planners’ work. Legal and political issues in communities and organizations.

280W. Geographical Analysis of Urban Social Issues
Analysis of socioeconomic patterns and issues within urban areas, with emphasis on applied geographical research. Policy implications are stressed.

282V. Computer Applications in Spatial Analysis (Q,C)
First semester, alternate years. Three credits. Recommended preparation: GEOG 242 or equivalent.
An advanced seminar in the design of computer programs for solving problems in spatial analysis. Students receive a thorough knowledge of Fortran and related graphic subroutine libraries necessary to implement individual projects.

284W. Advanced Economic Geography
Second semester. Three credits. Prerequisite: GEOG 200 or consent of instructor.
Problems involved in analyzing spatial variations of selected economic variables. Emphasis on location theory with view toward integrating geographic viewpoint and economic concepts.

285W. Advanced Physical Geography
Second semester, alternate years. Three credits. Prerequisite: GEOG 205 or consent of instructor.
Problems involving the application of physical processes in our changing environment.

286W. Environmental Evaluation and Assessment
First semester. Three credits. Recommended preparation: GEOG 205 or 236.

288W. Regional Development and Policy
First semester. Three credits. Prerequisite: GEOG 200 or consent of instructor.
A study of theory and practice in regional development and planning. Emphasis on evaluation of regional problems and public policies designed to resolve them, with a primary focus on the United States.

293. Foreign Study
Either or both semesters. Credits and hours by arrangement, up to a maximum of six credits. Consent of Department Head required prior to the student’s departure.
Special topics taken in a foreign study program.
111. Age of the Dinosaurs
Either semester. Three credits. Thorson
A reconstruction of the Mesozoic world of the dinosaurs as interpreted from geological and paleontological evidence. Course includes fundamental concepts of stratigraphy, historical geology, paleoclimatology, and paleontology.

205. Current Issues in Environmental Science
(Also offered as EEB 205.) Second semester, alternate years. Three credits. Open to honors students. Open to non-honors students only with consent of instructor. Recommended preparation: 8 credits of college level science. Simon, Thorson
Readings and discussions of current issues in environmental science, emphasizing linkages between earth, oceans, atmosphere, and biosphere. Topics include: climate change; watershed changes; alternative energy; population growth; endangered biodiversity; genetically-engineered organisms; deforestation/restoration; risk assessment; tradeoffs; problem-solving; alternative futures.

212. Field Geology
Second semester. Six credits. Four weeks intensive study following final examination period. Prerequisite: GEOL 102. Gray, Philpotts, Steinen
Field methods for geological and environmental geoscience studies, including electronic surveying techniques, aerial photograph interpretation, geological mapping, description and measurement of sedimentary sections, techniques of underground mapping, and geophysical surveying.

213. Spring Field Trip
Second semester. Variable credits. Prerequisite: GEOL 250, 251, 252, and 253, one of which may be taken concurrently.
Spring field trip during spring break, and supporting research. First week: background readings from primary literature and secondary literature. Seven weeks following trip: supervised laboratory research using field samples. One or more short research papers and presentation to the department.

214. Igneous Petrology (Q,W,C)
Second semester, alternate years. Four credits. Three class periods and one 3-hour laboratory. Prerequisite: GEOL 253. Recommended preparation: MATH 114 or 116, Philpotts
Introduction to rocks and the physical and chemical principles governing their formation. Fluid mechanics of magmas, heat transfer, thermodynamics, phase equilibria, isotopes and geochemistry, and the relation of magmatism to plate tectonics. Optical microscopy, x-ray fluorescence, and electron microprobe analysis. Preparing a paper suitable for publication in a scientific journal.

215V. Metamorphic Petrology (Q,C)
Second semester, alternate years. Three credits. Two class periods and one 3-hour laboratory. Prerequisite: GEOL 253. Recommended preparation: MATH 114 or 116, Joesten

217. Advanced Structural Geology
Second semester. Three credits. Two class periods and one 3-hour laboratory period. Prerequisite: GEOL 252. Recommended preparation: first year physics, MATH

227. Crespi
Mechanics of rock deformation. Material behavior of rocks and their geometry during orogenesis, with applications of finite strain analysis, and advanced geometric techniques. One or more weekend field trips may be required.

219. Invertebrate Paleontology
First semester, alternating years. Four credits. Two class periods and two 2-hour laboratory periods. Prerequisite: GEOL 250.
The systematics, anatomy, evolutionary patterns and ecology of the major groups of invertebrate fossils.

220. Principles of Geomorphology
First semester. Three credits. Two 1-hour class periods and one 3-hour laboratory (occasionally used for field trips). Prerequisite: GEOL 251. Thorson
Interpretation of landscape genesis with an emphasis on causal processes and paleoenvironmental implications.

223. Glacial Processes and Materials
Second semester. Three credits. One 2-hour class period and one 3-hour laboratory (for lab exercises and field trips). Recommended preparation: GEOL 251. Thorson
Reconstruction of former glaciers and the interactive processes leading to the character and distribution of unconsolidated surface materials in glaciated regions. Techniques for interpreting subsurface unconsolidated materials.

227. Polarized Light Microscopy
First semester. Three credits. Two class periods and one 3-hour laboratory period. Prerequisite: GEOL 253. Gray

229. Engineering and Environmental Geology
Second semester. Three credits. Recommended preparation: GEOL 101 or 102, Liu
Application of geological principles to engineering and environmental problems. Topics include site investigation, geologic hazards, slope processes, earthquakes, subsidence, and the engineering properties of geologic materials. Course intended for both geology and engineering majors.

234C. Introduction to Ground-Water Hydrology
First semester. Four credits. Three class periods and one 2-hour laboratory for which occasional field trips will be substituted. Prerequisite: MATH 114 or 116 and GEOL 102, or consent of instructor: Robbins
Basic hydrologic principles with emphasis on hydrologic and geologic relationships, use of quantitative techniques.

235. Chemical Hydrogeology
Second semester. Four credits. Three hours lecture and three hours laboratory. Prerequisite: GEOL 234 and CHEM 127-128. Gray, Robbins
Chemical processes controlling the composition of unpolluted and polluted natural waters. Field and laboratory analytical techniques. Equilibria, reaction and transport models of the chemical interactions groundwater and the media through which it travels. Applications of geochemical processes and principles understanding to the mitigation of environmental problems.

240. Sedimentation and Stratigraphy
First semester. Three credits. Two class periods and one 3-hour laboratory period. Prerequisite: GEOL 251.
Steinem
Composition, deposition and diagenesis of marine and non-marine sediments; stratigraphic methods; dynamics of sediment incorporation into the stratigraphic record. An examination of recent sedimentary sequences as a key to understanding ancient sedimentary environments. One or more weekend field trips may be required.

250. Earth History
Second semester. Three credits. Two class periods and one 3-hour laboratory period. Prerequisite: GEOL 102. Required of all Geology majors.

Reconstruction of earth history from geological data. Processes and events responsible for the stratigraphic record, and techniques used to decipher it. Includes an integrated survey of earth history. One or more weekend field trips may be required.

251. Earth Surface Processes
Both semesters. Three credits. Two class periods and one 3-hour laboratory period. Prerequisite: GEOL 102. Required of all Geology majors.

Processes responsible for the formation of the unconsolidated materials, landforms, and soils which constitute the Earth’s surface. Introduction to surface-water and groundwater hydrology, geological hazards and the effects of climatic change. One or more weekend field trips may be required.

252. Earth Structure
First semester. Three credits. Two class periods and one 3-hour laboratory period. Prerequisite: GEOL 102. Required of all Geology majors.

Structure and composition of the earth, including a survey of plate tectonics and crustal evolution. Gravitational, thermal and tectonic processes associated with the earth’s surface and interior. One or more weekend field trips may be required.

253. Earth Materials
First semester. Four credits. Two class periods and two 3-hour laboratory periods. Prerequisite: GEOL 102. Required of all Geology majors.

Principles of symmetry and crystal chemistry and the identification of minerals by hand sample, petrographic and x-ray methods. Description of the mineralogy and texture of igneous, sedimentary and metamorphic rocks and the application of contemporary petrogenetic models to the interpretation of the geologic environments they record. One or more weekend field trips may be required.

261. Plate Tectonics
Second semester. Three credits. Prerequisite: GEOL 250 and 252. Byrne
Plate tectonics: geomagnetic reversals; sea-floor spreading; description of plates, their motions, generation, destruction, and collisions; possible driving forces; evidence for ancient plates.

293. Internship in Geology and Geophysics - Field Study
Either semester. One to three credits. May not be repeated. Internship contract must be formulated before internship work begins. Students with summer internship must preregister for GEOL 293 for the fall semester. Prerequisite or corequisite: GEOL 250, 251, 252, and 253. Must be taken concurrently with GEOL 293; no credit will be given for one course without the other. Credits earned in GEOL 293 cannot be included in the 24 or 36 credits of 200-level Geology and Geophysics courses needed to meet the requirements of the B.A. or B.S. degree, respectively.

An internship program under the direction of Geology and Geophysics faculty. Students will be placed with government agencies or businesses where academic training will be applied in a program of activities to be planned and agreed upon in advance by the job site supervisor, the faculty coordinator, and the intern. One credit may be earned for each 42 hours of pre-approved activities up to a maximum of three credits.

294. Internship in Geology and Geophysics - Research Paper
Either semester. One credit. May not be repeated. Students with summer internship must preregister for GEOL 294 for the fall semester. Prerequisite or corequisite: GEOL 250, 251, 252, and 253. Must be taken concurrently with GEOL 293; no credit will be given for one course without the other.

Preparation of written report and oral presentation to Department summarizing internship experience and evaluating the applicability of academic experience to job situations and the impact of the internship experience on academic and career plans.

295. Variable Topics
Either semester. Three credits. With a change in topic, may be repeated for credit. Prerequisites and recommended preparation vary.

296. Undergraduate Research in Geology and Geophysics
Either semester. Three credits. Hours by arrangement. Open only with consent of instructor.

Independent research for the advanced undergraduate student interested in investigating a special problem involving field and/or laboratory observations in geology and geophysics. The student is required to give an oral presentation in a departmental seminar at the end of the semester.

297W. Undergraduate Research Thesis in Geology and Geophysics
Either semester. Three credits. Hours by arrangement. Prerequisite: GEOL 296. Open only with consent of instructor.

Writing of a formal thesis based on independent research conducted by the student.

298. Special Topics
Either semester. Credits and hours by arrangement. May be repeated for credit. Open only with consent of instructor.

Investigation of special topics related to, but not ordinarily covered in the undergraduate offerings; emphasis on laboratory projects.

299. Independent Study
Either or both semesters. Credits and hours by arrangement. May be repeated for credit. Open only with consent of instructor.

264Z. Physics of the Earth's Interior
First semester. Three credits. Prerequisite: PHYS 132 or 142, CHEM 128, MATH 114 or 116, Corriner
The composition, structure, and dynamics of the earth’s core, mantle, and crust; seismic waves, earthquakes, the earth’s magnetic field, geochronology, radioactive heating, and the earth’s internal heat.

2660. The Earth, Moon, and Planets
Second semester. Three credits. Prerequisite: PHYS 132 or 142, CHEM 128, and MATH 210 (or 211 or 221), or consent of instructor. Corriner
The earth’s gravity field and figure of the earth; wobbles of the earth’s axis, the earth-moon system and tidal friction; orbital paths of planets, moons, and artificial satellites; compositions of planets and moons; development of the solar system.

267Z. Geophysical Methods I (Q, W, C)
First semester. Three credits. Two class periods and one 3-hour laboratory period. Prerequisite: PHYS 123 or 132 or 142 or 152 and MATH 114 or 116.

Principles and applications of seismic methods of exploring the interior of the earth; principles of heat flow in the earth.

268Z. Geophysical Methods II (Q, W, C)
Second semester. Three credits. Two class periods and one 3-hour laboratory period. Prerequisite: PHYS 123 or 132 or 142 or 152 and MATH 114 or 116.

Principles and applications of electric, gravimetric and magnetic methods of exploring the interior of the earth.

German (GERM)

Head of Department: Professor David K. Herberger
Department Office: Room 228, J.H. Arjona Building
Consult the Modern and Classical Languages Department listing in this Catalog for requirements for Majors in German.

111 through 114. Special Intensive Course
First and second semesters. Eight credits per semester. Two hours a day, four days a week, plus a 2-hour laboratory practice. Open only with consent of instructor. Not open for credit to students who have passed GERM 131 through 134.

Intensive coverage of two years in two semesters. German 111-112 (fall) covers same materials as 131-132. Elementary German; German 113-114 (spring) covers same material as German 133-134, Intermediate German.

131-132. Elementary German I and II
Both semesters. Four credits each semester. Four class periods, and one 1-hour laboratory practice. Not open for credit to students who have had three or more years of German in high school, except with Departmental consent. Not open for credit to students who have passed GERM 111-112.

Fundamentals of German. Presentation of dialogues, conversation, vocabulary building, grammar and culture. Emphasis on speaking, oral comprehension, reading of simple texts and writing, to satisfy basic survival needs within a cultural setting.

133-134. Intermediate German I and II
Both semesters. Four credits each semester. Four class periods, and one 1-hour laboratory practice. Prerequisite for credit to students who have passed GERM 113-114.

Review and extension of grammar, vocabulary expansion, graded composition, intensive and extensive reading, and intensive oral practice to further develop communicative abilities within a cultural setting.

145-146. German Readings in the Sciences and Humanities
Both semesters. Three credits each semester. Not open for credit to students who have passed GERM 133-134 or equivalent. May not be used to meet the undergraduate language requirement.

Basic grammar and intensive practice in reading expository prose in the natural sciences, social sciences, and humanities. Intended for students desiring to learn German as a tool for research. Will satisfy ACS and Ph.D. reading requirements.
153. **Active Language Skills I**  
First semester. Two credits. Two class periods. 
Corequisite or prerequisite: GERM 133. Practice in audio-lingual skills. Emphasis on everyday vocabulary. Recommended for students intending to travel or study abroad.

154. **Active Language Skills II**  
Second semester. Two credits. Two class periods. 
Corequisite or prerequisite: GERM 134. 
Additional practice in developing communicative abilities in a German-speaking country. Recommended for students intending to travel or study abroad.

171. **The German Film**  
Either semester. Three credits. Readings and lectures in English. May not be used to meet the undergraduate foreign language requirement. 
Weekly showings of German films from the twenties to the present. Introduction to film history, analysis and interpretation of films, outside readings, term papers.

190. **German Folk Songs**  
Either semester. One credit. One 2-hour class period. 
May not be used to meet the undergraduate language requirement. May be repeated once for credit. 
German folk songs and Christmas carols from the 15th to the 20th Century. Emphasis on correct pronunciation. Occasional performances on and off campus.

193. **Foreign Study**  
Either or both semesters. Credits and hours by arrangement. 
May be repeated for credit. Consent of Department Head required, normally to be granted prior to the student's departure. 
Special topics taken in a foreign study program.

200. **Intensive Language Practice**  
Second semester. Three credits. Hours by arrangement. 
Prerequisite: GERM 133 or equivalent and consent of instructor. 
Two or three weeks of concentrated study in Europe. Exclusive use of the language, with three to four daily contact hours. Practice in all active and passive language skills, combined with periodic review sessions during the rest of the semester.

201-202. **Composition**  
Both semesters. Three credits each semester. 
Prerequisite: GERM 134 or three years of German in high school. May only be used for transfer credit or for study abroad. Not open for credit to students who have passed GERM 233-234. 
Intensive grammar review and extensive practice in writing.

204-205. **Conversation**  
Both semesters. Three credits each semester. 
Prerequisite: GERM 134 or three years of German in high school. May only be used for transfer credit or for study abroad. Not open for credit to students who have passed GERM 233-234. 
Intensive oral practice based primarily on cultural readings.

220. **German Recitation in Applied Mechanics**  
First semester. One credit. One class period. 
Technical German in engineering through the basic concepts and problem solving techniques used in applied mechanics.

221. **Introduction to the Sciences in German**  
Second semester. One credit. One class period. 
Prerequisite or corequisite: GERM 134, CHEM 120Q, and PHYS 152Q or equivalent. 
A series of lectures and discussion periods about basic concepts in the physical sciences presented in German. Topics will be primarily from the various engineering disciplines, chemistry, physics, and mathematics.

222. **Fields of Technology**  
First semester. One credit. One class period. 
Prerequisite: GERM 220 and GERM 221. 
A series of lectures and discussion periods on special topics in science and engineering. Open only with consent of instructor.

231-232. **Commercial German**  
Both semesters. Three credits each semester. 
Prerequisite: GERM 134 or equivalent. 
Practice in reading and writing using the specialized vocabulary and expressions of German business language. Preparation for the Goethe Institute’s test of commercial German, the Wirtschaftsprüfung Deutsch International.

233-234. **Advanced Language Skills I and II**  
Both semesters. Three credits each semester. 
Prerequisite: GERM 134 or equivalent. Not open for credit to students who have passed GERM 201-202 or GERM 204-205. 
Extensive practice in oral and written German, based on cultural materials. Emphasis on vocabulary expansion, active use of language for self-expression and communication, grammatical accuracy and reading strategies. Designed in relation to and preparation for upper-level German courses.

240W. **German Literature in Translation**  
Either semester. Three credits. 
May not be used to satisfy the undergraduate foreign language requirement or the major requirement in German. 
Reading and analysis of significant works of German literature from one or more periods.

243-244. **Advanced Conversation and Composition I and II**  
Both semesters. Three credits. 
Prerequisite: GERM 234 or the equivalent or consent of instructor. 
Practice in perfecting both oral and written expression through discussions, presentations and compositions on assigned topics.

251. **German Culture and Civilization**  
Either semester. Three credits. Conducted in English. 
Not open for credit to students who have passed GERM 250. 
An interdisciplinary course on the German-speaking countries, analyzing cultural life and past and present development. Period or thematic emphasis may vary. Discussion of selected non-fictional and fictional readings, films, slides and recordings.

252. **Studies in Early German Literature**  
Either semester. Three credits. 
Prerequisite or corequisite: GERM 233 or consent of instructor. 
Study of a cohesive group of texts that mark the periods of Middle Ages, Humanism, Reformation, and Baroque. Emphasis may vary. Attention will be given to the relevant socio-historical context and, when possible, to the visual and performing arts.

253. **Studies in German Literature Around 1800**  
Either semester. Three credits. 
Prerequisite or corequisite: GERM 233 or consent of instructor. 
Study of a cohesive group of texts that mark the periods of Enlightenment, Storm and Stress, Classicism and Early Romanticism. Emphasis may vary. Attention will be given to the relevant socio-historical context and to the visual and performing arts.

254. **Studies in 19th Century German Literature**  
Either semester. Three credits. 
Prerequisite or corequisite: GERM 233 or consent of instructor. 
Study of a cohesive group of texts that mark the periods of Late Romanticism, Vormärz, Realism and Naturalism. Emphasis may vary. Attention will be given to the relevant socio-historical context and to the visual and performing arts.

255. **Studies in 20th Century German Literature**  
Either semester. Three credits. 
Prerequisite or corequisite: GERM 233 or consent of instructor. 
Study of a cohesive group of texts that mark the period. Attention will be given to the relevant socio-historical context and to the visual and performing arts.

260. **Women's Studies in German**  
Either semester. Three credits. 
Prerequisite or corequisite: GERM 234 or consent of instructor. 
Women in the literature of the German-speaking countries. Women's writings. The development of German feminism. Contemporary gender issues in the German-speaking countries.

271. **Principles of Translation I**  
First semester. Three credits. 
Prerequisite: GERM 234 or equivalent. Open only to juniors and seniors, with consent of instructor. 
Theory and practice of translating and interpreting written and oral materials from German into English.

280W. **Introduction to Germanic Linguistics**  
First semester. Three credits. 
Prerequisite: GERM 132 or LING 202 or consent of instructor, McCormick. 
A study of the relationship among modern and historical Germanic languages. Lectures, readings, and class discussions in English.

281. **German Film and Culture**  
Either semester. Three credits. 
Prerequisite or corequisite: GERM 233. 
Critical analysis of artistic issues in writing screenplays and making movies. Dynamic interplay between German film, the other arts, and their socioeconomic context. Taught in German.

282. **Connecticut and the Global Market: The German-Speaking Countries**  
Either semester. Three credits. Taught in English. 
Cultural aspects of international business. Lectures by speakers from the German-speaking countries and representatives of institutions and companies related to those countries. Discussion and analysis of the lectures.

285. **Topics in German Culture**  
Either semester. Three credits. 
Prerequisite or corequisite: GERM 233 or consent of instructor. 
With a change in topic, this course may be repeated for credit. 
Analysis of the cultural trends of a selected period or theme in a German-speaking country, taking into account the historical, political, and socioeconomic background, aspects of daily life, philosophical trends, major literary works and other artistic achievements in art, music, and architecture. Specialists from other departments will be invited as guest lecturers.

290. **German Language Practicum**  
Either semester or summer. Credits (not to exceed six) and hours by arrangement. 
Prerequisite: Three years of college-level German or the equivalent. Open only to juniors and seniors with consent of instructor. 
Placement of students as trainees in business, industry and social or government agencies where foreign language skills can be put to use.
293. Foreign Study
Either or both semesters. Credits and hours by arrangement. May be repeated for credit. Consent of Department Head required, normally to be granted prior to the student’s departure. May count toward the major with consent of advisor. Special topics taken in a foreign study program.

295. German Play Production
Second semester. Three credits. Hours by arrangement. Prerequisite: GERM 111 or 131 and consent of instructor. May not be used to meet the undergraduate foreign language requirement. With a change in topic, this course may be repeated for credit.

Extensive and intensive study, discussion and interpretation of a German drama, followed by casting, rehearsals and eventual performance. Students are given both on-stage and off-stage assignments and responsibilities. Term paper.

296. German Seminar
Either semester. Credits and hours by arrangement. Open only to juniors and seniors with consent of instructor. May be repeated for credit.

Intensive investigation of selected problems in German literature and/or German studies.

297. Variable Topics
Either semester. Three credits. With a change in topic, may be repeated for credit. Prerequisites and recommended preparation vary.

298. Special Topics
Either semester. Credits and hours by arrangement. With a change in content, may be repeated for credit. Prerequisites and recommended preparation vary.

299. Independent Study
Either or both semesters. Credits and hours by arrangement. Open only with consent of instructor. With a change in content, may be repeated for credit.

German Study Abroad
An academic year or spring semester at the University of Salzburg, Austria, operated jointly with other New England state universities, allows students to earn up to 34 credits in all disciplines. The University of Connecticut sponsors a variety of programs at any of nine universities in the state of Baden-Wuerttemberg. Students also have the possibility of language study at a Goethe Institute, and a combination of study and work at one of nine universities in the state of Baden-Wuerttemberg. Students are given both on-stage and off-stage assignments and responsibilities. Term paper.

Health Systems Management (HSMG)

Director: Jeffrey A. Kramer
Center Office: Room 315, School of Business Administration

For major requirements, see the School of Business Administration section of this Catalog.

Health Systems Management courses are open to juniors and seniors only.

280. Introduction to Health Care Management
First semester. Three credits.

This course introduces basic concepts, principles, and practices associated with the health care delivery system in the United States. The course will examine how this system is organized, and discuss the major issues related to the provision of health care, from both a business and social science perspective. Emphasis will be placed on understanding the components and features of the health care delivery system in the United States as it is developed and applied through a managed care organizational framework.

281. Health Care Analysis
Second semester. Three credits. Prerequisite: OPIM 210 and HSMG 280, or consent of instructor.

This course deals with the application of economic theory, health services research, policy development and analysis, operations research, and management science techniques for analyzing and evaluating the performance of health care services and organizations.

282. Health Care Information Technology
First semester. Three credits. Prerequisite: HSMG 281 and 290.

This course provides an introduction to information technology (IT) within the context of health care planning, managerial decision-making and strategic analysis. The course examines how health care organizations apply information technologies in decision-making and considers factors that influence investments in healthcare IT. Students will learn to define appropriate IT terms, fit IT into an appropriate marketing plan, describe the IT project lifecycle, and identify key IT issues within the major healthcare markets. Topics include business model development, branding of services, and decision support.

283. Advanced Topics in Health Care Management
Second semester. Three credits. Prerequisites: HSMG 280, 281, and 290.

This course provides health care management students with opportunities to apply tools and concepts learned throughout the program. Through real world consulting projects and hands-on projects, students develop and refine their skills in project organization and management, analysis, reporting, and presentation. Project areas include applications that integrate all business disciplines.

285. Clinical and Social Issues in Health Care
First semester. Three credits.

This course covers clinical and social issues affecting health care provider organizations, such as the health needs of special population groups, public health concerns, epidemiological issues, and health care quality. Discussion will include how health care organizations address such issues through methods including clinical studies, disease management, partnership between private and public sectors, and legislative initiatives.

290W. Internship in Health Care Management
Either or both semesters. Six credits. Hours by arrangement. Prerequisite: OPIM 203 and 204, senior standing, and consent of instructor. It is recommended that students complete OPIM 210 prior to the internship.

Supervised field work in a health care organization where students work with health care professionals to expand their expertise in solving health systems problems and increase their awareness of the issues involved in the day to day operations of a health care institution. Student performance will be evaluated on the basis of an appraisal by the field supervisor and a detailed written report submitted by the student.

298. Special Topics
Either semester. Credits and hours by arrangement. Prerequisite: Announced separately for each offering. With a change in content, may be repeated for credit.

Classroom course in special topics in health systems management as announced in advance for semester.

299. Independent Study for Undergraduates
Either or both semesters. Credits by arrangement; not to exceed six in any semester. Open only with consent of instructor.

Individual study of special topics in health systems management as mutually arranged between a student and an instructor.

Hebrew (HEB)

Head of Department: Professor David K. Herzberger
Department Office: Room 228, J.H. Aronson Building
Consult the Departmental Handbook for courses being offered and further description of these courses.

149-150. Elementary Biblical Hebrew I and II
Both semesters. Four credits each semester. Four class periods. Not open for credit to students who have had three or more years of Hebrew in high school, except with Departmental consent.

An introduction to the biblical language for the student with no previous background. Grammar and drills, using simple texts, prepare the student for independent reading of Hebrew Scripture in the original.

151-152. Elementary Modern Hebrew I and II
Both semesters. Four credits each semester. Four class periods and one 1-hour laboratory practice. Not open for credit to students who have had three or more years of Hebrew in high school, except with Departmental consent.


153-154. Intermediate Hebrew I and II
Both semesters. Four credits each semester. Four class periods and one 1-hour laboratory practice. Prerequisite: HEB 152 or the equivalent.


** 193. Foreign Study

251-252. Advanced Hebrew
Both semesters. Three credits each semester. Prerequisite: HEB 154 or consent of instructor.

Further grammar study. Practice in composition involving the use of everyday vocabulary and idiomatic expressions. Readings in Hebrew culture and history.

** See description at end of Hebrew section.
**293. Foreign Study**

277. The Culture of East European Jewry
First semester. Three credits. The life, folklore, literature and thought of the Jews of Poland and Russia from the sixteenth to the twentieth century. The distinctive contributions of both the Jewish little-town (shiel) and the larger urban community will be explored.

278. Literature of Modern Israel
Second semester. Three credits. The major themes and literary achievements of modern Hebrew writing. Authors to be emphasized include Feierberg, Bialik, Brenner, Berdichevsky, Tsehernichowski, Agnon, Greenberg, and Alterman.

**293. Foreign Study**

298. Special Topics

**299. Independent Study for Undergraduates**

**HEBREW CIVILIZATION**

*(in English)*

None of the following courses may be used to meet the foreign language requirement.

101. The Land of Israel from Biblical Times to the Present
(Also offered as JUDS 101.) Either semester. Three credits. Offered in alternate years. Miller

An in-depth look at the history, culture and civilizations of the land of Israel. The importance of the land in Judaism and its significance for Christianity and Islam will be discussed. Lectures and discussion will be enhanced by slide presentations.

103. Literature and Civilization of the Jewish People
(Also offered as JUDS 103.) Either semester. Three credits. Miller

The major concepts, personalities and literary works of the Hebraic tradition from the Biblical and Talmudic periods to the present.

104. Modern Jewish Thought
(Also offered as JUDS Studies 104.) Second semester. Three credits.

Nationalism, culture, ethics and philosophy in the writings of the major Jewish thinkers from Spinoza to the present. Emphasis will be placed on the works of Moses Mendelssohn, Nachman Krochmal, Ahad Haam, Hermann Cohen, Franz Rosenzweig, Martin Buber and Mordecai Kaplan.

**193. Foreign Study**

201. Selected Books of the Hebrew Bible
(Also offered as JUDS 201.) Either semester. Three credits. Prerequisite: INTD 294 or HIST 213 or HEB 103, which may be taken concurrently, or consent of instructor. A knowledge of Hebrew is not required. May be repeated with change of content and consent of instructor. Miller

Focuses on a biblical book (or books) and emphasizes its literary structure and content using modern approaches as well as midrashic and medieval exegesis. Historical and archaeological material introduced where relevant.

202. Sects and Movements in Judaism
(Also offered as JUDS 202.) Either semester. Three credits. Offered in alternate years.

Varieties of Jewish expression and belief from Biblical times to the present. Topics include: the Dead Sea Sect, Pharisees, Sadducees, Karaîtes, MARRanos, Hasidism and the Reform, Conservative, Orthodox and Reconstructionist movements of the modern era.

203. The Holocaust
(Also offered as JUDS 203.) Either semester. Three credits.

A discussion of the Holocaust to be preceded by an examination of the roots of anti-semitism and its effect upon the Jewish experience. Special emphasis will be given to the impact of the Holocaust on Jewish and Christian thought.

218. Palestine Under the Greeks and Romans
(Also offered as CAMS 256, HIST 218, and JUDS 218.) Either semester. Three credits. Recommended preparation: HIST 213 or 214 or 216 or INTD 294 or HEB 202. Miller

The political, historical and religious currents in Greco-Roman Palestine. Includes the Jewish Revolts; sectarian developments, the rise of Christianity and the Talmudic academies.

277. The Culture of East European Jewry
First semester. Three credits. The life, folklore, literature and thought of the Jews of Poland and Russia from the sixteenth to the twentieth century. The distinctive contributions of both the Jewish little-town (shiel) and the larger urban community will be explored.

278. Literature of Modern Israel
Second semester. Three credits. The major themes and literary achievements of modern Hebrew writing. Authors to be emphasized include Feierberg, Bialik, Brenner, Berdichevsky, Tsehernichowski, Agnon, Greenberg, and Alterman.

**293. Foreign Study**

295. Variable Topics

**298. Special Topics**

**299. Independent Study for Undergraduates**

193. Foreign Study
Either or both semesters. Credits and hours by arrangement. May be repeated for credit. Consent of Department Head required, normally before the student’s departure.

Special topics taken in a foreign study program.

293. Foreign Study
Either or both semesters. Credits and hours by arrangement. May be repeated for credit. Consent of Department Head required, normally granted prior to the student’s departure. May count toward the major with consent of the advisor.

Special topics taken in a foreign study program.

295. Variable Topics
Either semester. Three credits. With a change in topic, may be repeated for credit. Prerequisites and recommended preparation vary.

298. Special Topics
Either semester. Credits and hours by arrangement. With a change in content, may be repeated for credit. Prerequisites and recommended preparation vary.

299. Independent Study
Either or both semesters. Credits and hours by arrangement. Open only with consent of instructor. With a change in content, may be repeated for credit.

STUDY ABROAD IN ISRAEL

Students may spend a semester or academic year at Hebrew University in Jerusalem, Tel Aviv, Haifa or Ben Gurion Universities. Students should take at least one semester of Hebrew at UConn before studying abroad. The University also sponsors an archaeological excavation at Sepphoris during the month of June. This is a six-credit program.

*** See description at end of Hebrew section.

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History (HIST)

Head of Department: Professor Altina L. Waller
Department Office: Room 121, Wood Hall

For major requirements, see the College of Liberal Arts and Sciences section of this Catalog.

100. The Roots of the Western Experience
Either semester. Three credits.

An analysis of the traditions and changes which have shaped Western political institutions, economic systems, social structures and culture in ancient and medieval times.

101. Modern Western Traditions
Either semester. Three credits.

History of political institutions, economic systems, social structures, and cultures in the modern Western world.

106. The Roots of Traditional Asia
Either semester. Three credits.

A survey of the early development and staying power of the traditional cultures from which the major societies of modern Asia have evolved.

108. Modern World History
Either semester. Three credits. Omara-Otunno

A survey of the historical experiences of the world’s major civilizations during recent centuries with particular attention to the modernization of the traditional cultures of Asia, Latin America, and Africa.

121. Women in History
Either semester. Three credits. I. Brown

The historical roots of challenges faced by contemporary women as revealed in the European and/or American experience: the political, economic, legal, religious, and family life of women.

198. Varieties of History
Either semester. Three credits. With a change in content may be repeated for credit.

A major topic in history through contemporary sources and historical interpretations.

200W. Senior Thesis in History
Either semester. Three credits. Hours by arrangement. Open only with consent of instructor and Department Head. Independent study authorization form required. Prerequisite: three credits of independent study and/or an advanced seminar.

201. Supervised Field Work
Either semester. Credits up to 12. No more than six credits will count toward the department’s major requirements. Hours by arrangement. Open only with consent of Department Head.

Internship in applied history.

203W. History and the Historian
First semester. Three credits. Cox, Langer

Major historical theories and writings from the ancient world to the modern era. For History Honors and other qualified students.

204. Medieval Islamic Civilization to 1700
First semester. Three credits. Recommended preparation: HIST 100 or 101. Open to sophomores. Azimi

The social dynamics of faith, culture, and change from the rise of Islam to the Ottoman decline and the Islamic challenge to Greek and Latin Christendom.

205. The Modern Middle East from 1700 to the Present
Second semester. Three credits. Open to sophomores. Azimi

Tradition, change, modernization and development
in the Middle East from the Ottoman decline and rise of successor states to the Arab-Israeli and oil crises.

**206. Introduction to the History of Science**  
(Also offered as SCI 206.) First semester. Three credits.  
Rise and development of scientific inquiry; case studies designed to illustrate problems and methods in the study of the history of science.

**207W. Science and Social Issues in the Modern World**  
Second semester. Three credits.  
Social context of science in the United States and Europe since 1850. Genetics and eugenics; ecology and the environment; nuclear issues; gender, race, and science.

**208W. Darwinism in the Modern World**  
First semester. Three credits.  
Interaction of science, ideology, and world view in the development of evolutionary biology from Darwin to the present, including interrelations of genetics, eugenics, ecology, and sociobiology.

**209. History of the Family**  
(Also offered as HDFS 279.) Either semester. Three credits.  
Not open for credit to students who have passed HDFS 279.  
Pre-industrial and industrial family life in Western society since the Middle Ages, with emphasis on the changes in demography, family size and structure, family economy, social expectations, sex roles, sexuality, and affective bonds.

**210. History of Women and Gender in Early America**  
(Also offered as WS 210.) Either semester. Three credits.  
Not open to students who have taken HIST 202 or WS 202 before fall 1998.  
Danielle Brown  
Compared the evolving gender systems of native American groups, transplanted Africans, and immigrant Europeans up to the early Nineteenth Century. Topics include women's work, marriage and divorce, witch-hunting, masculinity, and women's Revolutionary War roles. For U.S. women's history, 1790 to present, see History 215.

**211. The Historian's Craft**  
Either semester. Three credits.  
Open to sophomores. Learning critical reading, thinking and writing skills by interpreting a variety of primary sources.

**212W. Near Eastern Pre-History**  
(Also offered as ANTH 257W.) Second semester. Three credits.  
Not open for credit to students who have passed ANTH 257.  
From the earliest hunter-gatherers to the rise of the state: the transition from food-gathering to food-producing and the development of complex societies in the Near East.

**213. Ancient Near East**  
(Also offered as CAMS 253.) Either semester. Three credits.  
The history of Near Eastern civilization from the Neolithic period to the Persian Empire. The birth of civilization in Mesopotamia and Egypt. The political, economic, social, and cultural achievements of ancient Near Eastern peoples.

**214. Ancient Greece**  
(Also offered as CAMS 254.) Either semester. Three credits.  
The history of Greece from Minoan and Mycenaen times into the Hellenistic period with special emphasis on the Fifth Century and the "Golden Age" of Athens.

**214W. Ancient Greece**  
(Also offered as WS 215.) Either semester. Three credits.  
Open to sophomores. Three credits.  
Porter-Benson  
Wang  
Omara-Otunnu  
Coons  
Roe

**215. History of Women and Gender in the United States, 1790-Present**  
(Also offered as WS 215.) Either semester. Three credits.  
Not open for credit to students who have taken HIST 202 or WS 202 before fall 1998.  
Women and gender in family, work, education, politics, and religion. Impact of age, race, ethnicity, region, class, and affectional preference on women's lives. Changing definitions of womanhood and manhood.

**216. Ancient Rome**  
(Also offered as CAMS 255.) Either semester. Three credits.  
From the beginning of Rome to the reign of Justinian. The growth of the Roman Republic and Empire, Roman civilization and its influence upon later history.

**216W. Ancient Rome**  
(Also offered as ANTH 257W.) Second semester. Three credits.  
Roe

**217. World of Late Antiquity**  
(Also offered as CAMS 243.) Either semester. Three credits.  
Caner  
The profound social and cultural changes that redefined the cities, frontiers, and economies of the classical world and led to the Middle Ages. Developments in the eastern and western Mediterranean lands between the second and seventh centuries, including neo-Platonism, the spread of Christianity, Rabbinic Judaism, and Islam.

**218. Palestine Under the Greeks and Romans**  
(Also offered as CAMS 256, HEB 218, and JUDS 218.)  
Either semester. Three credits.  
Recommended preparation: HIST 213, 218, or 246.  
Miller  
The political, historical and religious currents in Greco-Roman Palestine. Includes the Jewish Revolts, sectarian developments, the rise of Christianity and the Talmudic academies.

**219. Early Middle Ages**  
First semester. Three credits.  
Olson  
The decline of Rome, rise of Christianity, the barbarian invasions and kingdoms, culminating in the civilizations of the Carolingian Empire, of Byzantium, and of Islam.

**220. The High Middle Ages**  
Second semester. Three credits.  
Olson  
The history of Europe from the tenth through the fourteenth centuries. The development and expansion of European civilization, the revival of a money economy and town life, the development of feudal monarchy, the conflict of Empire and Papacy, the Crusades.

**221. Modern China**  
Either semester. Three credits.  
Wang  
Survey of patterns of modern China since 1800. Topics will include reforms and revolutions, industrialization and urbanization, and family and population growth.

**222. History of Pre-Colonial Africa**  
First semester. Three credits.  
Omara-Otunnu  
The history of pre-colonial Africa with particular attention to the rise and fall of African kingdoms, interaction between different ethnic groups, African trade with other continents, and the impact of foreigners on African societies.

**223. History of Modern Africa**  
Second semester. Three credits.  
Omara-Otunnu  
The history of African perceptions of and responses to the abolition of the slave trade, Western imperialism and colonialism, and the development of nationalism and struggle for independence.

**224. History of Pan-Africanism**  
Second semester. Three credits.  
Recommended preparation: At least one of the following, HIST 222, 223, 238, or 246. Omara-Otunnu  
The development of ideas of Pan-Africanism, beginning with the proto-Pan-Africanists in the nineteenth century; examination of the linkages between those ideas in Africa and the evolution of Pan-Africanism as a movement in the African Diaspora.

**225. History of War in the Modern World**  
Either semester. Three credits.  
Recommended preparation: HIST 101.  
Open to sophomores.  
Passed ANTH 257.

**226. Contemporary World Issues**  
Either semester. Three credits.  
Open to sophomores.  
The historical background of, and approach to, a number of the most critical problems confronting the world since World War II.

**227. Social and Cultural History of Connecticut and New England**  
Either semester. Three credits.  
Dayton, Brown  
Roe

**228. Europe in the Nineteenth Century**  
First semester. Three credits.  
Open to sophomores.  

**229. Europe in the Twentieth Century**  
Either semester. Three credits.  
Open to sophomores.  
Recommended preparation: HIST 101.  
Twentieth Century Europe and its world relationships in the era of two world wars, the great depression, and the cold war.

**229W. Europe in the Twentieth Century**  
Second semester. Three credits.  
Roe

**230. American History to 1877: A Survey**  
Either semester. Three credits.  
Open to sophomores.  
The political, social, and economic development of the American people through post-Civil War Reconstruction.

**231W. American History to 1877: A Survey**  
Second semester. Three credits.  
Open to sophomores.  
Roe

**232. American History Since 1877: A Survey**  
Either semester. Three credits.  
Open to sophomores.  
Roe

**233. Social and Intellectual History of the United States through the Civil War**  
First semester. Three credits.  
Prerequisite: HIST 231 or consent of instructor. Brown  
This course stresses the impact of political, economic, and social changes on American thought.
234. American Thought and Society Since the Late Nineteenth Century

The interaction of popular ideas and formal thought with society in the United States during a time of worldwide crises and unrest. Social Darwinism, Populism, reformism, racism, radicalism, liberalism, conservatism, and other ideologies and movements.

235. Constitutional History of the United States

The Constitution and the Supreme Court in relation to the political, economic, and intellectual history of the United States.

236. Civil War America
Second semester. Three credits. Recommended preparation: HIST 231. Waller

The social, economic and cultural forces that shaped the Civil War and its aftermath. Sectional conflict, industrialization, reform and abolitionism, race relations, and class, gender and constitutional issues from the 1830s to the 1880s.

237. The Indian in American History
Either semester. Three credits. Recommended preparation: HIST 231. Shoemaker

Examination of the cultural and political/military interaction of Indians and Europeans in America from the early colonial period.

238. African American History to 1865
Either semester. Three credits. Ogbar

History of African-American people to 1865, from their West African roots, to their presence in colonial America, through enslavement and emancipation. Adaptation and resistance to their conditions in North America. Contributions by black people to the development of the United States.

238W. African American History to 1865

239. History of Connecticut
First semester in odd-numbered years. Three credits. Recommended preparation: HIST 231 or 232. Either 239 or 227, but not both, may be counted for credit toward the History major.

A survey of Connecticut’s history from 1633 to the present from a constitutional and political perspective.

240W. History Workshop: Topics in American Society and Culture

Techniques of primary historical research based on collaborative research and writing on a topic selected by the instructor. With a change in content, may be repeated for credit.

241. The History of Urban America
(Also offered as URBN 241.) Either semester. Three credits. Not open for credit to students who have passed URBN 241. Stave

The development of Urban America with emphasis on social, political, physical, and environmental change in the industrial city.

241W. The History of Urban America
(Also offered as URBN 241W.)

242. Work and Workers in American Society
Either semester. Three credits. Porter-Benson

Changes in work from the 17th through the 20th centuries. Workers’ experiences, ideologies, and activities as shaped by gender, race/ethnicity, region, occupation, and industry.

243. The Establishment of the American Colonies
First semester. Three credits. Recommended preparation: HIST 231. Dayton, Shoemaker

Examines the context in which Europeans undertook settlement of North America, and the nature of the Indian response. Emphasis on the development of social, political, and religious institutions in the seventeenth century and in the increasingly ethnically and racially mixed cultures of the eighteenth century.

243W. The Establishment of the American Colonies

244. The American Revolution

Creation of the United States of America from the beginnings of the independence movement through the adoption of the Constitution and Bill of Rights.

246. African American History Since 1865
Either semester. Three credits. Ogbar


246W. African American History Since 1865

247. Immigrants and the Shaping of American History

The origins of immigration to the United States and the interaction of immigrants with the social, political, and economic life of the nation after 1789, with emphasis on such topics as nativism, assimilation, and the “ethnic legacy.”

248W. Main Currents in American Law
Second semester. Three credits. Consent of instructor required. Dayton

Seminar, limited to fifteen, emphasizing class participation. Themes from 18th to 20th century include: the Americanization of English common law; developments in legal education and law practice; legal ideology from sociological jurisprudence to legal realism to critical legal studies.

249. Rise of U.S. Global Power
Either semester. Three credits. Recommended preparation: HIST 231 or 232. Costigliola

The people and ideas that powered the growth of America’s global empire. Emphasis on the world wars, the Cold War, the Vietnam War, intervention in Latin America, and the global economy.

250. Byzantium
Either semester. Three credits. Langer

A survey of the major developments from the fourth through the fifteenth centuries: religious controversies, the theme system, the Crusades, Byzantine civilization, its law, art, literature, and its impact upon European and Russian civilization.

251. Medieval and Imperial Russia to 1855
First semester. Three credits. Langer

The development of Russia from the emergence of the Slavs to the reign of Alexander II. Russian political institutions, orthodoxy and cultural traditions, nobility, peasantry, and townspeople.

252. History of Russia Since 1855
Second semester. Three credits. Recommended Preparation: HIST 251. Langer

Continuation of History 251. Late imperial Russia, the former Soviet Union, and contemporary Russia.

254W. The Habsburg Monarchy and Its Peoples, 1740-1918

The rise and fall of the multinational, dynastic state of the Habsburgs, with emphasis upon those forces which sustained it through the nineteenth century and those which brought its collapse in 1918.

255. Germany from the Reformation to 1815
First semester. Three credits. Bergmann

A political and cultural survey of German history with topical emphasis on the Reformation, the religious wars, the Age of Enlightenment, the rise of Brandenburg-Prussia, Germany during the revolutionary era.

255W. Germany from the Reformation to 1815

256. Germany Since 1815
Second semester. Three credits. Bergmann

A study of German political, social, and intellectual history since the Napoleonic Wars. This course also considers European and world problems as reflected in the emergence of Germany as a pivotal force in international affairs.

258. Intellectual and Social History of Europe in the Nineteenth Century
First semester. Three credits. Bergmann

A study of intellectual trends and social movement in the major European countries. The thought and feeling of Europeans in their social context.

258W. Intellectual and Social History of Europe in the Nineteenth Century

259. Intellectual and Social History of Europe in the Twentieth Century
Second semester. Three credits. Bergmann

A continuation of HIST 258.

259W. Intellectual and Social History of Europe in the Twentieth Century

261. English History to 1603
First semester. Three credits. Open to sophomores. Olson

A survey of English history from its origin to the close of the Tudor period. Emphasis is placed on the development of the English nation and the growth of its culture. Recommended to majors in English.

262. History of Modern England
Second semester. Three credits. Open to sophomores. Watson

Cultural, political, economic, and intellectual development of modern Britain, with special emphasis on changing ideas of national identity.

264. Social and Economic History of Modern Britain
First semester. Three credits. Watson

The change from an agrarian to an industrial society.

265. History of Ireland
Either semester. Three credits. Canning

History of Ireland, with emphasis on the modern period. The rise of Irish nationalism, the Irish Literary Revival, and the problems of Northern Ireland.

267. Italy 1250-1600
Either semester. Three credits.

Italy from the triumph of the city-state and the popolo grosso to the end of the Renaissance. The complex interrelationship between society and culture will be the focus of study. Not open to those who have taken HIST 268.
269. The Modernization of Italy from 1815 to Present
Second semester. Three credits. Open to sophomores.
Davis
The modernization of Italy’s traditional sociopolitical and economic structure; Industrialization, unification, the liberal regime, Fascism, and the republic.

270. Variable Topics
Either semester. Three credits. With a change in topic, may be repeated for credit. Prerequisites and recommended preparation vary.

271. The Renaissance
First semester. Three credits. Gouwens
Europe in the fourteenth and fifteenth centuries.

272. The Reformation
Second semester. Three credits.
Europe in the sixteenth century with emphasis on religious developments, rise of the modern state, birth of science, expansion of Europe, and the Commercial Revolution.

273. Europe in the Seventeenth Century
First semester. Three credits.
Conflict of constitutionalism and absolutism, colonial expansion and rivalry, development of science, and the age of reason, the age of the baroque, the age of Louis XIV.

274. Europe in the Eighteenth Century
Second semester. Three credits.
Intellectual, political, and socioeconomic developments in Europe from 1713 to 1789.

275. Latin America and the Great Powers
First semester. Three credits. Goodwin
Great power diplomatic, commercial, and cultural relations with Latin America from the end of the colonial period to the present. Emphasis on the United States and Great Britain.

276. Andean Societies
Second semester. Three credits. Recommended preparation: HIST 281 or 282. Spalding
History of the geographical and social region occupied by the Inca Empire: pre-Columbian cultures, the period of Spanish colonial rule, and the modern Andean republics (primarily Ecuador, Peru, and Bolivia).

277. Modern India
(Also offered as AASI 277.) Either semester. Three credits. Buckley
An introduction to the history of India from the Mughal and European invasions of the 16th Century to the present. India’s synthesis of Eastern and Western culture, traditional and new, will be the focus.

279. France Since 1715
Second semester. Three credits. Cox
The disintegration of the monarchical synthesis prior to and during the French Revolution; the attempts to harmonize French society under subsequent regimes.

280W. Mexico in the Nineteenth and Twentieth Centuries
The emergence of modern Mexico from independence to the present with emphasis on the Revolution of 1910.

281. Latin America in the Colonial Period
First semester. Three credits. Open to sophomores. Pre-Columbian Civilization in America, the epoch of conquest and settlement, together with a study of the Ibero-Indian cultural synthesis which forms the basis of modern Latin American civilization.

282. Latin America in the National Period
Second semester. Three credits. Open to sophomores. Goodwin, Silvestrini
Representative countries in North, Central, and South America and the Caribbean together with the historic development of inter-American relations and contemporary Latin American problems.

283W. The Hispanic World in the Ages of Reason and Revolution
First semester. Three credits. Recommended preparation: HIST 281. Silvestrini
The transformation of Spanish America from the Bourbons in 1700, through the wars of independence and the struggle to build stable national states in the Nineteenth Century.

285. Cuba, Puerto Rico, and the Spanish Caribbean
First semester. Three credits. Goodwin
Discovery and settlement, slavery and plantation economy, recent political and economic developments, and United States relations with the Spanish Caribbean.

286. Argentina and LaPlata Region
First semester. Three credits. Recommended preparation: HIST 281 or 282. Goodwin
Colonial heritage, social and economic transformation of Argentina, Uruguay and Paraguay, foreign relations and contemporary turmoil.

287. East Asia to the Mid-Nineteenth Century
(Also offered as AASI 287.) First semester. Three credits. Wang
The major problems and issues of traditional Chinese and Japanese history and historiography. Special emphasis on the "Great Tradition" in ideas of both civilizations.

287W. East Asia to the Mid-Nineteenth Century
(Also offered as AASI 287W.)

288. East Asia Since the Mid-Nineteenth Century
(Also offered as AASI 288.) Second semester. Three credits. Wang
The reactions of East Asia to the Western threat, and the rise of Asian nationalism, communism, and fascism. Special attention to the tensions caused by the conflict of ideas.

288W. East Asia Since the Mid-Nineteenth Century
(Also offered as AASI 288W.)

289. War and Diplomacy in East Asia
First semester. Three credits.
European struggle for power in Asia since 1842, in the context of the rise of Japan and the reassertion of Chinese power.

290. The Middle East Crucible
First semester. Three credits. Azimi
Twentieth-century issues in the Middle East heartland with analysis focusing on the Ottoman heritage, nationalism, Arab-Israeli and other conflicts, Islam, oil, water, rapid sociopolitical change, trends in development, super-power rivalries, and the search for identity, independence, and peace with justice.

291. Personality and Power in the Twentieth Century
Second semester. Three credits.
Dynamic leadership in historical crises, including, for example, Churchill, Roosevelt, Stalin, Hitler, DeGaulle, Kennedy, and Mao.

292W. Biography as History
Second semester. Three credits. Two class periods of 75 minutes. Open to sophomores.
What the lives of significant individuals reveal about major historical periods and themes. Variable topics.

293. Foreign Study
Either or both semesters. Credits and hours by arrangement. May be repeated for credit. Consent of department head required, normally to be granted before the student’s departure. May count toward the major with consent of the advisor.

294. Asian-American Experience Since 1850
(Also offered as AASI 294.) Either semester. Three credits. Wang
Survey of Asian-American experiences in the United States since 1850. Responses by Asian-Americans to both opportunities and discrimination.

295W. History through Fiction
Either semester. Three credits. Open to sophomores. Recommended preparation: History 231 or 232 (if American perspective) or History 228 or 229 (if European perspective). Phillips
What classic novels and other works of fiction reveal about major historical periods and themes in history. Variable topics. May be offered from an American or European perspective.

296. Directed Research
Either or both semesters. Three credits. Open only to senior history majors.
An introduction to research methods and resources in history.

297W. Senior Seminar
Either semester. Three credits. Prerequisite: HIST 211. Open only to undergraduate history majors in their senior year. With a change in content, may be repeated for credit.
These seminars give students the experience of reading critically and in depth in primary and secondary sources, and of developing and defending a position as an historian does.

298. Special Topics
Either semester. Credits and hours by arrangement. With a change of content, may be repeated for credit. Prerequisites and recommended preparation vary.

299. Independent Study
Either or both semesters. Credits and hours by arrangement. Open only with consent of instructor. With a change in content, may be repeated for credit.

Human Development and Family Studies (HDFS)

Dean: Charles M. Super
Program Office: Room 106, Family Studies Building
For major requirements, see the School of Family Studies section of this Catalog.

183. Courtship, Marriage, and Sexuality
(Formerly offered as HDFR 183.) Either semester. Three credits.
Development of patterns of interaction in premarital and marital relationships.

190. Individual and Family Development
(Formerly offered as HDFR 190.) Either semester. Three credits.
Human development throughout the life span, with emphasis upon the family as a primary context.
201. Diversity Issues in Human Development and Family Studies
(Formerly offered as HDFR 201.) Either semester.
Three credits. Recommended preparation: HDFS 190.
Open to sophomores.
Critical issues in diversity and multiculturalism in human development, family relations, and professional practice.

202. Human Development: Infancy Through Adolescence
(Formerly offered as HDFR 202.) Either semester.
Three credits. Open to sophomores.
Individual development and behavior from prenatal period through adolescence; impact of peers, school, other social agencies, and especially the family.

204. Human Development: Adulthood and Aging
(Formerly offered as HDFR 204.) Either semester.
Three credits. Open to sophomores.
Individual development and behavior from young adulthood through later life with special attention given to family and social influences. Physical, cognitive, social and personality changes, role transitions, and interpersonal and intergenerational relationships.

218. Observational Child Study
(Formerly offered as HDFR 218.) Either semester.
Three credits. Two class periods and laboratory by arrangement.
Assessment of developmental skills of young children using a variety of observational methods and procedures. Laboratory experience includes participation in the University of Connecticut’s Child Development Laboratories.

220. Introduction to Programs for Young Children
(Formerly offered as HDFR 220.) Either semester.
Three credits. Open only with consent of instructor. Must be taken concurrently with HDFS 221 or 224.
Components of programs designed for infants and young children. Guided observations are integrated with lecture material. Designed for students who intend to work with infants and young children.

220W. Introduction to Programs for Young Children
(Formerly offered as HDFR 220W.)

221. Programs for Young Children: Introductory Laboratory
(Formerly offered as HDFR 221.) Either semester. One credit. One 2-hour laboratory by arrangement. Open only to students concurrently enrolled in HDFS 220 or 220W, and open only with consent of instructor. Guided observation and participation in a program for young children.

222. Integrated Curriculum in Early Childhood Education I
(Formerly offered as HDFR 222.) First semester. Three credits. Two class periods and one 2-hour laboratory period.
Integration of child development theory with best teaching practices for specific age appropriate learning domains from infancy through kindergarten in cognitive development, mathematical and scientific thinking, social studies, and personal/social development.

223. Integrated Curriculum in Early Childhood Education II
(Formerly offered as HDFR 223.) Second semester. Three credits. Two class periods and one 2-hour laboratory period.
Integration of child development theory with best teaching practices for specific age appropriate learning domains from infancy through kindergarten in cognitive development, mathematical and scientific thinking, social studies, and personal/social development.

224. Child Development Laboratory: Practicum I
(Formerly offered as HDFR 224.) Either semester. Three credits. Open only with the consent of instructor. Concurrent enrollment in HDFS 220 highly recommended. Recommended preparation in HDFS 202. Weekly seminar. Practicum by arrangement.
Supervised participation in an early childhood education center which has programs for infants, toddlers, preschoolers, and kindergarten children.

225. Analysis of Programs for Young Children
(Formerly offered as HDFR 225.) Either semester. Three credits.
Analytic study of programs designed for young children, history of such programs, underlying theories, specific models; cultural and subcultural influences, parental involvement, and evaluation procedures.

227. Child Development Laboratory: Supervised Teaching Practicum
(Formerly offered as HDFR 227.) Either semester. Nine credits. Two class periods and laboratory by arrangement. Prerequisites: HDFS 202, 220, 222, 223, 224, GPA of 2.5 in HDFS courses, and consent of instructor.
Supervised teaching experience in an early childhood education center which has programs for infants, toddlers, preschoolers, and kindergarten children.

228. Child Development Laboratory: Advanced Teaching Practicum
(Formerly offered as HDFR 228.) Either semester. Six credits. Two class periods and laboratory by arrangement. Prerequisite: HDFS 227. GPA of 2.5 in HDFS courses, and consent of instructor.
Continuation of HDFS 227. Experience in early childhood program implementation, administration, staff supervising, policy making, and curriculum planning.

230. Current Topics in Early Childhood Education
(Formerly offered as HDFR 230.) Semester and hours by arrangement. Variable credits. Open only with consent of instructor. With a change in content this course may be repeated for credit.
In-depth investigation of a current issue in early childhood education (e.g. emergent literacy, diversity), with focus on recent research and application to classroom practice. Includes classroom instruction and laboratory observation.

231. Infancy
(Formerly offered as HDFR 231.) Either semester. Three credits. Prerequisite: HDFS 202 or PSYC 236.
Human development from birth through the second year of life within the family setting.

234. Social and Personality Development During Childhood
(Formerly offered as HDFR 234.) Either semester. Three credits. Prerequisite: HDFS 202 or PSYC 236.
Social and personality development during infancy and childhood; influence of family members, peers, and social institutions on development; aggression, pro-social behaviors, autonomy, self-concept, sex-role development, and moral development.

234W. Social and Personality Development During Childhood
(Formerly offered as HDFR 234W.)

240. The Family-School Partnership
(Formerly offered as HDFR 240.) First semester. Three credits.
The role of families in the education process. The effective family-school-community partnership in educating children: Communications and the implications of culture, socio-economics, family form, family dynamics, family supports, and public policy.

245. Parent-Child Relations in Cross-Cultural Perspective
(Also offered as ANTH 245.) (Formerly offered as HDFR 245.) Offered every third semester. Three credits.
Theory and research on major dimensions of parenting in the U.S.A. and cross-culturally: parental warmth, control and punishment.

248. Aging in American Society
(Also offered as SOCI 248.) (Formerly offered as HDFR 248.) Either semester. Three credits.
Social gerontology: the role and status of older people in a changing society.

248W. Aging in American Society
(Also offered as SOCI 248W.) (Formerly offered as HDFR 248W.)

250. Gender and Aging
(Formerly offered as HDFR 250.) Either semester. Three credits.
Aging process as it impacts on men and women; historical and cross-cultural perspectives, changing family roles, including grandparenthood and widowhood, and implications of changing gender roles for self-actualization of older persons.

250W. Gender and Aging
(Formerly offered as HDFR 250W.)

252. Death, Dying, and Bereavement
(Formerly offered as HDFR 252.) Either semester. Three credits.
Cultural context of death, personal meaning of death at different stages in life cycle, and the effect of death upon survivors.

252W. Death, Dying, and Bereavement
(Formerly offered as HDFR 252W.)

259. Men and Masculinity: A Social Psychological Perspective
(Formerly offered as HDFR 259.) Either semester. Three credits.
Men’s gender role socialization over the life span; men’s developmental issues, gender role, conflicts, and interpersonal dynamics with women. Theory, research, and personal exploration are integrated.

260. Woman: A Developmental Perspective
(Formerly offered as HDFR 260.) Either semester. Three credits.
Development of women and women’s roles from birth to maturity; physiological, psychological, sociological, and interpersonal systems which contribute to development of women across the life span; cross-cultural and alternative models for role development.

264. Legal Aspects of Family Life
(Formerly offered as HDFR 264.) First semester. Three credits.
Law in family life.
266. Introduction to Counseling
(Formerly offered as HDFR 266.) Either semester. Three credits.
Principles of professional counseling including therapeutic processes, roles, and skills. How counselors help people solve problems is explored. Student's psychological growth and development is facilitated through psychological education.

267. Latino Health
First semester. Three credits.
Overview of health and health care issues among Latinos in the United States. Particular attention is paid to cultural and social factors associated with health and well being (eg. migration, acculturation, SES).

268. Latinos: Sexuality and Gender
Either semester. Three credits.
Critical discussion of issues involving gender and sexuality among Latinos, with particular attention to race, class, ethnicity, and acculturation.

269. Family Violence
(Formerly offered as HDFR 269.) Either semester. Three credits.
Theory, research, prevention, and treatment concerning the multiple forms of violence within contemporary families. The impact of violence on families and family members over the entire life span is considered. Includes child abuse and neglect, courtship violence, spouse abuse, elder abuse, and rape.

270. Low Income Families
(Formerly offered as HDFR 270.) Either semester. Three credits.
Impact of poverty and related problems on development of the child in the context of the family. Family structure, childrearing patterns, early educational and community programs.

271. Black American Family Patterns
(Formerly offered as HDFR 271.) Either semester. Three credits.
Continuities and discontinuities between black American subcultural patterns and dominant cultural norms as reflected by black American families.

272. Family and Work
(Formerly offered as HDFR 272.) Either semester. Three credits.
Interaction of the world of work with family structure; social psychological dynamics that enhance or impede working families' lives.

273. Family Interaction Processes
(Formerly offered as HDFR 273.) Either semester. Three credits.
Family interaction: communication processes, bonding behaviors, management of conflict and aggression, negotiation of family crisis.

274. Public Policy and the Family
(Formerly offered as HDFR 274.) Either semester. Three credits.
Analysis of government programs and policies impacting the family: child care, aging, family law, mental health, family violence, income maintenance, and family impact analysis.

275. Family Pathology
(Formerly offered as HDFR 275.) Either semester. Three credits.
Theory, research and intervention in families under stress.

276. Planning and Managing Human Service Programs
(Formerly offered as HDFR 276.) Either semester. Three credits.
Planning techniques; needs assessment, data collection and analysis; budgeting, and evaluation. Management skills: decision making, management theory and organizational behavior, personnel motivation, accountability, and financial management.

276W. Planning and Managing Human Service Programs
(Formerly offered as HDFR 276W.)

277. Issues in Human Sexuality
(Formerly offered as HDFR 277.) Either semester. Three credits.
Contemporary issues concerning human sexuality; impact upon individuals and family units.

278. Family in Society
(Formerly offered as HDFR 278.) Either semester. Three credits.
Sociocultural and historic variability of family and kinship systems. Race, class, gender and ethnicity as those advantage or disadvantage the opportunity structure for families and individuals. Effect of public policy on the quality of family life.

278W. Family in Society
(Formerly offered as HDFR 278W.)

279. History of the Family
(Also offered as HIST 209.) (Formerly offered as HDFR 279.) Second semester. Three credits. Not open for credit to students who have passed HIST 209.
Preindustrial and industrial family life in Western society since the Middle Ages; changes in demography, family size and structure, family economy, social expectations, sex roles, sexuality, and affective bonds.

280. Material Culture in American Family Life
(Formerly offered as HDFR 280.) Either semester. Three credits.
Material culture of the American family; interaction between family members and the artifacts in their near environment; role of personal possessions, household objects, housing and diet in daily family life and rituals over time.

281. Comparative Family Policy
(Formerly offered as HDFR 281.) Second semester. Three credits.
Comparative analysis of government programs and policies impacting families in the United States and other countries. Health and welfare policies, family planning, child care, teen pregnancy, and care of the aged.

284. Adolescence: Youth and Society
(Formerly offered as HDFR 284.) Either semester. Three credits.
Prerequisite: HDFS 202 or PSYC 236.
Contemporary adolescence, the multiple forces and behavioral characteristics of this period of development.

Examines the methods through which empirical social science research can affect law and public policy affecting children and families.

286. Supervised Field Experience
(Formerly offered as HDFR 286.) Either semester. Three or six credits. May be repeated up to a maximum of six credits. Prerequisites: GPA of 2.5 in HDFS courses; 15 credits of 200 level HDFS courses and consent of the Director of Undergraduate Studies. Students who do not meet all of these requirements may take the course with the consent of the fieldwork coordinator and of the seminar instructor. Weekly seminar required. Practicum by arrangement.
Supervised participation in settings where purposes and functions are related to the development and welfare of individuals and families.

289. Fieldwork in Community Settings
(Formerly offered as HDFR 289.) Either semester. Three credits. Prerequisites: HDFS 288; GPA of 2.5 in HDFS courses; 15 credits of 200 level HDFS courses and consent of the Director of Undergraduate Studies. Cannot be repeated for credit. Cannot be used towards meeting major requirements in HDFS nor towards meeting GPA requirements in HDFS. Weekly seminar required. Practicum by arrangement.
Supervised participation in settings where purposes and functions are related to the development and welfare of individuals and families.

290. Research Methods in Human Development and Family Studies
(Formerly offered as HDFR 290.) Either semester. Three credits. Prerequisites: HDFS 190 and PSYC 132 and 133 or 135. Open only to Human Development and Family Studies majors.
Research methods used in human development and family studies.

290W. Research Methods in Human Development and Family Studies
(Formerly offered as HDFR 290W.)

292. Research Practicum in Human Development and Family Studies
(Formerly offered as HDFR 292.) Either semester. Credits and hours by arrangement. Prerequisite: GPA of 2.5 in HDFS courses and consent of instructor.
Supervised experience conducting research in human development and family studies.

294. Foreign Study
(Formerly offered as HDFR 294.) Either or both semesters. Credits and hours by arrangement. Consent of Director of Undergraduate Studies required, preferably prior to student's departure. With a change in content, this course may be repeated for credit. Special topics taken in a foreign study program.

296. Selected Topics in Human Development and Family Studies
(Formerly offered as HDFR 296.) Either semester. Three credits. With a change in content this course may be repeated for credit.

299. Independent Study for Undergraduates
(Formerly offered as HDFR 299.) Either or both semesters. Credits and hours by arrangement. Open only with consent of instructor. May be taken more than one semester.
Students, working with a faculty supervisor, develop plans for an independent research project or review paper, execute the project, and complete a report.
100. The Social Consequences of Engineering in the Modern World
Either semester. Three credits. Not open to students in the School of Engineering.
This course offers non-engineering students desiring an understanding of the role of engineering in the world today opportunities to get acquainted with various engineering disciplines and significant issues. These include mechanical and solar energy, nuclear power, computers, genetics and urbanization taught by a team of interdisciplinary specialists relating engineering to problems of the real world in an understandable, non-technical manner.

130. Africa and Latin America: The Challenge of Poverty, Violence, and Development
Either semester. Three credits.
A study of poverty, violence, and development in two major Third World regions, and the causes and consequences of these interrelated factors. Strategies for change and their effects on jobs, income distribution, modernization, indigenous and external relations, food, agriculture, industrialization, urbanization, inflation, political and military structures, and human rights will be examined.

132. World Studies and Human Resource Development
Either semester. Three credits.
A comparative exploration of three major world cultures (Chinese, Latin American, and Middle Eastern) which relates to the themes of authority, legitimacy, and loyalty in each. Third World perspectives and development issues will be emphasized.

180. FYE University Learning Skills
Either semester. One credit. One class period. Open to freshmen and sophomore students only.
A component of the First Year Experience (FYE) program, this course is intended to acquaint students with the university and expand their learning experiences in order for them to adjust to the new expectations they will face. The course involves assignments that will provide opportunities for students to enhance their academic and interpersonal skills.

181. FYE Learning Community Seminar
Either semester. One credit. One class period. Open to freshmen and sophomore students only. This course must be taken in combination with a cluster of three courses; with the permission of the instructor, one of the cluster courses may have been completed previously. With a change in content, this course may be repeated for credit.
A component of the First Year Experience (FYE) program, this seminar course is intended to provide an opportunity to integrate the consideration of material from three courses through discussion, assignments, and projects. Students will have opportunities to enhance their academic and interpersonal skills.

182. FYE Faculty/Student Seminar
Either semester. One credit. One class period. Open to freshmen and sophomore students only. With a change in content, this course may be repeated for credit.
A component of the First Year Experience (FYE) program, this seminar course is intended to provide an opportunity for students to investigate topics of professional interest to the faculty instructor through guided research or reading, discussion, and some writing. The course will help students learn independently and engage actively in the academic life of the university.

193. Foreign Study
Either or both semesters. Credits and hours by arrangement. May be repeated for credit (to a maximum of 15). Consent of appropriate area studies director required before departure.
Course work undertaken within approved Study Abroad programs, usually focusing on the history, culture, and society of a particular country.

195. Interdisciplinary Special Topics Lecture Course
Either semester. Credits and hours as determined by the Senate Curricula and Courses Committee. May be repeated for credit with a change in topic.

196. Interdisciplinary Special Topics Seminar
Either semester. Credits and hours as determined by the Senate Curricula and Courses Committee. Open only with consent of instructor. May be repeated for credit with a change in topic. This course may or may not count for credit toward graduation. Students should consult the course syllabus and the Dean’s Office of their School or College.

197. Interdisciplinary Special Topics Independent Study
Either semester. Credits and hours as determined by the Senate Curricula and Courses Committee. Open only to freshmen and sophomores with consent of instructor. May be repeated for credit with a change in topic.

198. Freshman Honors Seminar
First semester. One credit. One class period. Open only with consent of Honors Director.
A overview of some aspects of university education. Designed to help students set learning goals to be achieved during the baccalaureate experience.

200. An Interdisciplinary Approach to Health Care
First semester. Three credits. Open only with consent of instructors. This course is also listed under Nursing and Pharmacy. Gillespie, Infante, and Staff
An interdisciplinary approach to health care which focuses on the role of the health team in the health care delivery system. Emphasis is placed on the preparation and roles of the health team members, both independent and interdependent, the system of health care delivery in the nation, modes of communication and collaboration, and the role of the consumer of health care.

210. Urban Field Studies
Either semester. Nine credits. Hours by arrangement. Open only with consent of the director of the Urban Semester Program. Nine credits. Hours by arrangement. Open only with consent of the director of the Urban Semester Program. Must be taken concurrently with INTD 211 and 212. This course is also listed under Sociology. Sponsored by the Urban Semester Program. Director of the Urban Semester Program.
Field experience supervised by the director and an examining committee consisting of the director and two or more faculty members from two departments in the College of Liberal Arts and Sciences.

211. Seminar in Urban Problems
Either semester. Three credits. Hours by arrangement. Open only with consent of the director of the Urban Semester Program. Must be taken concurrently with INTD 210 and 211. Sponsored by the Urban Semester Program. Director of the Urban Semester Program.
Discussions based upon assigned readings and led by invited speakers from within the University.

212. Urban Semester Field Work Seminar
Either semester. Three credits. Hours by arrangement. Open only with consent of the director of the Urban Semester Program. Must be taken concurrently with INTD 210 and 211. Sponsored by the Urban Semester Program. Director of the Urban Semester Program.

220. Studies in the Culture of the Middle Ages
Second semester. Three credits. Open only with consent of the instructor of record. With a change in content this course may be repeated for credit. Sponsored by the Committee for Medieval Studies.
An interdisciplinary examination of various aspects of the culture of Medieval Europe. Instructors and content will vary. Particulars will be announced prior to registration for the semester in which the course is offered.

222. Linkage through Language
Either semester. One credit. Prerequisite: Language skills equivalent to four semesters of college course work in a single foreign language (may be completed concurrently). May be repeated for credit, with a change in content. Sponsored by the Modern & Classical Languages Department in collaboration with the department offering the companion course.
This course supplements a three-credit course in a particular discipline by studying selected foreign language texts related to the topic of its companion course. Practice in oral and written expression.

224. Spanish Language and Culture for the Health Professions (“Spansing”) Either semester. One credit. Open with the consent of instructor to students in health care professions and social services. With a change in content, may be repeated for credit. Sponsored by Spanish/Modern & Classical Languages department in collaboration with schools of Nursing and Allied Health Professions.
Supplements professional training with focused instruction in Spanish language, culture, and health issues of relevance to professionals working with Spanish-speaking populations.

230. Special Topics in Slavic and East European Studies
Either semester. Three credits. Open only with consent of instructor to junior and senior undergraduates and graduate students. With a change in content this course may be repeated for credit. Sponsored by the Center for Slavic and East European Studies.
Discussion and analysis of selected problems from an interdisciplinary perspective.

240. Social Science Data Utilization
Either semester. Three credits. Three class periods and one 1-hour laboratory. This course is also listed under Political Science and Sociology. This course may not be counted toward the major in Political Science or in Sociology. Sponsored by the Social Science Data Center and the Political Science Department. Davis
Introduction to social science data analysis and utilization. Laboratory assignments will use the University Computer Center facility for the execution of statistical package setups, and data bases by the Social Science Data Center/Roper Center.

249C. Social Science Data Utilization
First semester. Three credits. Blank, Previt, Reed
Sources of violence in the individual, the home,
Italian Literary and Cultural Studies (ILCS)

Consult the Modern and Classical Languages Departmental listing in this Catalog for requirements for Majors in Italian Literary and Cultural Studies. Consult the Departmental Handbook for courses offered in the appropriate semesters and further description of these courses.

- **145-146. Elementary Italian I and II** (Formerly offered as ITAL 145-146.) Both semesters. Four credits each semester. Four class periods and one 1-hour laboratory practice. Prerequisite: ILCS 146 or equivalent.

- **175-176. Intermediate Italian I - IV** First and second semesters. Eight credits per semester. Two hours a day, four days a week, plus a two-hour laboratory practice. Open only with consent of the instructor. Not open for credit to students who have passed ILCS 145-146 through ILCS 148.
  - Intensive coverage of two years of Italian in two semesters. Intensive Italian 175-176 (Fall) covers the same material as ILCS 145-146; Intensive Italian 177-178 (Spring) covers the same material as ILCS 147-148.

- **193. Foreign Study**
  - **213. Year Abroad in Italy: Preparation** (Formerly offered as ITAL 213.) Second semester. Three credits. Open only to students selected for the Year Abroad in Florence Program.
    - A comprehensive review of Italian language and civilization.
  - **237. Italy Today** (Formerly offered as ITAL 237.) First semester. Three credits. Prerequisite: ILCS 148.
    - A survey of contemporary Italian political, social, economic and cultural life.
  - **238. Italian Civilization in the Renaissance** (Formerly offered as ITAL 238.) Either semester. Three credits. Prerequisite: ILCS 148 or equivalent.
    - A survey of social, cultural and artistic trends in Italy during the Renaissance.
  - **239. Italian Composition and Conversation I** (Formerly offered as ITAL 239.) First semester. Three credits. Prerequisite: ILCS 148 or equivalent.
    - Practice in written and oral composition. Syntax study.
  - **240. Italian Composition and Conversation II** (Formerly offered as ITAL 240.) Second semester. Three credits. Prerequisite: ILCS 239 or equivalent.
    - Further practice in written and oral composition. Treatment of the finer points in syntax.

- **243. Main Currents of Italian Literature Through the Renaissance** (Formerly offered as ITAL 243.) First semester. Three credits. Prerequisite: ILCS 148 or equivalent.
  - The history of Italian literature through the Renaissance is traced through its main developments. The aim of the course is to acquaint the student with the principal authors, literary schools and trends.
- **244. Main Currents of Italian Literature After the Renaissance** (Formerly offered as ITAL 244.) Second semester. Three credits. Prerequisite: ILCS 148 or equivalent.
  - The history of Italian literature after the Renaissance is traced through its main developments. The aim of the course is to acquaint the student with the principal authors, literary schools and trends.
- **250. Italian Theatre of the Eighteenth Century** (Formerly offered as ITAL 250.) Second semester. Three credits. Prerequisite: ILCS 237 or 239 or 243 or equivalent.
  - Readings from Metastasio, Goldoni, and Alfieri.
- **251-252. Machiavelli, Michelangelo and Renaissance Literature** (Formerly offered as ITAL 251-252.) Both semesters. Three credits each semester. Prerequisite: ILCS 237 or 239 or 243 or 245 or equivalent.
  - Selected readings from the works of Poliziano, Leonardo da Vinci, Lorenzo de’ Medici, Michelangelo, Ariosto, Machiavelli, Castiglione, Tasso, and others.
- **253. Dante and His Time** (Formerly offered as ITAL 253.) Either semester. Three credits. Prerequisite: ILCS 237 or 239 or 243 or equivalent.
  - Selected readings from Dante, Petrarch, Compagni, Villani.
- **254. Boccaccio and His Time** (Formerly offered as ITAL 254.) Either semester. Three credits. Prerequisite: ILCS 237 or 239 or 243 or equivalent.
  - Readings from Boccaccio and others with special attention to the problems of social and sexual ethics.
- **261. Twentieth-Century Italian Literature** (Formerly offered as ITAL 261.) Either semester. Three credits. Recommended preparation: ILCS 237 or 239 or 240 or consent of the instructor. Bouchard
  - Major trends in twentieth-century Italian literature from the early modern period to contemporary times.
- **262. Nineteenth-Century Italian Literature** (Formerly offered as ITAL 262.) Either semester. Three credits. Recommended preparation: ILCS 237 or 239 or 240 or 243 or consent of the instructor. Bouchard
  - Nineteenth-century Italian drama, poetry, and narrative from the Neapolitan period to the years immediately following the conquest of Rome in 1870.

- **293. Foreign Study**
- **295. Variable Topics**
- **298. Special Topics**
- **299. Independent Study** (Formerly offered as ITAL 299.) Either or both semesters. Credits and hours by arrangement. Open only with consent of instructor. With a change in content, may be repeated for credit.

**Florence Program**
The Florence Program is open to sophomores, juniors, and seniors. Courses include intensive Italian, Italian literature, and, with the consent of the director of the
101. The Italian Renaissance
(Formerly offered as ITAL 101.) First semester. Three credits. A knowledge of Italian is not required. Taught in English.
A survey of Italian Renaissance civilization, with emphasis on literature and intellectual life.

149. Cinema and Society in Contemporary Italy
(Formerly offered as ITAL 149.) Second semester. Three credits. Three class periods and one 2-hour laboratory period. Lectures in English. Films in Italian with English subtitles.
A critical analysis of contemporary Italian society seen through the media of film and literature.

*** 193. Foreign Study

255W. Dante’s Divine Comedy in English Translation
Either semester. Three credits. This course may not be counted toward the Italian Literary and Cultural Studies major or minor group. 
Dante’s poem as a unique synthesis of Medieval culture. Emphasizes its integration of ethics, political thought, and theology with poetic imagination.

256W. The Literature of the Italian Renaissance
(Formerly offered as ITAL 256W.) Second semester. Three credits. Not open to students who have passed ILCS 251-252. This course may not be counted in the Italian Literary and Cultural Studies major group.
A survey, in English, of the major literary and philosophical currents of the Italian Renaissance. Selections from Boccaccio, Petrarch, Pico della Mirandola, Machiavelli, Castiglione, and others.

260W. Italian Cinema
(Formerly offered as ITAL 260W.) Either semester. Three credits. Two class periods and one 2-hour laboratory period. Lectures in English. Films in Italian with English subtitles. 
Italian cinema from the silent era to the present. Its genres, such as epic film, melodrama, comedy "Italian style," "Spaghetti-Westerns," and political cinema. Cinema as reflection and comment upon the social and political contexts of Italian history from pre-fascist Italy to modernization and beyond.

*** 295. Variable Topics

*** 296. Special Topics

193. Foreign Study
(Formerly offered as ITAL 193.) Either or both semesters. Credits and hours by arrangement. May be repeated for credit. Consent of Department Head required, normally before the student’s departure.
Special topics taken in a foreign study program.

293. Foreign Study
(Formerly offered as ITAL 293.) Either or both semesters. Credits and hours by arrangement. May be repeated for credit. Consent of Department Head required, normally granted prior to the student’s departure. May count toward the major with consent of the advisor.
Special topics taken in a foreign study program.

295. Variable Topics
(Formerly offered as ITAL 295.) Either semester. Three credits. With a change in topic, may be repeated for credit. Prerequisites and recommended preparation vary.

296. Special Topics
(Formerly offered as ITAL 296.) Either semester. Credits and hours by arrangement. With a change in content, may be repeated for credit. Prerequisites and recommended preparation vary.

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Journalism (JOUR)

Head of Department: Professor Maureen Croteau
Department Office: Room 422, Arjona Building

For major requirements, see the College of Liberal Arts and Sciences section of this Catalog.

101. Introduction to Journalism
Either semester. Three credits.
A survey of the principles, trends, attitudes and philosophies of journalism with emphasis on newspapers and magazines.

102. The Press in America
Either semester. Three credits.
The development of American print journalism from 18th century print shops to 21st century corporations; how journalists and their work have evolved and influenced American life.

200W. Newswriting I
(Formerly offered as JOUR 211.) Either semester. Three credits. One 75-minute lecture and one 2-hour laboratory plus field work. Open to sophomores. 
Worcester
Definition of news, newswriting style, community reporting, covering governmental meetings and writing statistical matter. Laboratory offers intensive practical writing exercises. Field trips required.

201W. Newswriting II
(Formerly offered as JOUR 221.) Either semester. Three credits. One 75-minute lecture and one 2-hour laboratory plus field work. Prerequisite: JOUR 200 or 211. Open to sophomores. 
Dufresne
Provides in-depth explanations and demonstrations of what reporters can expect to find, and report, in the courts, schools, town halls, land use agencies and other civic offices, boards and commissions.

202. Journalism Ethics
Either semester. Three credits. Prerequisite: JOUR 102. 
Breen
Discussion of such contemporary problems as privacy, good taste, community standards, effectiveness of the press and responsibility of the press.

212W. Feature Writing
Either semester. Three credits. Prerequisite: JOUR 201 or 211. Open to sophomores. 
Worcester
Emphasis on finding, developing and writing feature stories. Outside stories will be assigned weekly.

213W. Magazine Journalism
Either semester. Three credits. Prerequisite: JOUR 201. Recommended preparation: JOUR 212.
Students research, report and write, for publication, a magazine-length non-fiction article.

216. Publication Practice
Either semester. One to 3 credits. May be repeated for credit. Hours by arrangement. Open only with consent of instructor. 
Worcester
Students and faculty work together to research, write, edit and produce a publication.

219. Daily Campus Critique
First semester. One credit. One class period. Open only with consent of instructor. May be repeated only once for credit.
A weekly critique of the content of the student daily from news stories, through editorials to advertising copy and printing.

220. Law of Libel and Communications
Either semester. Three credits.
Typical subjects: libel, slander, invasion of privacy, obscenity, legal problems of newsgathering, protecting the political process, protecting state secrets, protecting the public welfare.

230W. Copy Editing I
(Formerly offered as Journalism 230.) Either semester. Three credits. Prerequisite: JOUR 211 or 201.
Editing for grammar, style and content, headline writing, introduction to basic newspaper design concepts.

231C. Copy Editing II
Second semester. Three credits. Prerequisite: JOUR 230. Croteau
Emphasis on copy and picture selection, copy fitting, photo editing and computer-assisted editing, page layout and production.

233. Opinion Writing
First semester. One credit. Prerequisite: JOUR 201.
One two-hour lab-lecture period. 
Breen
Writing for the editorial and op-ed pages.

235C. Advanced Reporting Techniques
First semester. Three credits. Prerequisite: JOUR 201. 
Dufresne
Using the Internet, databases, and other computer resources to research and report on the actions of courts, businesses, public agencies, and governments. Consideration of ethical questions.

240W. Newswriting for Radio and Television
Either semester. Three credits. Prerequisite: JOUR 200 or 211. Two 75-minute lab-lecture sessions plus a field trip. 
Application of newswriting techniques to the broadcast media.

241. Reporting and Editing TV News
Either semester. Three credits. Prerequisite: JOUR 240.
This is an advanced broadcast journalism class that teaches students how to gather, edit and deliver accurate, newsworthy information for television newscasts. Students develop the skills needed to report news and organize newscasts through actual experience in and out of class.

245. Specialized Journalism
Either semester. Three credits. Prerequisite: JOUR 200 or 211.
An introduction to specialized fields such as business, science, education, arts, sports, and entertainment reporting. Students will examine some of the best work in the fields and will consider ethical issues and other problems.

250. Professional Seminar
Three credits. Three hours. Prerequisite: JOUR 211 or 200, which may be taken concurrently (Also available for one credit. Two hours. No prerequisite.) May be repeated once for a maximum total of four credits.
Journalists discuss the economic, technological, sociological and ethical issues that challenge their profession.
293. Foreign Study
Either or both semesters. Credits and hours by arrangement. May be repeated for credit with permission of Department Head. Consent of Department Head required before the student’s departure. May count toward the major with consent of the advisor. *Croteau*

295. Variable Topics
Either semester. Three credits. With a change in topic, may be repeated for credit. Prerequisites and recommended preparation vary.

297. Supervised Field Internship
Either semester. One to three credits. Hours by arrangement. Prerequisite: JOUR 200, 201 and 220. Open only with consent of Department Head. *Croteau*
Students research, report and write for newspapers, news departments of radio and television stations, and public relations offices under supervision of professionals.

298. Special Topics
Either semester. Credits and hours by arrangement. With a change in content, may be repeated for credit. Prerequisites and recommended preparation vary.

299. Independent Study
Either semester. Credits and hours by arrangement. Open only with consent of instructor. May be repeated for credit.

Open to qualified students who present suitable projects for independent work in journalism.

**Judaic Studies (JUDS)**

*Associate Director, Center for Judaic and Studies and Contemporary Life.*

Professor Stuart S. Miller

*Offices:* Room 154, Thomas J. Dodd Research Center and Room 220, Arjona Building

For minor and individualized major requirements, see *Center for Judaic Studies and Contemporary Jewish Life* in the Special Facilities and Programs section of this Catalog.

101. The Land of Israel from Biblical Times to the Present (Also offered as HEB 101.) Either semester. Three credits. Offered in alternate years. *Miller*

An in-depth look at the history, culture and civilizations of the land of Israel. The importance of the land in Judaism and its significance for Christianity and Islam will be discussed. Lectures and discussion will be enhanced by slide presentations.

103. Literature and Civilization of the Jewish People (Also offered as HEB 103.) Either semester. Three credits. *Miller*

The major concepts, personalities and literary works of the Hebraic tradition from the Biblical and Talmudic periods to the present.

104. Modern Jewish Thought (Also offered as HEB 104.) Second semester. Three credits.

Nationalism, culture, ethics and philosophy in the writings of the major Jewish thinkers from Spinoza to the present. Emphasis will be placed on the work of Moses Mendelssohn, Nachman Krochmal, Ahad Haam, Hermann Cohen, Franz Rosenzweig, Martin Buber and Mordecai Kaplan.

201. Selected Books of the Hebrew Bible (Also offered as HEB 201.) Either semester. Three credits. Prerequisite: INTD 294 or HIST 213 or HEB 103, which may be taken concurrently, or consent of instructor. A knowledge of Hebrew is not required. May be repeated with change of content and consent of instructor. *Miller*

Focuses on a biblical book (or books) and emphasizes its literary structure and content using modern approaches as well as midrashic and medieval exegesis. Historical and archaeological material introduced where relevant.

202. Sects and Movements in Judaism (Also offered as HEB 202.) Either semester. Three credits. Offered in alternate years.

Varieties of Jewish expression and belief from Biblical times to the present. Topics include: the Dead Sea Sect, Pharisees, Sadducees, Karaites, Marranos, Hasidism and the Reform, Conservative, Orthodox and Reconstructionist movements of the modern era.

203. The Holocaust (Also offered as HEB 203.) Either semester. Three credits. A discussion of the Holocaust to be preceded by an examination of the roots of anti-semitism and its effect upon the Jewish experience. Special emphasis will be given to the impact of the Holocaust on Jewish and Christian thought.

218. Palestine Under the Greeks and Romans (Also offered as CAMS 256, HEB 218, and HIST 218.) Either semester. Three credits. Recommended preparation: HIST 213 or 214 or 216 or INTD 294 or HEB 202. *Miller*

The political, historical and religious currents in Greco-Roman Palestine. Includes the Jewish Revolts; sectarian developments, the rise of Christianity and the Talmudic academies.

242. American Jewry (Also offered as SOCI 242.) Three credits. Either semester. *Dashofsky*

Historical, demographic, organizational, and sociopsychological perspectives.

**Latin American Studies (LAMS)**

*Director, Center for Latin American and Caribbean Studies: Professor Elizabeth Mahan*

*Office:* Room 4, Human Development Center

For major requirements, see the College of Liberal Arts and Sciences section of this Catalog. For information about courses on Latin America in other departments consult the list published by the Center before pre-registration each semester.

190. Perspectives on Latin America Either semester. Three credits.

A multidisciplinary course including geography, indigenous peoples, colonization and nation formation; society, politics, economy, and culture of contemporary Latin America and its place in today’s world.

190W. Perspectives on Latin America

193. Foreign Study Either or both semesters. Credits and hours by arrangement. May be repeated for credit (to a maximum of 15). Consent of Director of Latin American and Caribbean Studies required before departure.

Course work undertaken within approved Study Abroad programs, usually focusing on the history, culture, and society of a particular Latin American or Caribbean country or countries.

270. Latin American Popular Culture Second semester, alternate years. Three credits. *Mahan*

Culture, subcultures, and culture industries in Latin America. Conditions that affect the mass production, dissemination and reception of entertainment products.

275. Cinema and Society in Latin America Either or both semester. Variable credit up to a maximum of three credits. Hours by arrangement. With a change in content, this course may be repeated once for credit.

The aesthetic, social, and political significance of Latin American film.

284. Latin America Either semester. Credits and hours by arrangement. Open only with consent of instructor and director of the Center for Latin American and Caribbean Studies. This number covers courses in Latin American Studies taken at other Universities by special arrangement for University of Connecticut credit.

290. Latin American Studies Research Seminar Either semester. Three credits. Prerequisite: Consent of instructor.

Capstone course in which majors and minors in Latin American Studies design, execute and write up original, library-based research on Latin America. Some readings may be in Spanish or Portuguese.

293. Foreign Study Either or both semesters. Credits (to a maximum of 17) and hours by arrangement. Consent of Director of Latin American and Caribbean Studies required before departure. May count toward the major with consent of advisor.

Special topics taken in a foreign study program.

295. Variable Topics Either semester. Three credits. With a change in topic, may be repeated for credit. Prerequisites and recommended preparation vary.

298. Special Topics Either or both semesters. With a change in topic, may be repeated for credit.

299. Independent Study Either or both semesters. Credits and hours by arrangement. Open only with consent of instructor. May be repeated for credit. Sponsored by the Center for Latin American and Caribbean Studies.

**Study Abroad**

The University sponsors academic programs in Mexico at the Universidad de las Americas, Puebla; in the Dominican Republic, at the Pontificia Universidad Católica Madre y Maestra, Santiago de Los Caballeros; at the University of Costa Rica, in San José, Costa Rica; at the Pontificia Universidad Católica de Chile and the Universidad de Chile, in Santiago, Chile; and at the Universidad de Buenos Aires, Argentina. Students may go for either a semester or a full academic year. The University also sponsors an academic year and a one-semester program in Brazil at the Universidade de São Paulo. For further information, contact the Center for Latin American and Caribbean Studies or the Study Abroad Office.
Linguistics (LING)

Head of Department: Professor Diane Lillo-Martin
Department Office: Room 230, Monteith Bldg.

For major requirements, see the College of Liberal Arts and Sciences section of this Catalog.

101. Language and Mind
Either semester. Three credits.

The special properties of human language and of the human mind that make verbal communication possible. Basic topics in the psychology of language.

102. Language and Environment
Second semester. Three credits. Anderson
The birth, spread, and death of languages. A basic survey of the effects of geography, society, and politics on language families.

193. Foreign Study
Either or both semesters. Credits and hours by arrangement. May be repeated for credit. Consent of Department Head or advisor may be required prior to the student’s departure. Special topics taken in a foreign study program.

202. Principles of Linguistics
Either semester. Three credits. Open to sophomores.
A survey of theory, methods and findings of linguistic research: the relation between sound and meaning in human languages; social variation in language; language change over time; universals of language; the mental representation of linguistic knowledge.

205Q. Phonology
First semester. Three credits. Prerequisite: LING 202.
Calabrese, van der Halst
The analysis of sound patterns in language within a generative framework: distinctive features, segmental and prosodic analysis, word formation, the theory of markedness.

206Q. Syntax and Semantics
Second semester. Three credits. Prerequisite: LING 101 or 202. Beck, Boskovic, Lasnik, Sharvit
The analysis of form and meaning in natural languages in a Chomskyan framework: surface structures, deep structures, transformational rules, and principles of semantic interpretation.

208W. The Linguistic Basis of Reading and Writing
Semester by arrangement. Three credits. Prerequisite: LING 202. Open to sophomores.

The relationship between writing systems and linguistic structures; the psycholinguistic basis of reading.

215C. Experimental Linguistics
Semester by arrangement. Three credits. Prerequisite: PSYC 132 and LING 101 or 202. Lillo-Martin, Snyder
Research methods and laboratory techniques for the study of language acquisition and/or sentence processing. Students design and conduct a study using a computer database of child speech.

225. Second Language Acquisition.
Either semester. Three credits. Prerequisite: Ling 101, or 202, or consent of instructor. Bar-Shalom

The relationship between linguistic theory and second language acquisition. Effects of mother tongue and linguistic input. Pedagogical implications of second language acquisition research.

244W. Language and Culture
First semester. Three credits. Not open for credit to students who have passed ANTH 244 prior to Fall 1998, Anderson, Bar-Shalom

The study of language, culture, and their relationship. Topics include the evolution of the human language capacity; the principles of historical language change including reconstruction of Indo-European and Native American language families; writing systems; linguistic forms such as Pidgins and Creoles arising from languages in contact; the interaction between language and political systems, the struggle for human rights, gender, ethnicity, and ethnoiology.

293. Foreign Study
Either or both semesters. Credits and hours by arrangement. May be repeated for credit. Consent of Department Head required, normally to be granted prior to the student’s departure. May count toward the major with the consent of the advisor. Special topics taken in a foreign study program.

295. Variable Topics
Either semester. Three credits. With a change in topic, may be repeated for credit. Prerequisites and recommended preparation vary.

298. Special Topics
Either semester. Credits and hours by arrangement. With a change in content, may be repeated for credit. Prerequisites and recommended preparation vary.

299. Independent Study
Either both semesters. Credits and hours by arrangement. May be repeated for credit.

Management (MGMT)

Head of Department: Professor John F. Veiga
Department Office: Room 212, School of Business Administration

For major requirements, see the School of Business Administration section of this Catalog.

Cours es in this department are open to juniors and seniors only with the exception of MGMT 198.

198. Contemporary Issues in the World of Management
Semester by arrangement. One credit. May be repeated in different sections, in combination with MGMT 198, up to a maximum of three credits. May not be used to satisfy Upper Division/major requirements of the School of Business Administration.

201. Managerial and Interpersonal Behavior
Either semester. Three credits. Prerequisites: ACCT 131, ECON 111 and 112, ENGL 110 or 111, or ENGL 105 and 109, MATH 106 or 114 or 116, STAT 100 or 110.

Topics covered include individual work motivation, interpersonal communications in organizations, team building and group processes, leadership, decision-making, and understanding and managing cultural diversity. Classes will emphasize interpersonal and leadership skill-building through the inclusion of exercises which rely on active participation of class members.

203. Development of American Business
Semester by arrangement. Three credits.

Historical development of business and business leadership, concentrating on changes in formulating and implementing top management policies. The total environment is considered as it affects business behavior. Case studies based on a variety of historical situations are used.

225. International Business
Semester by arrangement. Three credits. Prerequisite: FNCE 201, OPIM 204, MGMT 201, MKTG 201.

An introduction to the basic problems of the manager making decisions involving international trade, payments, and investment. Through extensive use of actual case studies, the special features of decision-making within the multinational enterprise integrating business operations among national economies are given particular attention. Lecturer, discussion, and case analyses.

234. Management of Small Businesses and Venture Enterprises
Semester by arrangement. Three credits. Prerequisite: ACCT 200, FNCE 201. BLAW 271 or 275, OPIM 203, MGMT 201, MKTG 201, and senior standing.

Emphasis on managerial aspects of organizing and operating small firms by means of case discussions and assigned readings. Students can obtain insights regarding opportunities of self-employment in traditional small businesses as well as entrepreneurial careers in more sophisticated business ventures.

235. Entrepreneurship and Venture Management
Semester by arrangement. Three credits. Prerequisite: ACCT 200, FNCE 201, MGMT 201, MKTG 201. Senior standing preferred.

In this field course, students investigate the special problems of newly formed firms. Course emphasis is on the planning skills necessary for start-up operations. The course is designed to acquaint students with the unique strategic problems faced by such firms and to teach them how to evaluate new venture plans.

239. Managing a Diverse Workforce
Semester by arrangement. Three credits.

This course examines issues related to managing an increasingly diverse workforce. Diversity in the workplace may result from differences in individual characteristics such as gender, race, ethnicity, national origin, and physical ability/disability. Diversity-related issues with management implications to be examined include personal identity, recruitment and selection, work group interactions, leadership, career development and advancement, sexual harassment, work and family, accommodation of people with disabilities, and organizational strategies for promoting equal opportunity and a positive attitude toward diversity among all employees.

245. Managerial Behavior in Cross-Cultural Settings
Semester by arrangement. Three credits.

The objective of this course is to introduce the student to the work values and behaviors of individuals in countries around the world. Some of the topics presented in the cross-cultural comparisons discussed in this course will include: approaches to motivation, communication, decision making, and negotiation. Particular emphasis will be placed on the developed and developing parts of the world that are major players in today’s global economy.

250W. Management Communications
Semester by arrangement. Three credits. Open to Management majors only.

This course has two objectives: to acquaint the student with the functional importance of communication in business management, and to teach the techniques of oral and written communication.

265. The Dynamics of Organization
Semester by arrangement. Three credits.

Dynamics of organization; relationship between people and organization. The organization viewed as a system interacting with a changing environment, as a structure of organized human cooperation, as an instrument of management strategy. Experiential
exercises and case studies used to gain a better understanding of organization strategy, design and structure.

265W. The Dynamics of Organization
Semester by arrangement. Three credits. Prerequisite: MGMT 201.
This course is designed to provide students with an opportunity for field work relevant to one or more major areas within the Department. Students will work under the supervision of one or more professionals in the specialty in question. Student performance will be evaluated on the basis of an appraisal by the field supervisor and a detailed written report submitted by the student.

269. Field Study Internship
Either or both semesters. One to six credits. Hours by arrangement. Prerequisite: Consent of instructor and Department Head.

271. Human Resources Management
Semester by arrangement. Three credits. Prerequisite: MGMT 201.
Study of the personnel function from the managerial perspective. Emphasizes human resources planning, recruitment, selection, employee and management development, and performance evaluation.

272. Career Development in Business
Either semester. One credit. Meeting once per week for one hour and fifty minutes for 6 weeks (first or second half of semester), plus 2 or 3 evenings or Saturday morning panel discussions. Prerequisite: Sixth or seventh semester standing. Open only to students in the School of Business Administration.
Topics covered include: self-assessment, exploration of career information resources, informational interviewing, development of an individual career plan, development of job search strategies and skills, discussion of career transition issues, overview of the career life cycle, and introduction to career development in organizations.

273. Labor Relations
Semester by arrangement. Three credits. Prerequisite: MGMT 201.
Study of employer-employee relations in unionized settings, both public and private sectors. Covers such areas as the National Labor Relations Act, labor contract negotiation, and administration.

276. Compensation Analysis and Administration
Semester by arrangement. Three credits. Prerequisite: MGMT 271.
Provides a systematic study of compensation theory and practice including wage theory, job analysis, job design, job evaluation, wage survey, pricing of the job structure, wage incentives, profit sharing and fringe benefits.

276W. Compensation Analysis and Administration
278. Purchasing and Materials Management
Semester by arrangement. Three credits. Prerequisite: MGMT 201, MKTG 201, ACCT 131, FNCE 201, OPIM 203C and BLAW 271 or 275.
Purchasing and Materials (Strategic Supply) Management is concerned with the management of materials and control of material costs in business and institutional enterprises. It emphasizes purchasing as the primary material activity. At the same time, it integrates the purchasing activity in the context of a total business operation, including marketing, engineering, production control, inventory management, finance, information management, strategic management and operations management.

281. Corporate Social Responsibility
Semester by arrangement. Three credits.
This course is designed to help the student relate business and its external culture, the social system, and the total environment. Develops an understanding of the role of the manager as the linking element between the business organization and the social environment.

281W. Corporate Social Responsibility

289. Strategy, Policy and Planning
Either or both semesters. Three credits. Prerequisite: ACCT 200, FNCE 201, OPIM 203 and 204, MGMT 201, MKTG 201, and either BLAW 271 or 275, or consent of instructor. Open only to School of Business Administration students with senior class standing.
An integrative analysis of the administrative processes of the various functional areas of an enterprise viewed primarily from the upper levels of management. The formulation of goals and objectives and selection of strategies under conditions of uncertainty as they relate to the planning, organizing, directing, controlling and evaluating policies and activities in each of the functional areas separately and jointly to achieve corporate objectives. Developing an integral business perspective is an integral part of the course.

291. Small Business Consulting
Semester by arrangement. Three credits. Hours by arrangement. Prerequisite: 7th semester or higher standing in the School of Business Administration plus a minimum of one course from each of the following areas: ACCT, BLAW, FNCE, MGMT, MKTG and OPIM.
Application of small business management concepts to a consulting project in an on-going small business in Connecticut. Students will be required to take examinations on course content and submit a report on the consulting project.

293. Foreign Study
Either or both semesters. Credits and hours by arrangement, up to a maximum of six credits. Consent of Department Head required, prior to the student’s departure.
Special topics taken in a foreign study program.

296W. Senior Thesis in Management
Either semester. Three credits. Hours by arrangement. Open only to Management Department Honors Students with consent of instructor and Department Head.

298. Special Topics
Semester by arrangement. Credits and hours by arrangement. Prerequisite: Announced separately for each of the topics. Application of advanced study and research on specific problems. Students submit written reports for each major topic.

299. Independent Study
Either or both semesters. Credits by arrangement, not to exceed six in any semester. Open only with consent of instructor.
Individual study of special topics in management as mutually arranged between a student and an instructor.

† Students taking this course will be assigned a final grade of S (satisfactory) or U (unsatisfactory).

Management and Engineering for Manufacturing (MEM)

Co-Directors: School of Business Administration:
Jeffrey Rummel, Associate Professor
School of Engineering: Robert G. Jeffers, Associate Professor

151. Introduction to Management and Engineering for Manufacturing Program
Second semester. Three credits. Prerequisite: ENGR 100C.
Introduction to the goals of engineering and management for manufacturing enterprises. Review of the history of technological development, including its effects on new products and processes. Written and oral communication skills will be developed.

210. Manufacturing Equipment Lab
Either semester. One credit. One and one-half hours of laboratory per week. Open to sophomores.
Introduction to machine shop equipment, metrology, general safety, and hands on experience in machining and fabrication of metals. Topics include: introduction to instrumentation; knee miller, engine lathe, drill press, grinder, and sander operation; welding; marking; and grinding.

211. Introduction to Manufacturing Systems
Second semester. Three credits. Prerequisite: STAT 110V. Open to sophomores.
Overview of manufacturing operations management and the systems used in controlling manufacturing enterprises including the concepts of global competition and manufacturing as a competitive weapon.

215W. Advanced Manufacturing Systems
Second semester. Four credits. Two three-hour laboratory periods. Prerequisite: ME 221 and MEM 211.
Capstone design course for the MEM Program. Design applications involving construction and analysis of manufacturing system models. Students submit write-ups for several small projects. One large project is completed by all students in the course, with a written report and oral presentation. Projects incorporate major concepts studied in prior courses.

221. Introduction to Products and Processes
First semester. Three credits. Prerequisite: MEM 211.
Overview of the factors affecting the design of products and the various processes used in their manufacture. An introduction to manufacturing processes and their capabilities and limitations. Value engineering, methods improvement and simplification techniques will be covered.

225. Advanced Products and Processes
First semester. Three credits. Prerequisite: MEM 221.
Introduction to advanced topics relevant to the design and manufacture of products. Special emphasis on the relationship between manufacturing products and processes. Student projects.

231. Computers in Manufacturing
Second semester. Three credits. Prerequisite: EE 220, MEM 211, and OPIM 203C, which may be taken concurrently.
The utilization of computers and information systems in manufacturing, with special emphasis placed on Computer Integrated Manufacturing (CIM). The study of actual CIM applications will be incorporated.

296. Manufacturing Internship
One or more summer semesters. No credits. Hours by arrangement. Prerequisite: Consent of instructor and MEM program director. May be repeated.
This course is designed to educate students in the MEM program with the realities of the manufacturing
processes. For major requirements, see the College of Liberal Arts and Sciences section of this Catalog.

135. The Sea Around Us
Second semester. Three credits. History of ocean exploration, interaction between the oceans and the atmosphere, impact of technology on the marine environment, climate modification and exploitation of ocean resources.

170. Introduction to Oceanography
Either semester. Three credits. Three class periods per week and two afternoon cruises per semester. A background in secondary school physics, chemistry or biology is recommended. Processes governing the geology, circulation, chemistry and biological productivity of the world’s oceans. Emphasis is placed on the interactions and interrelationships between physical, chemical, biological and geological processes that contribute to both the stability and the variability of the marine environment.

196. Oceanography Laboratory
Fall semester (Avery Point). One credit. Concurrent or past enrollment in MARN 170 (or equivalent) required. May be repeated for credit. This course is complementary to but independent from Marine Sciences 170. This course will emphasize experiential learning of fundamental oceanographic concepts using hands-on exercises. Laboratory sessions will include a variety of observations, measurements and experiments that teach principles of oceanography.

210. Coastal Systems Science I
Second semester (Avery Point). Three credits. Prerequisite: MARN 170 and any two of the following: BIOL 107, 108; CHEM 127Q, 128Q; PHYS 121Q, 122Q, 131Q, 132Q. Open to sophomores. J. Kremer and Staff
Biological, chemical, physical, and geological structure and function of coastal systems; a worldwide survey with emphasis on important coastal habitats and processes.

211. Coastal Systems Science II
Either semester (Avery Point). Four credits. Three hours lecture and three hours laboratory. Prerequisites: MARN 170 and any two (2) of the following: BIOL 107, 108; CHEM 127Q, 128Q; PHYS 121Q, 122Q, 131Q, 132Q; J. Kremer and Staff
Biological, chemical, physical and geological structure and function of coastal systems; a worldwide survey with emphasis on important coastal habitats and processes.

220C. Measurement and Analysis in Coastal Ecosystems
First semester (Avery Point). Four credits. Two 1-hour lectures and two 3-hour laboratories. Required field trips. Prerequisites: MARN 170 and any two (2) of the following: BIOL 107, 108; CHEM 127Q, 128Q; PHYS 121Q, 122Q, 131Q, 132Q, J. Kremer
Examination of oceanographic processes in local coastal systems; collection and analyses of samples from field trips and lab experiments; data analysis using computers.

220Q. Environmental Reaction and Transport
Second semester. Three credits. Prerequisite: CHEM 127 and one additional semester of CHEM, BIOL or PHYS; one semester of calculus (MATH 112, 115, 118 or 120) or concurrent enrollment in Calculus (115, 118, 120). Jorgersen
An introduction to the chemical/biological reactions and transport dynamics of environmental systems. Mass balances, elementary fluid mechanics and the coupled dynamics of lakes, rivers, oceans, groundwater and the atmosphere as biogeochemical systems.

230. Coastal Circulation and Sediment Transport
First semester (Avery Point). Three credits. Prerequisite: MARN 210 and 211; MATH 112 or 115 or 118 or 120.
Circulation and mixing in estuaries and the inner continental shelf, including surface gravity waves, tides, and buoyancy and wind-driven circulation. Coastal sediments, geomorphology, and processes of sedimentation, erosion and bioturbation. Required field trips.

235. Environmental Fluid Dynamics
First semester. Three credits. Recommended preparation: PHYS 122 or 142 or 152 and MATH 220 (may be taken concurrently). Bogden
Introduction to fluid dynamics with applications to coastal waters, estuaries, rivers, lakes, and ground water flows. Topics include waves, tides, turbulence, mixing, drag, lift, effects on organisms, and wind driven circulation.

236. Marine Microbiology
(Also offered as Biology: MCB 236.) First semester. (Avery Point) second semester (Storrz). Three credits. Two lecture-discussion class periods and one 2-hour laboratory period for which field trips may be substituted. Prerequisite: Biology: MCB 229, or the consent of instructor. Buck, Visscher
A general survey of the taxonomy, physiology and ecology of marine microorganisms.

240. Seminar on Marine Mammals
Joint program with Mystic MarineLife Aquarium. First semester. Three credits. One 3-hour class period; one field trip. Offered at Mystic MarineLife Aquarium. Prerequisite: one year college laboratory biology and permission of instructor.
Instructors from different areas of expertise discuss the natural history, evolution, anatomy, physiology, husbandry, and conservation of marine mammals. Current research is emphasized. (Special registration and fee: Contact Mystic MarineLife Aquarium, Mystic, CT 06355. 860-572-5955.)

241. Marine Invertebrate Biology: Adaptations and Community Structure
First semester (alternate years). Three credits. Prerequisites: BIOL 107 and 108. Recommended preparation: MARN 170 or consent of instructor. Ward
Comparative examination of major adaptations and functional responses of marine invertebrates to biotic and abiotic factors in the marine environment. Field trips required.

242. Environmental Physiology of Marine Animals
First semester (alternate years). Three credits. Prerequisites: BIOL 107 and 108. Recommended preparation: MARN 170 or consent of instructor. Ward
Introduction to the study of marine environmental physiology; behavioral and physiological adaptations of marine animals to different environments (intertidal, estuarine, coastal, oceanic); compensatory responses to changing ambient conditions; and basic animal energetics. Laboratory exercises focus on food consumption, energy transformations, and principles of physiological measurement.

244. Coastal Ecology
Joint program with Mystic MarineLife Aquarium. Summer. Three credits. Offered at Mystic MarineLife Aquarium. Prerequisite: One year college laboratory biology and permission of instructor.
A special introductory course providing students with theoretical as well as practical knowledge of ecological sampling techniques, estuarine productivity, and selected continental shelf communities. Laboratory portion of this course consists of a 5-day study cruise in coastal New England waters. (Special registration and fee: contact Mystic MarineLife Aquarium, Mystic, CT 06355. 860-536-4208.)

255W. Coastal Studies Seminar
Second semester (Avery Point). Two credits. Required preparation: MARN 210, 211, and 212, or consent of instructor.
Scientific analysis of coastal zone issues and their interdisciplinary implications. Written analysis and discussion of readings from the primary literature.

256. Science and the Coastal Environment
Second semester (Avery Point). Three credits. Required preparation: MARN 210, 211, and 212; or at least two (2) of the following: MARN 270, 275, and 280. J. Kremer
Specfic cases of multiple impacts on environmental resources and coastal habitats. Current scientific understanding as a basis for sociopolitical decision-making (e.g., land-use impacts on coastal processes in relation to zoning regulation and water-quality criteria).

259. Biological Oceanography
Second semester. Three credits. Prerequisite: MARN 270 and MARN 280W (both may be taken concurrently) or consent of instructor. Open only with permission of department head. Dam, Visscher, Whitlatch
An advanced course in biological processes in oceanic and coastal waters. Emphasis is on empirical and theoretical concepts of marine ecosystem dynamics, primary and secondary production and detrital cycling.

270. Descriptive Physical Oceanography
First semester. Three credits. Prerequisite: PHYS 122, 142 or 152; MATH 114 or 116. Bohlen
Ocean basin characteristics, properties of sea water, distribution of water masses, oceanic and atmospheric circulation, waves, tides, near-shore circulation, methods and instrumentation.

275W. Geological Oceanography
First semester. Three credits. Prerequisite: One year of laboratory science in CHEM, GEOL, MARN and/or PHYS or consent of instructor. Jorgersen
Basic concepts in geological oceanography, plate tectonics and the role of ocean floor dynamics in the control of the Earth and ocean system.

280W. Marine Biogeochemistry
First semester. Three credits. Two 1-hour lectures. Prerequisite: CHEM 128, MATH 114 or 116, PHYS 122 or equivalents. Fitzgerald
Composition, origin and solution chemistry of sea water. Marine biogeochemical cycles of water, salt, carbon, nutrients, gases and trace elements. Effects of ocean circulation, biological cycles and crustal exchanges on the distribution and transfer of substances in the marine environment.
282. Coastal Pollution and Bioremediation
First semester (alternate years). Three credits. Two class periods, 1-2 hour lab period. Recommended prepa-
ration: BIOL 107, 108 and CHEM 127-128 or consent of instructor. Visscher
Overview of processes and compounds leading to pollution in the nearshore marine environment. The
impact of pollution on the marine foodweb and its response is emphasized. Alleviation of pollution
through metabolism of organisms, including bacteria, seagrasses, and salt marshes.

294. Marine Biology
(Also offered as EEB 294.) First semester. Three credits. Two class periods and one 2-hour laboratory pe-
riod. Prerequisite: One year of laboratory biology. Whitlatch
The study of the kinds and distributions of marine organisms. Particular attention is paid to biotic features
of the oceans, organism-habitat and relationships and general ecological concepts influencing marine
populations and communities. Field trips are required.

296. Variable Topics
Either semester. Three credits. With a change in topic, may be repeated for credit. Prerequisites and recom-
med preparation vary.

†297. Internship in Marine Sciences
Either semester. Variable credits. With a change in topic, may be repeated for credit, not to exceed 3 cred-
its. Recommended preparation: Nine credits of MARN courses at the upper division level. Consent of Instruc-
tor.
An internship under the direction of MARN faculty. Placements stress application of academic training. A journal of activities is required. One credit may be earned for each 40 hours of pre-approved activities in a semester to a maximum of three credits.

298. Special Topics
Either semester. Credits and hours by arrangement. With a change in content, may be repeated for credit. Prerequisites and recommended preparation vary.

299. Independent Study
Either or both semesters. Credits and hours by arrangement. Open only with consent of instructor. May be repeated for credit.

Marketing (MKTG)
Head of Department: Professor Susan Spiggle
Department Office: Room 417, School of Business Administration
For major requirements, see the School of Business Administration section of this Catalog.

201. Introduction to Marketing Management
Either semester. Three credits. Prerequisite: ACCT 131, ECON 111 and 112, ENGL 110 or 111, or ENGL
105 and 109, MATH 106, or 114 or 116, STAT 100V or 110V; MKTG 201.
An introduction to the marketing system, its foundations and institutions. Students are exposed to product, promotion, price, distribution decision areas, strategic alliances, relationship marketing, and total marketing quality.

208. Consumer Behavior
Either semester. Three credits. Prerequisite: MKTG 201 and either PSYC 133 or PSYC 135, or SOCI 107.
Not open for credit to students who have passed, or are currently enrolled in, Marketing 209.
The analysis of consumer decision processes as they relate to marketing management decision areas. Several models of consumer behavior are studied as are the psychological phenomena of learning, motivation, and attitude development, and the sociological influences of social class, reference groups and culture.

208W. Consumer Behavior
Open to Marketing majors only.

209. Industrial Buyer Behavior
Either semester. Three credits. Prerequisite: MKTG 201 and either PSYC 133 or PSYC 135, or SOCI 107.
Not open for credit to students who have passed, or are currently enrolled in, Marketing 208.
This course provides an analysis of industrial markets and develops the tools required to thoroughly analyze these markets for marketing strategies. Differences between consumer and industrial products and services will be emphasized. Emphasis will be on high technology products and services.

225. Integrated Marketing Communications
Either semester. Three credits. Recommended prepa-
ratio: MKTG 201.
The design, coordination, integration, and management of marketing communications. The course focuses on advertising and sales promotion with an emphasis on the competitive and strategic value of communications in the marketplace.

225W. Integrated Marketing Communications
Open to Marketing majors only.

227. Product and Price Policies
First or second semester. Three credits. Prerequisite: MKTG 201.
First or second semester. Three credits. Prerequisite: MKTG 201, 208 or 209, MKTG 280 and se-
nior class standing.

228. Global Marketing Strategy
First or second semester. Three credits. Prerequisite: MKTG 201, 208 or 209, MKTG 280 and se-
nior class standing.
A study of the marketing concepts and analytical processes used in the development of programs in international markets. The course emphasizes comparative differences in markets, marketing functions, and political considerations. It includes the application of a systems approach to the evaluation of opportunity and to the solution of major global marketing problems. Emphasis is placed on the analysis and synthesis of marketing programs to determine the appropriate marketing mix for various international business enterprises.

280. Marketing Research
Either semester. Three credits. Prerequisite: MKTG 201 and OPI M 203.
This course covers strategies and techniques for obtaining and using market information from consumer and business-to-business markets. Emphasis on translating managerial problems into research questions, designing research, selecting alternate research methods, and analyzing and interpreting marketing research data. Students gain hands on, computer based experience in analyzing market data.

282. Marketing Planning and Strategy
First or second semester. Three credits. Prerequisite: MKTG 201, 208 or 209, 280, and senior class stand-
ing.
The application of a systems approach to the evaluation of opportunity and to the solution of major problems from the perspective of the top marketing executive. Emphasis is placed on the analysis and synthesis of marketing programs to determine the appropriate marketing mix for various business enterprises.

282W. Marketing Planning and Strategy
Either or both semesters. One to three credits. Hours by arrangement. Prerequisite: completion of Lower Di-
vision School of Business Administration requirements and consent of instructor and Department Head.
This course is designed to provide students with an opportunity for supervised field work in relevant major areas within the Department. Students will work with one or more professionals in the field of marketing. Student performance will be evaluated on the basis of an appraisal by the field supervisor and a detailed written report submitted by the student.

293. Foreign Study
Either or both semesters. Credits and hours by arrange-
ment. Up to a maximum of six credits. Consent of De-
partment Head required, prior to student’s departure.
Special topics taken in a foreign study program.

296W. Senior Thesis in Marketing
Either semester. Three credits. Hours by arrangement. Open only to Marketing Department Honor Students with consent of instructor and Department Head.

298. Special Topics
Either semester. Credits and hours by arrangement. Prer-
erequisite: Announced separately for each offering. With a change in content, may be repeated for credit.
Classroom course in special topics as announced in advance for each semester.

† Students taking this course will be assigned a final grade of S (satisfactory) or U (unsatisfactory).
Mathematics (MATH)

Head of Department: Professor Charles Vinsonhaler
Department Office: Room 102, Mathematical Sciences Building

For major requirements, see the College of Liberal Arts and Sciences section of this Catalog.

Students must pass the Q-course Readiness Test or Mathematics 101 before taking any "Q" courses.

101. Basic Algebra with Applications
Either semester. Three credits. This course does not meet distribution requirements or count toward the minimum credit requirement for graduation. Not open to students who have passed any Q-course.

Polynomials, exponents, Cartesian coordinate system, linear and quadratic equations, inequalities.

This course is required of all students who fail the Q-course readiness exam.

102Q. Problem Solving
Either semester. Three credits. Not eligible for course credit by examination. Not open to credit to students who have passed any mathematics course other than MATH 101, 103, 105, 107, 108, or 109. Vinsonhaler

An introduction to the techniques used by mathematicians to solve problems. Skills such as Externalization (pictures and charts), Visualization (associated mental images), Simplification, Trial and Error, and Lateral Thinking learned through the study of mathematical problems. Problems drawn from combinatorics, probability, optimization, cryptography, graph theory, and fractals. Students will be encouraged to work cooperatively and to think independently.

103Q. Elementary Discrete Mathematics
Either semester. Three credits. Not open for credit to students who have passed any MATH course other than MATH 101, 102, 103, 105, 107, 108, or 109.

Problems solving strategies, solutions of simultaneous linear equations, sequences, counting and probability, graph theory, deductive reasoning, the axiomatic method and finite geometries, number systems.

105Q. Mathematics for Business and Economics
Either semester. Three credits.

Linear equations and inequalities, exponents and logarithms, matrices and determinants, linear programming. Applications.

106Q. Calculus for Business and Economics
Either semester. Three credits. (One credit for students who have passed MATH 113, 115, or 120.) Recommended preparation: MATH 105. Not open for credit to students who have passed MATH 118.

Derivatives and integrals of algebraic, exponential and logarithmic functions. Functions of several variables. Applications.

108V. Mathematical Modeling in the Environment
Either semester. Three credits. A solid background and good performance in high school algebra are highly recommended.

An interdisciplinary approach to environmental issues, such as: ground water contamination, air pollution, and hazardous materials handling. Emphasis on mathematical models, social and ethical implications, and physical and chemical principles. Includes a spread sheet program for water and air pollution data; a computer modeling package to analyze hazardous materials emergencies; creative use of the internet and field research.

109Q. Algebra and Trigonometry
Either semester. Three credits. Not open for credit to students who have passed MATH 107, 112, 115, or 120.

A review of algebra, simultaneous and quadratic equations, logarithms, the trigonometric functions, solution of triangles, trigonometric equations.

112Q. Introductory Calculus 1
Either semester. Four credits. Four class periods. Students cannot receive credit for MATH 112 and either MATH 115 or MATH 120. Students who have not passed the Calculus Readiness Test take this course rather then MATH 115 or MATH 120.

Limits, derivatives, and extreme values of algebraic functions, with supporting algebraic topics.

113Q. Introductory Calculus 2
Either semester. Four credits. Four class periods. Prerequisite: MATH 112. Students cannot receive credit for MATH 113 and either MATH 115 or MATH 120.

May be used in place of MATH 107, 115, or 120 to fulfill any requirement satisfied by MATH 107, 115 or 120.

Limits, derivatives, and extreme values of trigonometric functions, with supporting trigonometric topics; anti-derivatives of algebraic and trigonometric functions; the definite integral and applications.

114Q. Introductory Calculus 3
Either semester. Four credits. Four class periods. Prerequisite: MATH 113. Note: MATH 115 is not adequate preparation for MATH 114. Not open for credit to students who have passed MATH 116 or 121. May be used in place of MATH 116 or 121 to fulfill any requirement satisfied by MATH 116 or 121.

The transcendental functions, formal integration, polar coordinates, infinite sequences and series, lines and planes in three dimensions, vector algebra.

115Q or V. Calculus I
Either semester. Four credits. Four class periods. Prerequisite: MATH 114. Note: MATH 115 is not adequate preparation for MATH 114. Not open for credit to students who have passed MATH 116 or 121. May be used in place of MATH 116 or 121 to fulfill any requirement satisfied by MATH 116 or 121.

Limits, continuity, differentiation, antidifferentiation, definite integrals, with applications to the physical and engineering sciences. Sections with V credit integrate computer-laboratory activity.

116Q or V. Calculus II
Either semester. Four credits. Four class periods. Prerequisite: Passing score on the Calculus Readiness Test, or the former MATH 107. Students cannot receive credit for MATH 120 and either MATH 113 or 115.

May be used in place of MATH 113 or 115 to fulfill any requirement satisfied by MATH 113 or 115. Recommended for those who have taken a semester of calculus in high school.

The subject matter of MATH 115 in greater depth, with emphasis on the underlying mathematical concepts.

121Q. Enhanced Calculus I
Either semester. Four credits. Four class periods. Prerequisite: MATH 120 or advanced placement credit for calculus (a score of 4 or 5 on the calculus AB examination or a score of 3 on the Calculus BC examination) or consent of instructor. Not open for credit to students who have passed MATH 114 or 116. May be used in place of MATH 114 or 116 to fulfill any requirement satisfied by MATH 114 or 116. Intended to provide superior preparation for prospective mathematicians, science and engineering majors. Recommended for those who have taken a semester of calculus in high school.

The subject matter of MATH 116 in greater depth, with emphasis on the underlying mathematical concepts.

193. Foreign Study
Either or both semesters. Credits and hours by arrangement. May be repeated for credit (to a maximum of 15 for MATH 193 and 293 together). Consent of the Department Head or Undergraduate Coordinator required, normally before the student’s departure.

204Q. Introduction to Mathematical Modeling
Either semester. Three credits. Prerequisite: MATH 221; or MATH 211 and 227. Knowledge of a programming language is strongly recommended. Not open for credit to students who have passed MATH 304 or 305, CHEM 305, or PHYS 305.


210Q. Multivariable Calculus
Either semester. Four credits. Four class periods. Prerequisite: MATH 114, 116, or 121 or a score of 4 or 5 on the Advanced Placement Calculus BC exam. Not open for credit to students who have passed MATH 220. Open to sophomores.

Two- and three-dimensional vector algebra, calculus of functions of several variables, vector differential calculus, line and surface integrals.

211Q. Elementary Differential Equations
Either semester. Three credits. Prerequisite: MATH 114, 116, or 121. Not open for credit to students who have passed MATH 221. Open to sophomores.

Introduction to ordinary differential equations and their applications, linear differential equations, systems of first order linear equations, numerical methods.

212Q. Transition to Advanced Mathematics
Either semester. Three credits. Prerequisite: MATH 210 or 220 or consent of instructor. Open to sophomores.

Derivatives and integrals of elementary functions including the exponential and logarithm functions; applications include optimization, marginal functions, exponential growth and decay, compound interest.
213Q. Projective Geometry
Either semester. Three credits. Prerequisite: MATH 113 or 115 or 120. MATH 113 may be taken concurrently. Open to sophomores.
Deductive reasoning and the axiomatic method. Euclidean geometry, parallelism, hyperbolic and other non-Euclidean geometries, geometric transformations.

214Q. Introduction to Discrete Systems
Either semester. Three credits. Prerequisite: CS 111 or 130 or consent of the instructor. Open to sophomores. Not open for credit to students who have passed MATH 213 or CS 254. Students who intend to major in mathematics should ordinarily take this course or MATH 213 during the third or fourth semester.
Mathematical methods for characterizing and analyzing discrete systems. Modern algebraic concepts, logic, set theory, grammars and formal languages, and graph theory. Applications to the analysis of computer systems and computational structures.

215Q. Linear Algebra
Either semester. Three credits. (Two credits for students who have passed MATH 227.) Required preparation: MATH 213 or 214.
Linear algebra and its applications; systems of equations, matrices, linear transformations, vector spaces, determinants, canonical forms, applications.

216Q. Abstract Algebra I
Either semester. Three credits. Prerequisite: MATH 213 or 214. Recommended preparation: MATH 215 or 227.
The fundamental topics of modern algebra including elementary number theory, groups, rings, polynomials and fields.

217Q. Abstract Algebra II
Either semester. Three credits. Prerequisite: MATH 216.
Topic chosen from modules, linear algebra, geometric algebra, extension fields, algebraic coding, algebraic combinatorics.

220Q. Enhanced Multivariable Calculus
Either semester. Four credits. Prerequisite: MATH 114 or 116 or 121. Open to sophomores. Not open to students who have passed MATH 210. MATH 220 satisfies any requirement met by MATH 210, and provides superior preparation for prospective mathematics, science, and engineering majors.
The subject matter of MATH 210 in greater depth, with emphasis on the underlying mathematical concepts.

221Q. Enhanced Differential Equations
Either semester. Three credits. Prerequisite: MATH 114 or 116 or 121. Open to sophomores. Not open to students who have passed MATH 211. MATH 221 satisfies any requirement met by MATH 211, and provides superior preparation for prospective mathematics, science, and engineering majors.
The subject matter of MATH 211 in greater depth, with emphasis on the underlying mathematical concepts.

223Q. Geometry
Either semester. Three credits. Prerequisite: MATH 113 or 115 or 120. MATH 113 may be taken concurrently. Open to sophomores.
Deductive reasoning and the axiomatic method. Euclidean geometry, parallelism, hyperbolic and other non-Euclidean geometries, geometric transformations.

224Q. Projective Geometry
Either semester. Three credits. Prerequisite: MATH 213Q.
Finite and infinite geometries as logical systems based on axioms. Synthetic and analytic projective geometry.

227Q. Applied Linear Algebra
Either semester. Three credits. Prerequisite: MATH 114, 116, or 121. Not open for credit to students who have passed MATH 213. Open to sophomores. Systems of equations, matrices, determinants, linear transformations on vector spaces, characteristic values and vectors, from a computational point of view. The course is an introduction to the techniques of linear algebra with elementary applications.

231Q. Probability
Either semester. Three credits. Prerequisite: MATH 210 or 220, which may be taken concurrently with the consent of the instructor.
Introduction to the theory of probability. Discussion of some of the probability problems encountered in scientific and business fields.

232Q. Elementary Stochastic Processes
(Also offered as STAT 235Q.) Either semester. Three credits. Prerequisite: STAT 220 or 224 or 230 or MATH 251. Not open for credit to students who have passed STAT 235Q.
Conditional distributions, discrete and continuous time Markov chains, limit theorems for Markov chains, random walks, Poisson processes, compound and marked Poisson processes, and Brownian motion. Selected applications from actuarial science, biology, engineering, or finance.

235Q. Introduction to Mathematical Logic
Either semester, alternate years. Three credits. Prerequisite: MATH 213 or 214 or CS 207. PHIIL 211 is recommended.
Formalization of mathematical theories, elementary model theory with applications to algebra, number theory, and non-standard analysis. Additional topics: Elementary recursion theory and axiomatic set theory. Emphasis on the applications of logic to mathematics rather than the philosophical foundations of logic.

237Q. Theory of Computability
Either semester, alternate years. Three credits. Prerequisite: MATH 213 or 214 or CS 254.
Finite automata and regular languages, pushdown automata and context-free languages and grammars. Turing machines, recursively enumerable sets and grammars, Church’s thesis, the halting problem, and other undecidable problems. Computational complexity and NP-completeness.

242W. History of Mathematics
Either semester, alternate years. Three credits. Prerequisite: MATH 210 and 211, or 221. This course may not be counted in any of the major groups described in the Mathematics Departmental listing.
A historical study of the growth of the various fields of mathematics.

247Q-248Q. Fundamentals of Algebra and Geometry
Either semester. Three credits each semester. Prerequisite: PSYC 132 and three credits of Mathematics other than MATH 101. Not open for credit to students who have passed MATH 210 or 211. This course may not be counted in any of the major groups described in the Mathematics Departmental listing.
A development of the number system with applications to elementary number theory and analytic geometry. This course is recommended for students in elementary education.

250Q. Elements of Topology
Either semester, alternate years. Three credits. Prerequisite: MATH 213 or 214.
Metric spaces, topological spaces and functions, topological properties, surfaces, elementary topics in geometric topology.

252Q. Introduction to Complex Variables
(Also offered as Mathematics 352.) Either semester. Three credits. Prerequisite: MATH 210 and 211, or 221. MATH 252Q not open for credit to students who have passed MATH 352.
Functions of a complex variable, integration in the complex plane, conformal mappings.

255Q. Principles of Computer Graphics
Either semester. Three credits. Prerequisite: CS 111 or 130, MATH 227 or 215, MATH 210, and consent of instructor. Not open for credit to students who have passed CS 275.
Representation of two- and three-dimensional data, internal representation of data structures, transformations, mapping of functions to graphics screen, graphics hardware. Programming projects assigned.

256Q. Introduction to Number Theory
Either semester, alternate years. Three credits. Prerequisite: MATH 213 or 214.
Congruences, unique factorization, primitive roots, numerical functions, quadratic reciprocity and other selected topics, with emphasis on problem solving.

272Q. Differential Equations for Applications
Either semester. Three credits. Prerequisite: MATH 210 and 211, or 221. Not open for credit to students who have passed MATH 279.

273Q-274Q. Analysis
Either semester. Three credits each semester. Prerequisite: MATH 213 or 214, and 211 or 221.
Introduction to the theory of functions of one and several real variables.

277Q. Applied Analysis
(Also offered as Mathematics 377.) Either semester. Three credits. Prerequisite: MATH 272. Offered in alternate years. MATH 277Q not open for credit to students who have passed MATH 377.
Convergence of Fourier Series, Legendre and Hermite polynomials, existence and uniqueness theorems, two point boundary value problems, and Green’s functions.

278Q. Partial Differential Equations
(Also offered as Mathematics 378.) Either semester, alternate years. Three credits. Prerequisite: MATH 272 or its equivalent. MATH 278Q not open for credit to students who have passed MATH 378.
Solution of first and second order partial differential equations with applications to engineering and the sciences.

279Q. Introduction to Field Theory
Either semester. Three credits. Prerequisite: MATH 210 and 211. Not open for credit to students who have passed MATH 272.

281Q. Numerical Analysis I
Either semester. Three credits. Prerequisite: MATH 210Q, 211Q, and either 215Q or 227Q; and knowledge of at least one programming language.
Analysis of numerical methods associated with linear systems, eigenvalues, inverses of matrices, zeros of non-linear functions and polynomials. Roundoff error and computational speed.

282Q. Numerical Analysis II
Either semester. Three credits. Prerequisite: MATH 281.
Approximate integration, difference equations, solution of ordinary and partial differential equations.

283Q. Calculus and Probability Problems
Either semester. One or two credits. Hours by arrangement. Prerequisite: MATH 210 and 231.
Problems in calculus and probability designed to help students prepare for the first actuarial examination.

284Q. Financial Mathematics I
(Also offered as MATH 365.) Either semester. Three credits. Prerequisite: MATH 111, 114, 116, or 121.
The mathematics of measurement of interest, accumulation and discount, present value, annuities, loans, bonds, and other securities.

286Q. Introduction to Operations Research
(Also offered as STAT 286Q and STAT 356.) Either semester. Three credits. Prerequisite: MATH 231 or STAT 220 or 230. Not open for credit to students who have passed STAT 286 or 356.
Introduction to the use of mathematical and statistical techniques to solve a wide variety of organizational problems. Topics include linear programming, network analysis, queuing theory, decision analysis.

287Q-288Q. Actuarial Mathematics
(Also offered as MATH 387-388.) Either semester. Three credits each semester. Prerequisite: MATH 231 or STAT 230; and MATH 285, which may be taken concurrently.
Survival distributions, claim frequency and severity distributions, life tables, life insurance, life annuities, net premiums, net premium reserves, multiple life functions, and multiple decrement models.

289. Financial Mathematics II
Either semester. Three credits. Prerequisite: MATH 285. Also ACCT 131, which may be taken concurrently.
The continuation of MATH 285Q. Measurement of financial risk, the mathematics of capital budgeting, mathematical analysis of financial decisions and capital structure, and option pricing theory.

290. Field Study Internship
Either or both semesters. One to three credits. May be repeated for credit (to a maximum of 6 credits). Consent of the Department Head, Director of the Actuarial Program, or the Undergraduate Coordinator required. Prerequisite: Completion of lower division required courses in the major.

292W. Senior Thesis in Mathematics
Either semester. Three credits. Open only by consent of Department Head or Departmental Honors Committee.
The student should define a general subject area for the thesis before choosing a thesis advisor and seeking consent at the time of registration. The student should submit a written proposal for the senior thesis to the advisor by the end of the semester preceding enrollment for thesis credit.

293. Foreign Study
Either or both semesters. Credit and hours by arrangement. May be repeated for credit (to a maximum of 15 for MATH 193 and 293 together). Consent of the Department Head or Undergraduate Coordinator required, normally before the student's departure. May count toward the major with consent of the Advisor and either the Department Head or Undergraduate Coordinator.

295. Variable Topics
Either semester. Three credits. With a change in topic, may be repeated for credit. Prerequisites and recommended preparation vary.

296. Problem Seminar
Either semester. One credit. One class period. Prerequisite: MATH 114, 116, or 121. Open to sophomores. This course, with a change of topic, may be repeated for credit.
Problem sequences selected from algebra, geometry, calculus, combinatorics, and other branches of mathematics, designed to introduce mathematical concepts and to give experience in problem solving.

297. Undergraduate Seminar
Either semester. Three credits. Open only with consent of instructor. This course, with a change of topic, may be repeated for credit.

298. Special Topics
Either semester. Credits and hours by arrangement. With a change in content, may be repeated for credit. Prerequisites and recommended preparation vary.

299. Independent Study
Either semester. Credits and hours by arrangement. Open only with consent of instructor. This course, with a change of topic, may be repeated for credit.

Mechanical Engineering (ME)

Head of Department: Professor Theodore L. Bergman
Department Office: Room 480, United Technologies Engineering Building
For major requirements, see the School of Engineering section of this Catalog.

205. Introduction to Mechanical Engineering
Three credits. Prerequisite: CE 211 and PHYS 151Q, both of which may be taken concurrently. Open to sophomores. Introduction to Mechanical Engineering through application of engineering principles and computers in practical problem solving, design and manufacturing. Topics include elementary numerical analysis, overview of manufacturing processes, simplified engineering modeling, and analysis of systems, and computer analysis and simulation. A design project throughout the course incorporates these topics; a presentation of project results is required.

214. Dynamics of Particles and Rigid Bodies
Second semester. Three credits. Prerequisite: CE 212.
Kinematics and dynamics of particles. Motion relative to translating and rotating observers; inertial reference systems; central forces and orbits. Kinematics and dynamics of groups of particles and rigid bodies. Lagrangian description of motion.

217. Metal Cutting Principles
First semester. Three credits. Two class periods and one 2-hour laboratory period. Prerequisite: CE 287 and MTGY 202 which may be taken concurrently.
Examination of metal cutting processes including turning, shaping, drilling, grinding. Mechanics of two and three dimensional cutting. Principles and mechanisms of wear. Tool materials. Theoretical prediction of surface finish. Chemistry of cutting fluids. Laboratory period includes operation of machine tools. Experimental determination of cutting energies forces, stresses and strains. The interrelationship between these and practical metal cutting conditions.

218. Manufacturing Systems
Second semester. Three credits. Two class periods and one 2-hour laboratory period. Prerequisite: ME 217, which may be taken concurrently.
A study of process aspects of manufacturing with particular references to metal joining and casting. Relationship between manufacturing process and product design. Basic elements of numerically controlled metal processing systems. Organization required to manufacture.

220. Dynamics of Mechanical Systems
Second semester. Three credits. Prerequisite: MATH 210 and 211, ME 205, and CE 215 or 212.

221. Manufacturing Automation
First semester. Three credits. Prerequisite: Consent of instructor. Not open to students who have passed ME 386.
Introduction to Computer Integrated Manufacturing (CIM). Fundamentals of automated manufacturing; Computer Numerical Control (CNC); production economics and optimization of production systems.

222. Production Engineering
Second semester. Three credits. Prerequisite: Consent of instructor. Not open to students who have passed ME 387.

224. Analysis and Design of Mechanisms
First semester. Three credits. Prerequisite: MATH 210 and 211 and CE 211.
Application of kinematics in the analysis and synthesis of mechanisms. Type and dimensional design of linkages, cams and gears based on motion requirements and kinetostatic force transmission, in contrast to the strength requirements. Graphical, analytical and computer methods in analysis and design of mechanisms. Design considerations in mechanism synthesis. Design project.

Both semesters. Three credits. Prerequisite: CSE 123, CE 287, MATH 210 and consent of instructor.
Introduction to computer-aided graphics, modeling and design. Applications of graphics software and hardware with mini- and micro-computer systems. Interactive computer graphic techniques. Extensive laboratory study of wire-frame and raster computer graphics. Static and dynamic graphic presentation methods.

227. Design of Machine Elements
First semester. Three credits. Prerequisite: ME 205 and CE 287.
Application of the fundamentals of engineering mechanics, materials and manufacturing to the design and analysis of machine elements.

† Students taking this course will be assigned a final grade of S (satisfactory) or U (unsatisfactory).
228. Introduction to Fatigue in Mechanical Design
Second semester. Three credits. Prerequisite: CE 287 or consent of instructor. Not open to students who have passed ME 365.
Design calculation methods for fatigue life of engineering components. Crack initiation and crack propagation fatigue lives; introduction to current literature in the field. Emphasis on finite life prediction by strain life methods.

229. Machine Design
Second semester. Three credits. Prerequisite: CE 287. This course and CE 289 may not both be taken for credit.

230. Linear Automatic Control Systems
Semester by arrangement. Three credits. Prerequisite: MATH 210 and 211.
Consolidated treatment of system analysis including modelling of electromechanical, pneumatic, hydraulic, thermal, and mechanical systems and their components. Closed loop control concepts related to these systems. Stability, instability issues. Basic treatment of Routh analysis, root locus, Bode, and Nyquist criterion. A hands-on open-ended control design project.

233. Thermodynamic Principles
Second semester. Three credits. Prerequisite: CHEM 127Q, PHYS 151Q and MATH 210Q and 211Q which may be taken concurrently. Open to sophomores.
Introduction to the First and Second Laws of Thermodynamics. Thermodynamic properties of pure substances and ideal gases. Analysis of ideal and real processes – including turbines, pumps, heat exchangers, and compressors.

234. Applied Thermodynamics
First semester. Three credits. Prerequisite: ME 233 or CHEG 211.
Thermodynamic first and second law analysis of vapor and gas cycles, property relations for simple pure substances, properties of ideal gas mixtures, psychrometry, fundamentals of combustion thermodynamics, application of thermodynamics in the design of thermal engineering systems.

239. Pollution from Combustion
Either semester. Three credits. Prerequisite: ME 234.
Introduction to combustion processes and chemical kinetics. Mechanism of the formation of pollutants such as nitrogen oxides, carbon monoxide, soot, and unburned hydrocarbons in stationary and vehicular power plants.

240. Principles of Combustion
First semester. Three credits. Prerequisite: ME 234, and 250, or equivalent.
A first course in combustion introducing some basic chemical thermodynamics and chemical kinetics principles as a background for an elementary treatment of flame propagation in pre-mixed mixtures, diffusion flames, explosions and detonations. Some aspects of coal combustion will also be discussed.

242. Heat Transfer
First semester. Three credits. Prerequisite: ME 233, and 250.
Fundamentals of conduction, convection and radiation heat transfer. Application of the general laws of heat transfer, and heat exchange to a wide variety of practical problems. The analytical, numerical, and graphical solution of one, two, and three dimensional problems.

245. Aerodynamics
Semester by arrangement. Three credits. Prerequisite: MATH 210 and 211 and either ME 250 or CE 297.
Application of fluid mechanics to the aerodynamics of flight. Classical inviscid theory for two-dimensional shapes and finite-span wings.

250. Fluid Dynamics I
Second semester. Three credits. Prerequisite: ME 205 and 233, and MATH 210 and 211. This course and CE 297 may not both be taken for credit.
Laws of conservation of mass, momentum, and energy in fluid systems, fluid statics, dimensional analysis, incompressible, inviscid and viscous flows, steady and unsteady flows, internal and external flows.

251. Fluid Dynamics II
Either semester. Three credits. Prerequisite: ME 250 or CE 297.

253. Linear Systems Theory
First semester. Three credits. Prerequisite: ME 205, which may be taken concurrently, CE 212 and MATH 211Q.
Mathematical modeling of dynamic systems, linearization of nonlinear behavior, Laplace domain representation of dynamics, transfer functions, block diagram algebra, signal-flow graphs, Mason’s rule, transient analysis of system response, convolution integral, Duhamel’s integral, Green’s function, stability of linear systems, Routh-Hurwitz method, root locus, frequency response, Bode and polar representations, introduction to feedback systems.

255. Computational Mechanics
First semester. Three credits. Prerequisite: MATH 210Q and CE 212.
Topics include elementary numerical analysis, finite differences, initial value problems, ordinary and partial differential equations and finite element techniques. Applications include structural analysis, heat transfer, and fluid flow.

257. Mechanical Engineering Analysis
Either semester. Three credits. Three class periods. Prerequisite: MATH 211Q.
Introduction to the applied mathematical techniques in mechanical systems, heat transfer, fluid mechanics, and thermodynamics. Methods involving the application of partial differential equations, linear algebra, Fourier series, Bessel functions and LaPlace transform will be treated within the context of mechanical engineering. Case studies will be employed where appropriate.

260W. Measurement Techniques
Second semester. Three credits. Two class periods and one 2-hour laboratory period. Prerequisite: ECE 220.
Theory and practice of measurement including analysis and application of electromechanical transducers. Methods of measuring length, area, time, pressure, temperature, force and strain. The determination of the phase relation between a driving potential and the response of a system. The application of statistical methods to analysis of experimental data.

262. Introductory Thermo-Fluids Laboratory
First semester. Three credits. One class period and one 3-hour laboratory period. Prerequisite and co-requisite: ECE 220 and ME 233.
Introductions to experimental methods in Mechanical Engineering. Review and use of pressure, temperature, and flow measuring devices. Data acquisition and analysis including use of computers. Principles of good experimental design. Experiments selected mainly from within the thermo-fluids area.

263W. Experimental Mechanical Engineering I
(Formerly offered as ME 264W) First semester. Four credits. Two class periods and one 3-hour laboratory period. Prerequisite: ME 242 and ME 250, both of which may be taken concurrently.
Analyses of basic engineering problems with subsequent verification of the analyses.

270. Engineering Design Project
Second semester. Four credits. Two 3-hour laboratory periods. Prerequisite: ME 227.
Design of a device or machine, process, or system. Students working singly and in small groups produce a solution to an engineering design problem, from first concepts through preliminary sketches, analysis, construction, evaluation and report. A written report and oral presentation of the design project are required. Shop safety qualification is required.

272P. Senior Design Project I
First semester. Three credits. Prerequisite: ME 250. Prerequisite or co-requisite: ME 227
This course is the first part of the senior design experience. It will cover topics on design process, planning, and costs. Design for manufacture and assembly will be covered. Both oral and written reports are required.

273P. Senior Design Project II
Second semester. Three credits. Prerequisites: ME 272P, 260, and 262.
Projects which have started in the previous semester will be completed. The project analysis, design, and manufacture stages will take place. Both written and oral reports will be required.

295. Special Topics in Mechanical Engineering
Semester. Credits, hours by arrangement or as announced. Prerequisite and/or consent: Announced separately for each course. This course, with a change in topic, may be repeated for credit.
A classroom course on special topics as announced.

298. Mechanical Engineering Undergraduate Seminar
Second semester. One credit. One class period. Open only to seniors in mechanical engineering.
Presentation and discussion of advanced topics in mechanical engineering.

299. Problems in Mechanical Engineering
Semester and hours by arrangement. Credits by arrangement, not to exceed four. Open only to seniors in mechanical engineering. This course, with a change in topic, may be repeated for credit.
This course is designed primarily for students who wish to pursue a special line of study or investigation. The program of study is to be approved by the head of the department and by the instructor before registration is completed.
Medical Laboratory Sciences
Programs (MLS)

Cytotechnology Program Academic Coordinator:
Associate Professor Denis A. Coble
Cytotechnology Program Office: Room 306, Koons Hall

Diagnostic Genetic Sciences Program Director:
Martha B. Keagly
Diagnostic Genetic Sciences Program Office: Room 222, Koons Hall

Medical Technology Program Director: Elizabeth Epp
Medical Technology Program Office: Room 318, Koons Hall

For major requirements, see the School of Allied Health section of this Catalog.

200. Basic Laboratory Techniques in Medical Laboratory Sciences
First semester. Three credits. One 2-hour lecture and one 2-hour laboratory period. Open only to students in the Medical Laboratory Science Programs.

Introduction to diagnostic genetic sciences, diagnostic molecular technologies, cytotechnology and medical technology, microscopy, laboratory safety, medical terminology, staining technique and theory, hematology, phlebotomy, laboratory equipment and volumetrics, quality assurance, interdisciplinary case studies.

205. Anatomy and Physiology for the Medical Laboratory Sciences
First semester. Two 1-1/2-hour lectures and one two-hour laboratory period. Prerequisite: CHEM 128Q; and two of the following four courses: BIOL 103, BIOL 107, BIOL 108, PNB 264; one of which may be taken concurrently. Open only to students in the Medical Laboratory Science Programs; others with consent of instructor. Not open for credit for students who have passed PNB 265.

A systemic approach to the study of anatomy and physiology specific to the Medical Laboratory Sciences. The structure and function of each organ system will be discussed.

208. Immunology for the Medical Laboratory Sciences
Second semester. Three credits. Three hours of lecture. Recommended preparation MT 210 or MCB 229 which may be taken concurrently. Open only to students in the Medical Laboratory Sciences Programs; others with consent of the instructor.

Mechanisms of innate and acquired immunity; antigen-antibody interactions, function of the human immune system in normal and diseased states.

208W. Immunology for the Medical Laboratory Sciences
298. Special Topics
Either semester. Credits and hours by arrangement. Prerequisite: The completion of all Lower Division requirements in Medical Laboratory Sciences. Open only with consent of instructor. May be repeated for credit.

Application of the scientific method of inquiry to planning, implementing, evaluating and reporting a study of a problem related to the medical laboratory.

299. Independent Study for Undergraduates
Either semester. Credits and hours by arrangement. Open only with consent of the instructor. May be repeated for credit.

This course is designed primarily for students who wish to extend their knowledge in some specialized area in the field of cytology, diagnostic genetic sciences, clinical laboratory medicine or medical technology.

Medical Technology (MT)

Medical Technology Program Director: Elizabeth Epp
Program Office: Room 318, Koons Hall

For major requirements, see the School of Allied Health section of this Catalog.

The following courses are open only to the students enrolled in the Medical Technology Program unless otherwise noted. Others must obtain the permission of the Director of the Medical Technology Program.

210. Infectious Disease Process I
(Formerly MLS 204.) First semester. Four credits. One 2-hour lecture, 4 hours of laboratory. Prerequisite: MCB 203 or MCB 204 which may be taken concurrently. Not open for credit for students who have passed MCB 229.


213. Clinical Immunology and Virology
Either semester. Three credits. Prerequisite: MLS 208(W) which may be taken concurrently.


250. Clinical Chemistry and Instrumentation
Either semester. Five credits. Prerequisite: MCB 203.

Manual and automated methods for the biochemical analysis of blood and body fluids; principles of operation, maintenance, and troubleshooting of laboratory instruments. Evaluation of test results in normal and diseased states.

251. Clinical Chemistry Laboratory
Second semester. Three credits. Prerequisite: MT 250.

Application of the theory and techniques learned in MT 250 to the clinical laboratory setting. Understanding work flow, teamwork, evaluation of normal and abnormal results; instrumentation and quality assurance or the general laboratory environment.

252. Infectious Disease Process II
Either semester. Two credits. Prerequisite: MT 210.

Isolation and identification of pathogenetic and opportunistic fungi that infect humans, pathogenesis and identification of human parasites and correlation of organisms to disease states.

260. Theory of Phlebotomy
(Formerly MLS 291.) Either semester. One credit. Prerequisite: MLS 200.

Venipuncture and special phlebotomy techniques, safety, ethics, and management of phlebotomy services.

261. Phlebotomy Laboratory
(Formerly MLS 292.) Either semester. One credit. Prerequisite: MT 260 (Formerly MLS 291).

Application of the theory and techniques learned in MT 260 (Formerly MLS 291) to the clinical laboratory setting. Understanding work flow, scheduling, teamwork, and quality assurance in the general laboratory environment.

264. Hematology
(Formerly MLS 280.) Either semester. Three credits. Prerequisite: MLS 200.

Principles of hemostasis, blood cell formation, morphology, function and kinetics; pathophysiology of coagulation and blood cell disorders; principles and procedures used to evaluate coagulation and blood cells in blood and body fluids; laboratory practice in microscopic evaluation.

266. Clinical Microbiology
(Formerly MLS 284.) First semester. Four credits. Prerequisite: MT 210 (Formerly MLS 204).

Isolation and identification of normal flora and clinically significant bacteria and fungi from clinical specimens, correlation of the organisms isolated to disease states, and susceptibility testing of bacteria.

267. Clinical Microbiology Laboratory
(Formerly MLS 285.) Second semester. Four credits. Prerequisite: MT 266 (Formerly MLS 284).

Application of the theory and techniques learned in MT 252 and MT 266 (Formerly MLS 284) to the clinical laboratory setting. Understanding work flow, teamwork, evaluation of normal and abnormal results, instrumentation, and quality assurance in the general laboratory environment.

270. Transfusion Services
(Formerly MLS 286.) First semester. Two credits. Prerequisite: MLS 208(W).

Human blood groups, HLA antigens, compatibility testing, donor selection, and their relationship to transfusion and transplantation. Evaluation of laboratory results for selection of blood components for therapy.

272. Urinalysis
(Formerly MLS 293.) First semester. One credit. Prerequisite: MLS 200.

Renal physiology, chemical and microscopic examination of urine, correlation of results with disease states, chemical analysis of feces.

273. Urinalysis Laboratory
(Formerly MLS 294.) Either semester. One credit. Prerequisite: MT 272 (Formerly MLS 293).

Application of the theory and techniques learned in MT 272 (Formerly MLS 293) to the clinical laboratory setting. Understanding work flow, teamwork, evaluation of normal and abnormal results, instrumentation and quality assurance in the general laboratory setting environment.

274. Hematology Laboratory
Second semester. Three credits. Prerequisite: MT 264.

Application of the theory and techniques learned in MT 264 (formerly MLS 280) to the clinical laboratory setting. Understanding work flow, teamwork, evaluation of normal and abnormal results, instrumentation and quality assurance in the general laboratory environment. Correlation of blood cell morphology and laboratory data in normal and disease states.

275. Transfusion Services Laboratory
Second semester. Two credits. Prerequisite: MT 270.

Application of the theory and techniques learned in MT 270 (formerly MLS 286) to the clinical laboratory setting. Understanding work flow, teamwork, evaluation of normal and abnormal results,
### 201. Materials Science & Engineering I
Both semesters. Three credits. Prerequisite: CHEM 128 or PHYS 122, 123, or 152.

Relation of crystalline structure to chemical, physical, and mechanical properties of metals and alloys. Testing, heat treating, and engineering applications of ferrous and non-ferrous alloys.

### 202. Materials Science & Engineering Lab
Both semesters. One credit. One 3-hour laboratory period. Prerequisite: MMAT 201, which may be taken concurrently.

Illustrative experiments on microstructure, phase equilibria, heat treatment and mechanical properties.

### 203. Materials Science & Engineering II
Semester by arrangement. Three credits. Prerequisite: MMAT 201.

Structures, properties and processing of ceramics, polymers, and composites. Further development of the properties of these materials and of metals, including electrical, thermal, magnetic and optical behaviors. Case studies in materials selection.

### 204. Chemical Metallurgy
Semester by arrangement. Three credits. Prerequisite: CHEM 128, PHYS 151. 
Principles of chemical thermodynamics, reaction kinetics, and electrochemistry. Applications to interfacial phenomena, extraction and refining, and corrosion and electro-deposition.

### 205. Introduction to Mechanical Metallurgy
Semester and hours by arrangement. Three credits. Prerequisite: MMAT 201 or 203.

Elements of plastic deformation of metals and the role of crystal structure. Strengthening mechanisms. Fracture; including fatigue, stress corrosion and creep rupture. Test methods. Forming of metals.

### 206. Defects in Metals and Semiconductors
Semester by arrangement. Three credits. Prerequisite: MMAT 201 or 203. 
Galligan
Equilibrium and non-equilibrium defects in crystals, their influence on various metallurgical and semiconducting properties of materials. Interrelationship of equilibrium defects to non-equilibrium defects and the influence on various properties of materials.

### 207. Failure Analysis
Second semester. Three credits. Prerequisite: MMAT 201.
Methods for determining the nature and cause of materials failure in structures and other mechanical devices. Analysis of case histories.

### 211. Structure and Properties of Alloys
Semester by arrangement. Three credits. Prerequisite: MMAT 201 or 203. 
Clapp
Microstructures of alloys and relationships between microstructure and properties.

### 212. Extractive Metallurgy
Semester by arrangement. Three credits. Prerequisite: CHEM 128 or 130. Devereux
Pertinent engineering principles. General introduction to important extractive processes. Overall concepts of separation.

### 219. The Metallurgy of Welding
Either semester. Three credits. Prerequisite: MMAT 201 or 203. Kattamis
Basic metallurgical principles applied to welding and brazing processes. Effects of welding on material. Treatment and properties of welded joints. Welding defects and quality control.

### 222. Materials Processing – Metals
First semester. Three credits. Prerequisite: MMAT 201 or 203.
Achievement of desired dimensional, physical and chemical properties with manufacturing economy. Solidification, powder methods, joining, deformation, and surface treatments. Field trips.

### 229. Physical Ceramics
Semester and hours by arrangement. Three credits. Prerequisite: CHEM 128 or 130 and PHYS 152. Kattamis
Microstructure of crystalline ceramics and glasses and role of thermodynamics and kinetics on its establishment. Effect of process variables on microstructure and ultimately on mechanical, chemical and physical properties.

### 230. Introduction to Composite Materials
Either semester by arrangement. Three credits. Prerequisite: MMAT 201 or MMAT 266.


### 232. Introduction to High-Temperature Materials
Semester by arrangement. Three credits. Prerequisite: MMAT 201 or 203, or consent of the instructor.

Plastic deformation of metals and other solid materials at elevated temperatures. Dislocation mechanisms; creep processes; oxidation. Strengthening mechanism, including ordering and precipitation hardening.

### 234. Materials Protection
Semester by arrangement. Three credits. Not open for credit to students who have passed MTGY 343. Greene

### 236. Materials Characterization
Semester by arrangement. Three credits. Two class periods and, every other week, a 3-hour laboratory period. Laboratory sections in addition to that listed in Directory of Classes will be arranged.

### 238. Alloy Casting Processes
Second semester by arrangement. Three credits. Prerequisite: MMAT 203 or MMAT 265 and MMAT 255 or equivalent.

Principles of alloy solidification are discussed and applied in the context of sand, investment, and die casting; continuous and direct chill casting; electroslag and vacuum arc remelting, crystal growth, rapid solidification, and laser coating.

### 243. Introduction to Structure, Properties, and Processing of Materials I
First semester. Two credits. Co-requisites: CHEM 128 and MATH 116. Not open for credit to students who have passed MMAT 201. Open to sophomores.

Principles underlying the selection of materials and the characterization of micro- and atomic structure will be introduced, with emphasis on atomic and molecular structure, crystallography, solid solutions, binary phase diagrams, mass mass transport, cross linking, entanglement, and the relation of microstructure to properties.

### 244. Introduction to Structure, Properties, and Processing of Materials II
Second semester. Three credits. Prerequisites: MMAT 243 or MMAT 201. Open to sophomores.

Principles underlying the selection of materials and the control of microstructure through processing will be introduced, with emphasis on injection molding, extrusion, casting, particulate processing, electrochemistry, corrosion, refining, vapor processing, processing-property relations.
255. Transport Phenomena in Materials Processing
First semester. Four credits. Three hours lecture and two hours laboratory. Co-requisites: MMAT 265 and MATH 210Q.
Mechanisms and quantitative treatment of mass, energy, and momentum transfer will be applied to design and analysis of materials processing. Increasingly complex and open-ended engineering design projects will be used to illustrate principles of diffusion; heat conduction, convection, and radiation, and fluid flow.

256. Applied Thermodynamics of Materials
Second semester. Three credits. Prerequisites: ME 233 or CHEG 263 and MMAT 265.
Thermodynamic principles will be applied to the behavior and processing of materials. Topics covered will include solution thermodynamics: activity and activity coefficients; phase equilibrium; electrochemistry; slag metal and gas metal reactions.

257. Structure-Property Relations I: Phase Transformation Kinetics and Applications
First semester. Three credits. Prerequisite: PHYS 152Q. Co-corequisite: M143 or M110.
Principles and applications of phase transformations to control microstructure and materials properties. In depth, quantitative coverage will include atomic and molecular arrangements; lattices; point, line, and surface defects; cross links, entanglements, glasses, diffusion; kinetics of nucleation and growth; and thermal treatments to control microstructure.

258. Structure-Property Relations II: Strengthening and Toughening Mechanisms
Second semester. Three credits. Prerequisite: MMAT 265.
Principles and applications of strengthening and toughening mechanisms will be treated quantitatively with emphasis on line defects, microplasticity, displaceable and diffusional transformations, fillers, sintering, creep, and creep rupture.

259. Structure-Property Relations III: Electromagnetic and Environmental
First semester. Three credits. Prerequisite: MMAT 266.
Principles underlying electrical, magnetic, and chemical behavior will be applied to the selection and design of materials. Topics covered will include: thermoelectricity, photoelectricity, conductors, semiconductors, dielectrics, superconductors, magnetism, corrosion, and oxidation.

260. Materials Processing I: Thermal Mechanical
Fundamental principles of materials processing and their quantitative application to process design will be illustrated for deformation processes: forging, rolling, drawing, extrusion, injection molding, powder compaction and sintering.

261. Materials Processing II: Thermal Fluid
Fundamental principles of materials processing and their quantitative application to process design will be illustrated for materials processes involving liquids and gasses: crystal growth, zone refining, shape casting, continuous casting, refining, welding, and vapor deposition.

262. Materials Characterization Laboratory I
First semester. Three credits. Co-requisite: MMAT 253. Not open for credit to students who have passed MMAT 202. One 3-hour laboratory period. Open to sophomores.
Principles of materials characterization and materials selection illustrated by hands-on experience with microscopy, testing, and analysis of design criteria for selection of materials for engineering systems (reverse engineering).

263. Materials Processing Laboratory
Principles of materials processing will be illustrated by hands-on experience with qualitative and quantitative microscopy, testing, and reverse engineering, with experiments on polymer extrusion and injection molding, alloy casting, etching, particle compaction, sintering, forging, welding, and electrodeposition.

264. Mechanical Behavior Laboratory
First semester. One credit. Co-requisite: MMAT 265. Three hours laboratory.
Characterization of mechanical properties of materials and fundamentals of materials deformation and fracture processes will be experienced through hands-on projects with tensile, rheological, cyclic, and high temperature testing; drawing; forging; extrusion; rolling; and hot pressing.

265. Materials Characterization Laboratory II
Second semester. One credit. Prerequisite: MMAT 265. One 3-hour laboratory period.
Hands-on experience with materials characterization will be gained through work shops on X-ray fluorescence and diffraction, scanning electron microscopy, electronic and magnetic property measurement, and failure analysis.

266. Capstone Design Project I
First semester. Two credits. Four hours practicum. Prerequisites: MMAT 266 and MMAT 276.
Seniors working in teams with faculty and industry mentors will open ended projects in design of materials, products, and processes. Oral and written reports are required in each semester. For students with high academic standing the BSE and MS projects may overlap.

267. Capstone Design Project II
Second semester. Two credits. Four hours practicum. Prerequisites: MMAT 266 and MMAT 276.
Seniors working in teams with faculty and industry mentors will open ended projects in design of materials, products, and processes. Oral and written reports are required in each semester. For students with high academic standing the BSE and MS projects may overlap.

268. Special Topics in Metallurgy
Both semesters. Three credits. Prerequisite: Consent of instructor. With a change in topic this course may be repeated for credit.

269. Introduction to Research
Both semesters. Credits and hours by arrangement. Prerequisite: Consent of instructor. With a change in topic this course may be repeated for credit. Some sections of this course are graded Satisfactory/Unsatisfactory.
Methods of research and development. Laboratory investigation. Correlation and interpretation of experimental results. Writing of technical reports.
Modern and Classical Languages
Head of Department: Professor David K. Herberger
Department Office: Room 228, J.H. Arjona Building
For major requirements for Classics and Ancient Mediterranean Languages, French, German, Italian Literary and Cultural Studies, Portuguese, and Spanish, see the College of Liberal Arts and Sciences section of this Catalog.
For course descriptions of Modern and Classical Languages, see these topics listed alphabetically throughout this Directory of Courses:
- Classics and Ancient Mediterranean Languages (CAMS)
- Critical Languages (CRLP)
- French (FREN)
- German (GERM)
- Hebrew (HEB)
- Italian Literary and Cultural Studies (ILCS)
- Portuguese (PORT)
- Russian (RUS)
- Spanish (SPAN)

Molecular and Cell Biology (MCB)
Head of Department: Professor Philip L. Yeagle
Department Office: Room 205, Life Sciences Annex
For major requirements, see the College of Liberal Arts and Sciences section of this Catalog.

200. Human Genetics
First semester. Three credits. Two lectures and one problem session. Prerequisite: BIOL 107. Open to sophomores. Strausbaugh
Principles of genetics as applied to humans. Focus on modern methods of molecular genetics.

201. Gene Expression
Second semester. Three credits. Recommended preparation: MCB 200 or 210 or 229. Open to sophomores. Highzero
Basic mechanisms of genetic information transfer in eukaryotic cells from DNA to folded and assembled proteins. Regulation of transcription, translation, DNA replication, and the cell cycle.

203. Introduction to Biochemistry
Either semester. Four credits. Three class periods and two 3-hour laboratory periods. Prerequisite: CHEM 141 or 244; CHEM 244 may also be corequisite. Open to sophomores. Not open for credit to students who have passed MCB 204. May substitute for MCB 204 only if taken with MCB 226 and with permission of the Department Head to satisfy the biochemistry requirement of the molecular and cell biology major.
The structure, chemistry, and metabolism of carbohydrates, lipids and proteins. Enzyme function and kinetics, energy metabolism, and structure and function of nucleic acids. A survey course for students of agriculture, general biology, medical technology, nursing, and pharmacy. Molecular and Cell Biology majors, biophysics majors, and other students desiring a more intensive introduction or considering advanced coursework in biochemistry or molecular biology should take MCB 204.

204. Biochemistry
First semester. Five credits. Four class periods and one 3-hour laboratory. Prerequisite or corequisite: CHEM 244. Recommended preparation: MCB 210 or MCB 229. Not open for credit to students who have passed MCB 203. Teschke
The structure and function of biological macromolecules. The metabolism of carbohydrates, lipids, amino acids, proteins and nucleic acids. The regulation of metabolism and biosynthesis of biological macromolecules. An in-depth introduction intended for students planning to take advanced course work in biochemistry, biophysics, or other areas of molecular biology.

205. Human Metabolism and Disease
Second semester, alternate years. Two credits. Prerequisite: MCB 203 or 204, or consent of instructor. Albert
A thorough analysis of the inter-relationships of metabolic pathways in connection with human health and disease, including inherited metabolic diseases and the role of hormones in metabolic pathways.

206. Fundamentals of Structural Biology
First semester. Three credits. Prerequisite: BIOL 107 or CHEM 128, or consent of instructor. Yeagle
An introduction to principles underlying the structure and function of the molecules guiding life processes. These principles will be applied to proteins, DNA/RNA and membranes as well as to the energetics of life processes.

207. Introduction to Biophysical Chemistry
Second semester. Three credits. Prerequisite: CHEM 243; MATH 114 or 116; PHYS 122, 132 or 142; or consent of instructor.
Energetics and kinetics of metabolic reactions. Interactions of electromagnetic radiation and biological macromolecules. Formation and energetics of supramolecular structures. The basis of selected techniques of molecular biology, such as DNA hybridization, radiolnmun results. DNA melting and thermal transitions in polymers, thermodynamics, analysis of reactions, binding theory, cooperative interactions.

208. Techniques of Biophysical Chemistry
Second semester. Three credits. Prerequisite: MCB 207, or CHEM 263, or consent of instructor. Brawsell
The characterization of biological macromolecules (i.e. proteins and nucleic acids) in solution is important to the biotechnology and pharmaceutical industries. This course deals with hydrodynamic techniques (i.e. diffusion, electrophoresis, sedimentation, light scattering, and viscosity) for molecular size and shape, and spectroscopic methods (such as circular dichroism) for more detailed structure.

209. Structure and Function of Biological Macromolecules
Second semester. Three credits. Prerequisite or corequisite: MCB 204 or 203 or consent of instructor. Knox
Correlation of three-dimensional molecular architecture with biochemical function in proteins, nucleic acids, and large assemblies such as viruses and ribosomes. Folding motifs and domains; molecular ancestry/homology; molecular recognition at the atomic level, as in DNA/protein complexes; structural basis of enzyme specificity and catalysis. Structure prediction from sequence; principles of structure determination by x-ray diffraction, NMR and CD spectroscopies, and electron microscopy. X-ray laboratory and graphics demonstrations.

210. Cell Biology
First semester. Three credits. Prerequisite: BIOL 107. This course is intended to be taken before MCB 203 or 204 (Biochemistry). Open to sophomores. Knecht/Lee
Structural organization of cells and the molecular basis of dynamic cellular processes, with emphasis on eukaryotic cells. Topics include protein targeting, vesicle trafficking, cytoskeleton, cell-cell interactions in tissues, and the molecular basis of related human diseases.

211. Basic Immunology
First semester. Three credits. Prerequisite: BIOL 107. Recommended preparation: MCB 210. Lynes
An introduction to the genetic, biochemical, and cellular mechanisms of the immune system. This course will address basic aspects of immune function, and will examine abnormal immune function associated with cancer, autoimmune disease, AIDS, and other immunological abnormalities.

212. Genetic Engineering and Functional Genomics
Second semester. Three credits. Prerequisite: MCB 200 or 213. Recommended preparation: MCB 204 or 203. R. O’Neill
Methods and applications of genetic engineering, including gene manipulation and transfer techniques in prokaryotes and eukaryotes. Emphasis on applications of recombinant DNA technology in the elucidation of gene function. Consideration of recent technological developments in molecular genetics, such as cloning, gene therapy, the patenting and release of genetically engineered organisms, and societal issues related to these developments.

213. Concepts of Genetic Analysis
Second semester. Four credits. Three class periods and 2-hour laboratory. Prerequisite: BIOL 108 or 110, or MCB 200 or equivalent, and CHEM 128. Open to sophomores. Zhang
Survey of genetic theory and applications of genetic analysis. Model genetic systems in animals, plants, and microbes.

214. Experiments in DNA Identification
Second semester. Two credits. One fifty minute lecture period and one three hour laboratory period. Prerequisite: MCB 200. O’Neill
An introductory laboratory course in principles and techniques of DNA manipulation and identification. Course simulates independent research, using modern molecular genetics techniques.

215. Experiments in Molecular Genetics
First semester. Three credits. One 1-hour lecture and two 3-hour laboratory periods. Open only with consent of instructor. Recommended preparation: MCB 204; 212 or 217. Not open for credit to students who have passed MCB 230. Reiter
Modern methods in molecular genetics arranged to meet a research goal. Use of polymerase chain reaction, bacteriophage library screening, molecular cloning, nucleic acid hybridizations, and DNA sequence determinations to isolate and characterize a eukaryotic gene.

217. Molecular Biology and Genetics of Prokaryotes
First semester. Four credits. Three lecture periods and one 2-hour discussion. Prerequisite: MCB 229. Noll
Molecular genetics of bacteria, archaea bacteria, and their viruses. Transcription and replication of DNA, transformation, transduction, conjugation, genetic mapping, mutagenesis, regulation of gene expression, genome organization.

218. Heredity and Society
First semester. Three credits. Open to sophomores. May not be counted toward the biology major.
The principles of heredity and their implications for society.
219. Developmental Biology
Second semester. Three credits. Prerequisite: BIOL 107. Recommended preparation: MCB 210 and 213 or 200, which may be taken concurrently. Krider
Principles of embryogenesis, pattern formation, and cell differentiation. The focus will be on molecular and cellular aspects of development in several experimental systems, including the mouse, nematode, fruit fly, and frog.

220. Laboratory in Developmental Biology
Second semester. Three credits. Two 3-hour laboratory periods and a discussion/recitation period. Prerequisite or corequisite: MCB 219, or six credits of college biology and consent of instructor. Not open for credit to students who have passed MCB 223.
Analysis of principles of morphogenesis and differentiation.

220W. Laboratory in Developmental Biology
(Formerly offered as MCB 223.) Second semester. Four credits. Two 3-hour laboratory periods and two discussion/recitation periods. Prerequisite or corequisite: MCB 219, or two semesters of college biology and consent of instructor.

221. Introduction to Molecular Evolution and Bioinformatics
First semester. Three credits. Recommended preparation: At least one 200 level course in MCB. Open to sophomores. Gogarten
Evolution of biomolecules, and application to molecular data analysis and the design of new molecules. Topics include prebiotic chemistry, origin of cells, selfish genes, molecular innovations, data bank searches, alignment of sequence and 3-D protein structures. Course includes lectures, discussions and computer lab exercises.

222W. Human Disease and the Development of Therapeutic Agents
First semester. Three credits. Recommended preparation: one 200 level course in MCB. Kendall
Molecular basis of human disease and strategies for developing therapeutic treatments. Applications of genetic, cellular, and biochemical information in treating disease states. Especially appropriate for students interested in biomedical research and the health profession.

224. Experiments in Bacterial Genetics
Second semester. Three credits. Two 1/2 hour laboratory/lecture periods. Prerequisite: MCB 213. Prerequisite or corequisite: MCB 217 or 229. Open only with consent of instructor.
Experiments in bacterial genetics, emphasizing genetic manipulations using modern techniques for mutant isolation, DNA characterization and cloning. These include the use of transposons, DNA isolation, restriction analysis, gel electrophoresis, PCR and DNA sequencing.

226W. Advanced Biochemistry Laboratory
Second semester. Four credits. One 1-hour lecture and two 4-hour laboratories. Prerequisite: Either MCB 204, or MCB 203 with consent of instructor. Teschke
Theory and application of modern techniques for separation and characterization of biological macromolecules, including several types of liquid chromatography, liquid scintillation spectrophotometry, and SDS polyacrylamide gel electrophoresis. Instruction in writing a scientific paper.

229. Fundamentals of Microbiology
Either semester. Four credits. Three lecture periods and one 2-1/2-hour laboratory period. Prerequisite or corequisite: CHEM 141 or 243. Recommended preparation: BIOL 107 or equivalent. Open to sophomores. Gage, Terry, Vinopal
Biology of microorganisms, especially bacteria. Cellular structure, physiology, genetics, and interactions with higher forms of life. Laboratory familiarizes students with methodology of microbiology and aseptic techniques.

230. Laboratory in Biotechnology and Molecular Genetics
Summer session. Two credits. One 4-hour laboratory. Prerequisite: MCB 200 or 213. Prerequisite or corequisite: MCB 229. Not open for credit to students who have passed MCB 215.
Theory and application of techniques used in biotechnology and molecular genetics, including recombinant DNA procedures, gel electrophoresis and blot analysis.

232C. Microcomputer Applications in Molecular and Cell Biology
First semester. Three credits. One 1-hour lecture and two 3-hour laboratories. Recommended preparation: MCB 200 or 204 or 210 or 213 or 229. Bruswell
Introduction to the use of microcomputers in molecular biology, emphasizing commercially available applications software, both general (spreadsheet, word processing, database, graphics) and specialized (DNA and protein sequence database manipulation, molecular modeling, data acquisition, others).

233. Pathogenic Microbiology
Second semester. Four credits. Two class periods and two 2-hour laboratory periods. Prerequisite: MCB 229. Recommended preparation: MCB 204 (or 203).
A detailed study of microbial genera, emphasizing species which are important in diseases of man and animals and which have special public health significance. Diagnostic methods include some standard serological procedures.

235. Applied Microbiology
First semester. Four credits. Two class periods and two 2-hour laboratory periods. Prerequisite: MCB 229. Recommended preparation: MCB 204 (or 203). Benson
A study of the biology, physiology, and genetics of microorganisms useful in industry, agriculture, and selected environmental processes.

236. Marine Microbiology
(Also offered as MARN 236.) Second semester. Three credits. Two lecture-discussion class periods and one 2-hour laboratory period for which field trips may be substituted. Offered at the Avery Point Campus. Prerequisite: MCB 229, or consent of instructor.
A general survey of the taxonomy, physiology, ecology and marine microorganisms.

240W. Bacterial Diversity and Ecology
Second semester. Four credits. Two lecture periods and two 3-hour laboratory/discussion periods. Prerequisite: MCB 229 or consent of instructor. Recommended preparation: MCB 204 (or 203). Leadbetter
A study of the ecophysiology of diverse bacterial types with particular emphasis on the activities of bacteria in situ. Investigative laboratory includes individual projects.

241W. Research Literature in Molecular and Cell Biology
First semester. Three credits. Open only with consent of instructor. Recommended preparation: one 200’s course in MCB. With a change in content, may be repeated for credit. Leadbetter
Discussion of current research in molecular and cell biology. Focus on microbes as agents of environmental change.

246. Virology
Second semester. Three credits. Three lecture periods. Prerequisite: MCB 229. Recommended preparation: MCB 204 or 210. Marcus
Biological, biochemical, physical, and genetic characteristics of viruses, with an emphasis on molecular and quantitative aspects of virus-cell interactions.

258. Biotecnical Plant Culture
Summer session. Two credits. Prerequisite: MCB 259.
Recent advances in in vitro, hydroponic and controlled environment culture of plants.

259. Plant Physiology
First session. Three credits. Three 1-hour class periods. Recommended preparation: BIOL 108 (or 110) and CHEM 128.
Functioning of plants in relation to external and internal factors. The course integrates pertinent findings from cell biology, genetics and molecular biology. Topics include photosynthesis, long distance and trans-membrane transport, selected biochemical pathways, phytohormones, photomorphogenesis and movements in plants.

261. Laboratory Techniques of Plant Physiology

269. Variable Topics
Either semester. Three credits. With a change of topic, may be repeated for credit. Prerequisites and recommended preparation vary.

290. Forensic Application of DNA Science
Second semester. Three credits. Recommended preparation: A course in genetics. Strausbaugh
DNA analysis in forensic science, with emphasis on molecular genetic technology in criminal investigations and issues surrounding the use of DNA evidence. Team-taught with forensic practitioners.

292W. Senior Research Thesis in Molecular and Cell Biology
Either semester. Three credits. Hours by arrangement. Prerequisite or corequisite: Three credits of MCB 299. Open only with consent of instructor and department honors committee. Not limited to honors students.
Designed for the advanced undergraduate who is pursuing a special problem as an introduction to independent investigation. Research and writing of a thesis.

297. Undergraduate Seminar
Either or both semesters. Credits and hours by arrangement. Open only with consent of instructor. May be repeated for credit with a change of topic.

298. Special Topics
Either semester. Credits and hours by arrangement. With a change in content, may be repeated for credit. Prerequisites and recommended preparation vary.

299. Independent Study
Either or both semesters. Credits and hours by arrangement. Open only with consent of instructor and the department honors committee. May be repeated for credit with change in topic.
Designed for the advanced undergraduate student who desires to pursue a special problem as an introduction to independent investigation.
101. Convocation, Concert and Recital Repertoire
Required of all music majors every semester of residence. No credit. Maker. Larrabee

108. Varsity Band
Either semester. One credit. Two laboratory periods. Open only with consent of instructor. May be repeated for credit. Mills

109. Marching Band
First semester. One credit. Three laboratory periods. Open only with consent of instructor. May be repeated for credit. Mills

110. Band
Either semester. One credit each semester. Three laboratory periods. Open only with consent of instructor. May be repeated for credit. Wind Ensemble, Symphony Band, Concert Band. Mills, Renshaw

111. Chorus
Either semester. One credit each semester. Three laboratory periods. Open only with consent of instructor. May be repeated for credit. Concert Choir, Chamber Singers, University Chorale. Bagley

112. Orchestra
Either semester. One credit each semester. Three laboratory periods. Open only with consent of instructor. May be repeated for credit. Sacco

113. Chamber Ensemble
Semester by arrangement. One credit each semester. Three laboratory periods. Open only with consent of instructor. May be repeated for credit. As a requirement for credit, the student must participate in MUSI 110, 111, or 112.

114. Voices of Freedom Gospel Choir
Either semester. One credit. One 2-hour laboratory period. Open only with consent of instructor. May be repeated for credit.

115. Jazz Ensemble
Either semester. One credit. Two laboratory periods. Open only with consent of instructor. May be repeated for credit.

116. Small Ensemble
Either semester. One credit. Two laboratory periods. Open only with consent of instructor. May be repeated for credit. As a requirement for credit, the student must participate in MUSI 110, 111, or 112.

117. Women’s Choir
Either semester. One credit. Two 1/2 hour laboratory periods. Open only with consent of instructor. May be repeated for credit.

118. Collegium Musicum
(formerly offered as MUSI 220.) Either semester. One credit per semester. One lecture period, two laboratory periods. Open only with consent of instructor. May be repeated for credit. Bellingham

119. Opera Workshop
(formerly offered as MUSI 221.) Either semester. One credit each semester. Three laboratory periods. Open only with consent of instructor. May be repeated for credit. McClain

121. Secondary Applied Music
Either semester. One credit each semester. May be repeated for credit. Ensemble required with conditions stated under MUSI 122. Open only with consent of instructor and department head.

123. Class Instruction in Piano
Either or both semesters. One credit each semester. Two class periods and required practice. May be repeated for credit. Open only with consent of instructor. Clark

124. Applied Accompanying
One credit per semester. One class period per week by arrangement. Open only with consent of instructor. This course is intended for students whose area of emphasis is keyboard. An audition is required for all other students.

125. Applied Music Techniques
Bs (Brass), Ph (Percussion), Sg (String), Ve (Voice), Wd (Woodwind).

126. Introduction to Diction for Singers
First semester. One credit. Two one-hour laboratory periods. Prerequisite: concurrent registration in applied voice study under MUSI 122, 222, or 323. McClain

127. Italian Diction for Singers
Second semester. One credit. Two one-hour laboratory periods. Prerequisite: MUSI 126 and concurrent registration in applied voice study under MUSI 122, 222, or 323. McClain

128. German Diction for Singers
First semester. One credit. Two one-hour laboratory periods. Prerequisite: MUSI 126 and concurrent registration in applied voice study under MUSI 122, 222, or 323. McClain

129. French Diction for Singers
Second semester. One credit. Two one-hour laboratory periods. Prerequisite: MUSI 126 and concurrent registration in applied voice study under MUSI 122, 222, or 323. McClain

135. Honors Harmony I
First semester. Four credits. Three class periods and two 1-hour laboratory periods. Prerequisite: Open only with consent of instructor. Kaminsky

136. Honors Harmony II
Second semester. Four credits. Three class periods and two 1-hour laboratory periods. Prerequisite: MUSI 135. Kaminsky

138. Introduction to Improvisation
Either semester. One credit. One laboratory period. Open only with consent of instructor. May be repeated once for credit.

145. Harmony I
First semester. Four credits. Three class periods and two 1-hour laboratory periods. Open only with consent of instructor. Not open for credit to students who have passed MUSI 135. Kaminsky

1† Students taking this course will be assigned a final grade of S (satisfactory) or U (unsatisfactory).
146. Harmony II
Second semester. Four credits. Three class periods and two 1-hour laboratory periods. Prerequisite: MUSI 145. Not open for credit to students who have passed MUSI 136. Kaminsky
Continuation of MUSI 145.

153. Fundamentals of Music I
Either semester. Three credits. Maker
Basic skills in note reading, rhythm, meter, pitch symbols, scales, key-signatures, intervals, and triads.
No previous training is required.

154. Fundamentals of Music II
Second semester. Three credits. Prerequisite: MUSI 153 or consent of instructor. Laszloffy
Traditional harmonic principles, four-part writing, sight singing and melodic dictation.

155. Introduction to Ear Training
Second semester. Three credits.
Music reading, sight-singing, and dictation.

190. Non-Western Music
Either semester. Three credits. Intended primarily for students who are not music majors. Not open for credit to students who have previously passed MUSI 292W.
Folk, popular, and classical musics of selected non-Western cultures, with an emphasis on the distinctive characteristics of each culture.

191. Music Appreciation
Either semester. Three credits. No previous training is required. Not appropriate for students who have previously passed MUSI 193 or 194. Not intended for students with previous musical experience.
An approach toward intelligent listening, illustrated by recordings.

193. Introduction to Music History I
First semester. Three credits. Not intended for music majors.
Music history in relation to other arts from the early Christian era to J.S. Bach (1750). Some background in music fundamentals or performance is highly recommended.

194. Introduction to Music History II
Music history in relation to other arts from the mid-18th Century to the present. Some background in music fundamentals or performance is highly recommended.

195. Practicum in Music
Either or both semesters. Credits and hours by arrangement. Open only with consent of instructor. May be repeated for credit.

210W. Music, History, and Ideas
Either semester. Three credits. Open only with consent of instructor. Relationships of musical styles to cultural and intellectual backgrounds.

211. The Composer and the Composer’s World
Either semester. Three credits. Prerequisite: MUSI 286 or consent of instructor. May be repeated for credit with a change in content.
Selected works in relation to the musical institutions, musical style, social, intellectual and political milieu, and biography of composer(s).

211W. The Composer and the Composer’s World
First semester. Three credits. Prerequisite: MUSI 286 or consent of instructor.
Plainsong, mass, motet, cantata, oratorio, and other forms of church music.

212W. Music of the Church
Second semester. Three credits. Prerequisite: MUSI 286 or consent of instructor.
Opera, ballet, and other types of music for the theater.

213W. Music of the Theater
First semester. Three credits. Prerequisite: MUSI 286 or consent of instructor.
Concerto, symphony, symphonic poem, and other forms of music for orchestral ensembles.

214. Orchestral Music
First semester. Three credits. Prerequisite: MUSI 286 or consent of instructor.
Keyboard music, the art song, and other types of music for instrumental or vocal soloists.

215. Chamber Music
Second semester. Three credits. Prerequisite: MUSI 286 or consent of instructor.
Keyboard music, the art song, and other types of music for instrumental or vocal soloists.

216. Solo Literature
Second semester. Three credits. Prerequisite: MUSI 286 or consent of instructor.
Keyboard music, the art song, and other types of music for instrumental or vocal soloists.

217. A History of Jazz
Either semester. Three credits. Prerequisite: MUSI 146.

218. Applied Music, Advanced Course
Either or both semesters. Credits and hours by arrangement. Ensemble required with conditions stated under MUSI 122. Prerequisite: Advanced standing in performance as recommended by a faculty jury, recommendation by an instructor in this department, and consent of the Department Head. May be repeated for credit.
A continuation of MUSI 122 for students with proven ability. Fees for this course are at the same rate as described for MUSI 122.

219. Vocal Literature I
First semester. Two credits. Two class periods. Corequisite: MUSI 222 and consent of instructor. Songs and arias of the Renaissance and Baroque Periods; Oratorio Literature.

220. Vocal Literature II
Second semester. Two credits. Two class periods. Corequisite: MUSI 222 and consent of instructor. Classical Period Songs; German Lied.

221. Vocal Literature III
First semester. Two credits. Two class periods. Corequisite: MUSI 222 and consent of instructor. French melody; Songs of Nationalistic origin.

222. Vocal Literature IV
Second semester. Two credits. Two class periods. Corequisite: MUSI 222 and consent of instructor. British and American Songs; The Modern Period.

223. Instrumental Pedagogy and Literature
Either semester. One or two credits. One or two instrumental hours per week. Corequisite: MUSI 222 (upperclass level). May be repeated for credit to a maximum of four semesters. Open only with consent of instructor.

232. Conducting I
Either semester. Two credits. Prerequisite: MUSI 146. Renshaw
Physical aspects of conducting, reading of full and condensed scores.

233. Conducting II: Choral
Either semester. Two credits. Prerequisite: MUSI 232. Bagley

234. Conducting II: Instrumental
Either semester. Two credits. Prerequisite: MUSI 232. Renshaw

235. Honors Harmony III
First semester. Four credits. Three class periods and two 1-hour laboratory periods. Prerequisite: MUSI 136. Open to sophomores.
Continuation of Honors Harmony II, including writing and analysis of chromatic harmony; formal analysis.

236. Honors Harmony IV
Second semester. Four credits. Three class periods and two 1-hour laboratory periods. Prerequisite: MUSI 235. Open to seniors. Bass
Continuation of Honors Harmony II, including writing and analysis of chromatic harmony; formal analysis.

238. Jazz Improvisation and Performance
Either semester. One credit. One laboratory period. Prerequisite: MUSI 138 or consent of instructor. May be repeated for credit.
Advanced jazz theory, styles, and ensemble techniques.

239. Jazz Arranging I
First semester. Two credits. Two class periods. Prerequisite: MUSI 146 or equivalent and consent of instructor.
Arranging and composition of chamber jazz ensembles and big band.

240. Jazz Arranging II
Second semester. Two credits. Two class periods. Prerequisite: MUSI 239 and consent of instructor. Continuation of MUSI 239.

241. Jazz: Theory and Performance
Either semester. Two credits. Two class periods. Prerequisite: MUSI 146 and consent of instructor. Open to sophomores.
Performance, improvisation, arranging, and ensemble techniques.

245. Harmony III
First semester. Four credits. Three class periods and two 1-hour laboratory periods. Prerequisite: MUSI 146. Open to sophomores. Not open for credit to students who have passed MUSI 235. Bass

246. Harmony IV
Second semester. Four credits. Three class periods and two 1-hour laboratory periods. Prerequisite: MUSI 245. Open to seniors. Not open for credit to students who have passed MUSI 236. Bass

250. Introduction to Electronic Composition
Either semester. Three credits. Prerequisite: MUSI 264 or consent of instructor.
Composition by synthesizer and computer.

251. Composition I
First semester. Three credits. Prerequisite: MUSI 246 or consent of instructor.
252. Composition II
Second semester. Two credits. Prerequisite: MUSI 251 and consent of instructor.

253. Composition III
Either or both semesters. Two credits. Hours by arrangement. May be repeated for credit. Prerequisite: MUSI 252 and consent of instructor. Individual instruction in musical composition.

257. Form and Analysis I
Either semester. Three credits. Prerequisite: MUSI 246. Not open for credit to students who have passed MUSI 236 with a grade of “B” or better. Musical structure and expression; melodic, harmonic, rhythmic and contrapuntal relationships; style analysis.

257W. Form and Analysis I

258. Form and Analysis II
Either semester. Three credits. Prerequisite: MUSI 257. Continuation of MUSI 257. Emphasis on the larger works of the 19th-century and 20th-century styles.

258W. Form and Analysis II

259. Music for the Classroom Teacher
Either semester. Three credits. Prerequisite: MUSI 257. Junda
Primarily for the non-music major preparing to teach in the elementary school. Elementary music materials, organization of learning experiences, and teaching methods.

261Q. Acoustics and the Perception of Music
Either semester. Three credits. Prerequisite: Pass Q- Course Readiness Test or MATH 101. Science of Music, using basic quantitative techniques.

262. Elementary Descriptive Acoustics
Either semester. Three credits. Nature of sound as it applies to music.

263. Psychology of Music
Second semester. Three credits. Prerequisite: PSYC 132. Traditional approaches to music perception, learning and development.

264. Electronic Music Techniques
Either semester. Three credits. Open only with consent of instructor. Theory and application of standard electronic music systems and techniques of sound synthesis.

265. Music Communications
First semester. Three credits. Prerequisite: MUSI 262 and 263. Communication between performer and listener in music.

266. Musical Tests and Measurements
Either semester. Three credits. Prerequisite: MUSI 246 (Harmony IV) or equivalent and consent of instructor. Significant aspects of musical evaluation, with emphasis on the uses and limitations of standardized music tests of achievement and aptitude and problems of musical performance evaluation.

267C. Microcomputers in Music Education
Either semester. Two credits. Two laboratory/discussion periods. Open only with consent of instructor. Uses of micro-computers in the school music program.

273. Seminar in Music Education
Either semester. One or two credits. One or two class periods. Open only with consent of instructor. With a change of content, may be repeated for credit. Junda Theories and procedures for the organization of musical instruction.

275. Orchestration I
Second semester. Three credits. Prerequisite: MUSI 245 and consent of instructor. Maker Range, tone quality, and characteristics of the various orchestral and band instruments. Elementary scoring problems.

276. Orchestration II
First semester. Three credits. Prerequisite: MUSI 275. Maker Scoring problems, score reading, and study of scores in the standard literature.

277. Counterpoint I
Either semester. Three credits. Prerequisite: MUSI 246. Two- and three-voiced textures in the principal 16th-century styles: Josquin, Lassus, Palestrina.

278. Counterpoint II
Either semester. Three credits. Prerequisite: MUSI 277.

2790. Twentieth Century Theory and Analysis
Either semester. Three credits. Prerequisite: MUSI 246 and MUSI 257. With consent of instructor, MUSI 257 may be taken concurrently. Bass Analytical techniques appropriate to selected styles of twentieth century music. Problems in twentieth century counterpoint and composition.

281. Vocal Pedagogy
Either semester. Two credits. Two class periods. Prerequisite: MUSI 222 and consent of instructor. Vasil Vocabulary, methodology and practical application of pedagogical techniques.

283. Marching Band Techniques
First semester. Two credits. Two class periods. Open only with consent of instructor. Mills Scoring for the outdoor band, administration, marching and maneuvering.

284. Music History and Literature Before 1700
(Formerly offered as MUSI 287.) First semester. Three credits. Prerequisite: MUSI 146 or consent of instructor. Open to sophomores. Bellingham Medieval, Renaissance, to High Baroque periods. Score study, development of notation, and relation to other artistic traditions.

285. Music History and Literature 1700-1830
First semester. Three credits. Prerequisite: MUSI 287. Open to sophomores. Leading composers, genres, elements of style, form and harmony, musical institutions and aesthetics in the High Baroque, Pre-classic, and Classic periods.

286. Music History and Literature 1830 to Present
Second semester. Three credits. Prerequisite: MUSI 285. Open to sophomores. The romantic period and the Twentieth Century.

290. Theory Review
First semester. Three credits. An overview of traditional undergraduate theory. Intended for graduate students in Music.

292W. Music in World Cultures
Either semester. Three credits. Not open for credit to students who have passed MUSI 190. Prerequisite: MUSI 286 and consent of instructor. Comparison of musical concepts, styles, and performance practice in the social context of various cultures.

295. Music of the Twentieth Century
Either semester. Three credits. Prerequisite: MUSI 286.

297. Senior Recital
Required of all Bachelor of Music performance majors. No credit.

298. Special Topics
Either semester. Credits and hours by arrangement. Open only with consent of instructor. May be repeated for credit.

299. Independent Study
Either semester. Credits and hours by arrangement. Open only with consent of head of department. May be repeated for credit.

Natural Resources Management and Engineering (NRME)

Department Head: Professor David B. Schroeder
Department Office: Room 308, W.B. Young Building

For major requirements, see the College of Agriculture and Natural Resources section of this Catalog.

100. Environmental Science
First semester. Three credits. Two class periods and one 3-hour laboratory period. Neumann An introduction to basic concepts and understanding of Natural Resources Systems and the effects of society on the environment.

110. Introduction to Natural Resources
First semester. One credit. Open only to lower division students or by consent.

130. Environmental Conservation
Second semester. Three credits. Barclay Overview of conservation policy development from colonial period to present and development of the environmental movement in the U.S. Discussion of the context and complexity of some contemporary environmental policy issues.

204. Wetlands Biology and Conservation
Second semester, alternate years (even). Three credits. Principal wetland habitats of North America are surveyed, and the relationship of wildlife associations to biological and physical features of wetlands is reviewed. Emphasis is placed on issues relating to wetlands conservation and management.

205. Stream Ecology
Second semester. Three credits. Prerequisite: Biology: EEB 244. A broad overview of stream ecology will be presented. Emphasis will be placed on the biota and the application of ecosystem and community ecology to running water habitats. Human influences on stream systems will also be discussed.

† Students taking this course will be assigned a final grade of S (satisfactory) or U (unsatisfactory).
205. Introduction to Aquaculture
Either semester. Three credits. Two class periods, one 2-hour laboratory. Prerequisite: BIOL 107 or 108 or consent of instructor. Basic principles and practice of environmentally compatible aquaculture. Emphasis on commercial aquaculture production including concepts and principles of various re-circulation systems, species, and culture techniques. Application of biotechnology will also be covered.

210. Air Pollution
First semester. Three credits. Prerequisite: NRME 241 or consent of instructor. Miller
The meteorology, effects and controls of air pollution.

211. Watershed Hydrology
Second semester, alternate years (even). Three credits. Recommended preparation: NRME 242 or ENGR 150, or consent of instructor. Open to sophomores. Warner
Fundamental hydrologic processes, water balances, precipitation analyses, infiltration, soil water, evapotranspiration, open channel flow, discharge measurements, and analysis, flow frequencies, ground water-surface water interactions, runoff processes and prediction. Problem oriented course requiring use of computer spreadsheets.

214. Dendrology
First semester. Three credits. Two class periods and one 3-hour laboratory period. Prerequisite: BIOL 108 or 110. Open to sophomores. Schroeder
The taxonomy, silvics, and distribution of trees and shrubs of the United States with emphasis upon Northeastern species. Field trips will be required.

217. North American Wildlife
First semester. Three credits. Prerequisite: BIOL 107. Open to sophomores. Ortega
An introduction to wildlife conservation programs and resource values. The distribution, life history and status of those birds and mammals whose populations man is attempting to preserve, reestablish, or to control are examined.

232P. Wildlife Management
Second semester. Three credits. Prerequisite: NRME 217 or consent of instructor. Recommended preparation: Prior course work in ecology. Must be taken with another P course in NRME to equal one W course. Ortega
Brief review of wildlife conservation and ecological principles; management of wetlands, farmlands, rangelands, and forest lands for wildlife; programs dealing with exotic, urban, nongame, and endangered wildlife; contemporary economic, administrative, and policy aspects of management.

233. Wildlife Management Techniques
First semester, alternate years. Two credits. One 4-hour laboratory period. Prerequisite: NRME 232. Open only with consent of instructor. One or more field trips will be required. Barclay
Collection and reporting of biological data upon which wildlife conservation decisions are based.

235P. Principles of Fishery Management
Second semester. Four credits. Three class periods and one 2-hour laboratory period. Prerequisite: EEB 200 and one course in statistics, or consent of instructor. Must be taken with another P course in NRME to equal one W course. Neumann
Principles and practices of fisheries management with applications to biota, habitat, and human users to produce desirable fish populations and communities. Selected topics include harvest regulations, fish population dynamics, stocking concepts, age and growth, and habitat management.

237. Introductory Remote Sensing
First semester. Three credits. Two class periods and one 2-hour laboratory period. Open to only CANR students and GEOG major or with consent of instructor. Cico
The principles of the interpretation of remote sensing imagery acquired from aircraft and satellite platforms will be studied. Various applications of remote sensing will be discussed.

238V. Advanced Remote Sensing
Second semester. Three credits. Two class periods and one 2-hour laboratory period. Prerequisite: NRME 237. Open only with consent of instructor. Cico
The principles of quantitative remote sensing, image processing and pattern recognition will be studied. Computer-assisted data analysis techniques will be used.

239W. Natural Resources Planning and Management
Second semester. Three credits. Prerequisite: Senior standing or consent of instructor. Clausen
Concepts and methods of planning for the allocation, management and utilization of terrestrial and aquatic ecosystems. Techniques and methods of managerial decision making. Written technical reports required.

240. Environmental Law
First semester. Three credits.
An overview of environmental law including the common law principles of nuisance, negligence, and trespass. Students will become acquainted with legal research techniques; emphasis will be on federal, state, and municipal programs addressing clear air, clean water, hazardous waste, inland wetlands, coastal zone management, and prime agricultural farm land and aquifer protection.

241. Meteorology
First semester. Three credits. Yang
A survey course in meteorology at the introductory level covering weather and climate processes.

242. Natural Resources Measurements
First semester. Four credits. Two class periods and two 2-hour laboratories. Open to sophomores. Miller
Principles and instrumentation used in the measurement of environmental conditions and processes, with emphasis on the interactions of biological organisms and populations with their environment.

246. Water Quality Management
First semester, alternate years (odd). Three credits. Recommended preparation: NRME 211 or NRME 260P or consent of instructor. Clausen
An introduction to all aspects of water quality problems relating to the many beneficial uses of water, including the physical, chemical, and biological properties.

247P. Public Lands Wildlife Management
Second semester. Three credits. Recommended preparation: NRME 217, 232P, EEB 244. Open only with consent of instructor. Must be taken with another P course in NRME to equal one W course. Ortega
Applied natural resources management in different ecosystems (forestslands, grasslands, and drylands). Meet one hour per week for background readings from current literature. Two short research papers and presentation to the class. Required field trip last two weeks of May. Students are responsible for cost of field trip.

251C. Computer Utilization in Agriculture and Natural Resources
Second semester. Three credits. Two class periods and one two-hour laboratory. Students who have passed AGEG 201 may not receive credit for NRME 251C.
Instruction in the utilization of microcomputer technology in a variety of natural resources management and engineering applications, such as forest mensuration, water runoff and soil erosion estimation, land use planning, ecological modeling, and general problems from commercial agriculture. Skills will be developed in the use of popular programming languages, such as BASIC and FORTRAN, and commercial packages, including spreadsheets, data base managers, computer graphics and application-specific software.

252. Geographic Information Science for Natural Resources Management
Second semester. Four credits. Three class periods and one two-hour laboratory period. Prerequisite: NRME 242, MATH 112Q. Recommended preparation: PHYS 121Q. Open only to natural resource majors or with consent of instructor. Meyer
Introduction to geodetic and cartographic principles underlying the creation of accurate maps. Particular emphasis is given to mapping topography and natural areas. Topics include: horizontal and vertical geodetic datums, the geoid, map projections, coordinate systems, global positioning systems (GPS), GIS data modeling with regional database management systems, and digital terrain models.

256. Natural Resources Modeling
First semester. Three credits. Prerequisite: MATH 112Q or higher. Open only to natural resource majors except by consent. Warner, Clausen
Applications of conservation of mass, energy and momentum in modeling natural resources systems. Defining systems; determining flows and storages; interactions and feedback mechanisms within systems. Problem oriented course including computer solutions using spreadsheets or modeling programs.

260P. Soil and Water Management and Engineering
Second semester, alternate years (odd). Three credits. Two class periods and one 3-hour laboratory. Recommended preparation: NRME 211 or CE 265. Must be taken with another P course in NRME to equal one W course. Warner
Flooding and erosion control, reservoir management, storm water control, watershed management, and on-site sewage treatment systems. Written technical and laboratory reports, use of spreadsheets and field work required, some field trips.

271. Environmental Meteorology
Second semester, even numbered years. Three credits. Recommended preparation: NRME 241. Yang
Applied meteorology in environmental science and engineering. Solar energy, winds and air pollution, atmospheric-hydrologic interactions, agricultural and forest meteorology, and biometeorology.

280P. Forest Management
Second semester, alternate years (odd). Four credits. Two class periods and one 4-hour laboratory period. Prerequisite: NRME 214. (Not open for credit to students who have passed NRME 230 and NRME 231.) Must be taken with another P course in NRME to equal one W course. Broderick, Schroeder
An introduction to forest mensuration, ecology, silviculture, and multiple-use management. Field trips required.
285. Forest Ecology
First semester alternate years (even). Three credits. Two class periods and one 3-hour laboratory. Prerequisite: NRM 214 or consent of instructor.

Forest stand dynamics and ecosystem function including tree response to local and regional site factors individually and in community interactions with other species, and the role of forest stands in ecosystem function (e.g., habitat diversity, interactions among ecosystems, nutrient cycling). Laboratory will be outside or in computer lab.

287. Field Study Internship
Either semester or summer. One to six credits. Hours by arrangement. Open only to Upper Division students with consent of advisor and department head. This course may be repeated provided that the sum total of credits earned does not exceed six.

This course is designed to acquaint students through actual work experience with research and management activities not available on campus. Students will work with professionals in an area of concentration. Student evaluation will be based upon the recommendation of the field supervisor and a detailed written report submitted by the student.

295. Seminar
Second semester. One credit. May be repeated for credit. Open only with consent of instructor.

298. Special Topics
Either semester. Credits and hours by arrangement. May be repeated for credit with a change of topic. Open only with consent of instructor.

299. Independent Study
Either or both semesters. Credits and hours by arrangement. May be repeated for credit. Open only with consent of instructor.

NURSING (NURS)

Dean: Laura Cox Dzurec
Office: Room 111, Storrs Hall

For major requirements, see the School of Nursing section of this Catalog.

110. Introduction to Health
First semester. Three credits.

An interdisciplinary course that provides an introduction to the intrinsic and extrinsic factors that influence health. Includes approaches to health promotion and disease prevention, study of leading causes of illness, injury and death in a university community, and cultural practices and beliefs about health. Examples of topics covered include: sexuality and sexually transmitted diseases, assessment of genetic history, healing practices to enhance wellness.

111. Humanizing Health Care: Nursing's Past, Present and Future
Second semester. Three credits.

This course is designed to explore the history of health care in the United States as it relates to nursing. Historical imperatives, dealing with such issues as gender related constraints and other social, political and economic factors will be identified. Both external and internal forces that shape the substance of nursing education, practice and research and reinforce its mission to society will be analyzed.

112. Health Care Delivery System
Second semester. Three credits.

An historical and contemporary exploration of the American health care delivery system: its evolution and development, legal and regulatory perspectives, roles of all providers and finances. A comparison with socialized health care will be made.

198. Introduction to Nursing Arts
Either semester. One credit.

Introduction to foundational allopathic and holistic nursing art skills needed in all practice settings, grounded in Nightingale’s philosophy/theory of nursing. Includes psychomotor competency, theoretical and philosophic foundations for nursing as a caring/healing art, and self-care foundations for becoming a nurse healer.

202. The Basis of Scientific Inquiry
Either semester. Three credits. Prerequisite: PHIL 104. Open to sophomores.

This course will acquaint the learner with issues salient to an understanding of science as a source of knowledge. Perspectives on scientific truth, the nature of science, and the science in modern culture will be presented.

204. Clinical Science I
First semester. Three credits. Open to Nursing majors only. Prerequisite: CHEM 127Q and 128Q, PNB 264. PNB 265 concurrent or prerequisite. Open to sophomores.

Critical examination of concepts from microbiology, pathophysiology, and pharmacology as they relate to health care of individuals throughout the lifespan. Emphasis will be placed on microbiology and anti-infectives.

205. Theoretical Foundations of Nursing I
First semester. Two credits. Prerequisite: PHIL 212, SCI 240 or NURS 202.

An exploration of the empirical way of knowing in nursing. Selected models and theories illustrating an empirical approach will be analyzed.

206. Theoretical Foundations of Nursing II
Second semester. Two credits. Prerequisite: NURS 205, 217, or RN license.

An exploration of the existential way of knowing in nursing. Selected models and theories illustrating an existential approach will be analyzed.

207. Clinical Science II A
Second semester. Three credits. Prerequisite: PNB 264 and NURS 204; PNB 265 concurrent. Open to sophomores.

Critical examination of concepts from pathophysiology, pharmacology and nutrition as they relate to preventative health care of adults. Emphasis will be placed on nutritional aspects of preventative health care.

211C. Information Systems in Health Care
Either semester. Three credits. Two class periods and two hours of laboratory. Open to sophomores.

Concepts of problem-solving and decision-making will be used to explore the basic elements of information processing. Applications of computerized information processing in health care will be examined.

212. Clinical Science for Sub-acute and Chronically Ill Adults
First semester. Three credits. Prerequisites: NURS 110, 111, 112, 204, 207 and 221.

Critical examination of concepts of pharmacology, microbiology, nutrition and pathophysiology as they relate to nursing care of adults with sub-acute and chronic health problems and their families.

213. Nursing Research
Either semester. Three credits. Open to Nursing majors only. Prerequisite: STAT 100V or 110V.

An introduction to qualitative and quantitative research. A variety of processes and resources is used to identify scholarly writing, critique research, and apply research findings to nursing.

213W. Nursing Research

214. Clinical Science II B
First semester. Three credits. Prerequisite: CHEM 127Q, 128Q, PNB 264, 265; PHYS 101; NURS 204. Open to Nursing majors only.

Concepts from pathophysiology, pharmacology, and normal and therapeutic nutrition as they relate to the nursing care of adults with acute non-life threatening health problems.

216. Adult Health I

Clinical decision-making utilizing functional health patterns, dependent, independent, and interdependent nursing actions related to care of adults with acute non-life threatening and/or life modifying health problems.

217. Practicum: Adult Health I
First semester. Five credits. Fifteen laboratory hours. Prerequisites: Co-requisites: NURS 214 and 216.

Application of functional health patterns to the care of adults with acute, non-life threatening and/or life modifying health problems. Focus is on psychomotor, communication and decision-making skills basic to nursing.

218. Nursing Science for Adults with Sub-Acute and Chronic Health Issues
First semester. Three credits. Prerequisites: NURS 110, 111, 112, 204, 207 and 221.

Critical examination of theory, research and expert clinical practice supportive of nursing with adults experiencing sub-acute and chronic health problems and their families.

219. Practicum with Sub-acute and Chronically Ill Adults
First semester. Six credits. Prerequisites: NURS 110, 111, 112, 204, 207, 221; NURS 212, 218 concurrent.

Nursing and interdisciplinary care of person and family with sub-acute and chronic health issues.

220. Historical and Contemporary Topics in Nursing
Either semester. Three credits. Open to non-majors only with the consent of the instructor.

Contemporary topics in nursing will be explored from historical and phenomenological perspectives. The ideas and actions of individuals, the genesis and impact of various professional issues, and pervasive themes throughout nursing will be examined.

220W. Historical and Contemporary Topics in Nursing

221. Health Assessment through the Lifespan
Second semester. Three credits. Prerequisites: PNB 264; PNB 265 concurrent. Open to Nursing majors only. Open to sophomores.

In this course, students will acquire the knowledge, skills, and values needed for assessing individuals through the lifespan. Supervised laboratory sessions will provide opportunity to practice newly acquired skills.

224. Clinical Science III
Second semester. Four credits. Prerequisite: NURS 214.

Concepts from pharmacology, microbiology, nutrition and pathophysiology as they relate to the nursing care of adults with life modifying, life threatening health problems.
225. Theoretical Foundations of Nursing III
   First semester. Three credits. Prerequisite: NURS 206, 227, or RN license.
   An exploration of the ethical way of knowing in nursing. Selected models and theories illustrating an ethical approach will be analyzed.

226. Adult Health II
   Second semester. Two credits. Concurrent or recommended preparation: Corequisites NURS 224 and 227.
   Clinical decision-making utilizing functional health patterns, dependent and independent nursing actions related to care of adults with life threatening health problems.

227. Practicum: Adult Health II
   Application of functional health patterns to the care of adults with life threatening health problems. Focus is on independent decision making.

232. Clinical and Nursing Science: Nursing Care of the Childbearing Family
   Both semesters. Four credits. Prerequisites: NURS 212, 218, and 219.
   This course builds on students’ understanding of microbiology, pharmacology, nutrition and pathophysiology as these sciences relate to childbearing families. Emphasis is on development of clinical decision making skills related to nursing care of childbearing families with a particular focus on anticipatory guidance, prevention, intervention and health restoration.

234. Clinical Science IV
   Either semester. Two credits. Prerequisite: NURS 224.
   Concepts from pharmacology, microbiology, pathophysiology, and nutrition as they relate to child bearing, child rearing families.

235. Theoretical Foundations of Nursing IV
   Second semester. Three credits. Prerequisite: NURS 225, 227 or RN license.
   An exploration of the esthetic way of knowing in nursing. Selected models and theories illustrating an esthetic approach will be analyzed.

236. Parent-Child Nursing
   Either semester. Four credits. Prerequisites: NURS 224 and 226. Corequisite NURS 234.
   Functional health patterns and clinical decision-making related to the care of the child bearing, child rearing family. Focus is an anticipatory guidance, preventive intervention, and health restoration.

237. Practicum Parent-Child Nursing
   Either semester. Five credits. Fifteen laboratory hours. Prerequisites: NURS 220 or 220W and 213 or 213W. Co-requisites NURS 234 and 236.
   Application of functional health patterns and clinical decision-making in care of the child bearing, child rearing family.

239. Practicum with Childbearing Families
   Both semesters. Three credits. Prerequisites: NURS 212, 218, and 219; NURS 232 concurrent. Open to Nursing majors only.
   This course provides experience in the application of principles of nursing used in the care of childbearing families. Clinical placements will be settings such as day care centers, childbirth education classes, schools, clinics, group homes, women’s health centers and agencies providing acute and chronic care.

240. Epidemiology in Nursing Practice: Clinical Science V-A
   Either semester. One credits. Prerequisites: NURS 227 or RN license.
   An introduction to the principles of epidemiology used in nursing practice.

241. Community Health Nursing
   Analysis of theories from nursing and related disciplines for application to community health nursing. Provide the basis for clinical decision-making for individuals, families, and groups.

242. Clinical Science in Psychiatric-Mental Health Nursing Practice: Clinical Science V-B
   Either semester. One credit. Prerequisite: NURS 227 or RN license.
   Concepts from microbiology, pharmacology, nutrition and pathophysiology as they relate to psychiatric-mental health nursing.

243. Psychiatric-Mental Health Nursing
   Analysis of theories from nursing and related disciplines for application to psychiatric-mental health nursing. Focus is on nursing processes for clinical decision-making for individuals, families, and groups.

248. Community Health Nursing Practice
   Either semester. Three credits. Prerequisites: NURS 213 or 213W, 220 or 220W, 226 and 227.
   Clinical application of theory from nursing and related disciplines to individuals, families and community groups in a variety of community health settings. Focus is on nursing care applied throughout the wellness illness continuum in collaboration with other members of the health care team.

249. Psychiatric-Mental Health Nursing Practice
   Focus is on the application of nursing theory, the Caring-Praxis Model and therapeutic communication to psychiatric-mental health nursing. Emphasis on a) application of the lived experience persons with mental illness; b) self-reflective abilities and their significance to affecting the nurse patient encounter; c) therapeutic use of self, and d) analyzing intuitive and rational ways of knowing in responding to the mental health and/or psychiatric illness experience.

250. Nursing Leadership in the 21st Century
   Second semester. Three credits. Prerequisites: NURS 219; 239, 259, 269, and 279; NURS 289 concurrent. Open to Nursing majors only.
   An in-depth examination of the components that facilitate new nursing graduates to become leaders in the profession of nursing.

252. Clinical and Nursing Science for Nursing Care of Childbearing Families
   Both semesters. Four credits. Prerequisites: NURS 212, 218, 219; NURS 232 concurrent. Open to Nursing majors only.
   This course builds on students’ understanding of microbiology, pharmacology, nutrition and pathophysiology as these sciences relate to childbearing families. Emphasis is on development of clinical decision making skills related to nursing care of childbirthing families with a particular focus on anticipatory guidance, prevention, intervention and health restoration.

253. Professional Nursing Practice: Leadership, Management and Financial Issues
   Second semester. Two credits.
   Designed to examine and prepare individuals for the lived experience of nursing as a business. The course addresses management, leadership and fiscal skills as they relate to health care delivery and the profession of nursing.

259. Practicum with Childrearing Families
   Both semesters. Three credits. Prerequisites: NURS 212, 218, 219; NURS 252 concurrent. Open to Nursing majors only.
   This course provides experience in the application of principles of nursing used in the care of infants, children, adolescents and their families. Clinical placements will be settings such as day care centers, childbirth education classes, schools, clinics, group homes, women’s health centers and agencies providing acute and chronic care.

262. Clinical Science for Psychiatric and Mental Health Nursing
   Both semesters. Two credits. Prerequisites: NURS 212, 218 and 219; NURS 263 concurrent. Open to Nursing majors only.
   Biochemical, neural activity, functional and structural aspects of the brain, cognition, mental health and illness (behavioral health) are overviewed. The psychopharmacology and nutrition of behavioral health is addressed. Psychopharmacological issues will consist of how to offer a safe and effective biochemical environment for a person (group or family) with mental health (behavioral health) issues. Psychological, sociological, and physiological integrity will be addressed for behavioral health.

263. Nursing Science for Psychiatric and Mental Health Nursing
   Both semesters. Two credits. Prerequisites: NURS 212, 218, 219; NURS 262 concurrent. Open to Nursing majors only.
   The role of nursing, in regard to psychiatric and social parameters of any person, family or group with a medical or psychiatric illness is examined. Major elements include the use of therapeutic communication, critical thinking, and the nursing process to examine multiple therapeutic interventions. This course stresses assessment of health and mental illness in populations that will be the focus of interventions in a professional nurse’s career. Students will be exposed to knowledge that explicates how to provide a safe and effective environment in diverse milieus; how to promote health and support growth and development issues through the lifespan; how to assist persons in coping and adaptation and how to reduce risks in population of interest.

269. Practicum for Psychiatric and Mental Health Nursing
   Both semesters. Three credits. Prerequisites: NURS 212, 218, 219; NURS 262 and 263 concurrent. Open to Nursing majors only.
   This course entails the clinical application of theory from nursing and related disciplines to mental health and illness (behavioral health). The focus is on psychiatric illness, critical thinking, communication skills, the nursing process in persons with a primary or secondary/adjunctive illness. The target of nursing care is the individual, family, group or community.
In the text provided, the course descriptions are structured in a clear format with titles and brief descriptions. Here is a structured and coherent representation of the text in plain text:

**270. Public Health Nursing**
Both semesters. Three credits. Open to Nursing majors only.

Theories from nursing and public health are examined within the context of aggregate/population based care. Primary, secondary and tertiary approaches are used to promote the health of selected population/community.

**272. Clinical Science for Adults with Acute Illness**
Both semesters. Two credits. Prerequisites: NURS 212, 218 and 219; NURS 273 concurrent. Open to Nursing majors only.

Critical examination of pharmacology, microbiology, nutrition and pathophysiology as they relate to nursing care of adults experiencing acute, life-threatening problems.

**273. Nursing Science for Acutely Ill Adults**
Both semesters. Two credits. Prerequisites: NURS 212, 218 and 219; NURS 272 and 279 concurrent. Open to Nursing majors only.

Critical examination of theory, research and expert clinical practice supportive of nursing with adults experiencing acute life-threatening health problems.

**279. Practicum with Acutely Ill Adults**
Both semesters. Three credits. Prerequisites: NURS 212, 218, 219; NURS 272 and 273 concurrent. Open to Nursing majors only.

Nursing and interdisciplinary care of acutely ill persons and their families.

**289. Capstone Practicum**
Second semester. Six credits. Prerequisites: NURS 219, 239, 259, 269 and 279; NURS 250 concurrent. Open to Nursing majors only.

This course is the capstone clinical practicum and seminar taken in the final semester of the baccalaureate program. The course is designed to provide the student with opportunities to apply knowledge and skills from all required courses to special clinical situations. The student works with a clinical preceptor in the development, implementation and evaluation of objectives specific to clinical emphasis area.

**292. Health Perspectives on Alcohol and Other Drug Abuse**
Either semester. Three credits. Open to non-nursing majors.

An interdisciplinary examination of the health consequences of alcohol and other drug abuse across the lifespan with emphasis on: epidemiology; pharmacology: theoretical models; strategies for prevention and treatment; needs of special populations; and, ethical, political and legal ramifications.

**292W. Health Perspectives on Alcohol and Other Drug Abuse**

**298. Special Topics in Nursing**
Either semester. Credits and hours by arrangement. Open only with consent of instructor. With a change in content, this course may be repeated for credit.

**299. Independent Study**
Either semester. Credits and hours by arrangement. Open only with consent of instructor.

Primarily for qualified students who wish to extend their knowledge by investigating special problems in nursing. With a change in content, this course may be repeated for credit.

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**Nutritional Sciences (NUSC)**

**Head of Department:** Professor Carol J. Lammi-Keefe
**Department Office:** Room 214, Roy E. Jones Building
For major requirements, see the College of Agriculture and Natural Resources section of this Catalog.

**160. The Science of Food**
(Also offered as ANSC 160.) Second semester. Three credits. Faustman, Zhao

An introductory level course for students interested in the application of science to food. Nutritional and functional attributes of various food constituents are discussed. Issues concerning food processing and food safety are covered.

**165. Fundamentals of Nutrition**
Either semester. Three credits.

An introduction to the principles and concepts of nutrition with emphasis on the nature and function of carbohydrates, fats, proteins, minerals and vitamins, and their application to the human organism.

**166. Food, Culture and Society**
Second semester. Three credits. Furr

Social, cultural and economic factors affecting food intake and nutritional status. Includes contemporary topics such as world food problems, hunger in the United States, dieting and eating disorders, health foods and vegetarianism.

**167. Honors Colloquium in Nutrition**
First semester. One credit. One class period and one 2-hour discussion/laboratory every other week. Concurrent enrollment in NUSC 165 required. Clark

Lectures, discussions, and laboratory exercises to complement topics from NUSC 165. Primarily for, but not restricted to, honors students.

**200. Nutrition and Human Development**
First semester. Three credits. Recommended preparation: NUSC 165. Open to sophomores. Ferris

Nutritional needs and consequences of nutritional deficiencies throughout the life cycle: periconception, pregnancy, lactation, childhood, adolescence and aging. Maternal and child public health issues in the developed and developing world.

**212. Principles of Food Science**
Second semester. Three credits. Recommended preparation: MCB 203 or 204. Zhao

Chemical, physical, microbiological, and legal aspects of food production, preservation and processing. Safety, aesthetics and nutrition topics included.

**213. Principles of Food Science Laboratory**
Second semester. Two credits. One class period and one 2-hour laboratory period. Consent of instructor required. Recommended preparation: NUSC 212.

Flavor, color, texture, viscosity and consistency, enzyme reactions, and processing. Field trips.

**233. Food Composition and Preparation**
First semester. Three credits. Prerequisite: NUSC 165. Recommended preparation: CHEM 141 or 243. Fernandez

Study of the composition of food and the physical and chemical changes that occur during preparation and/or processing that affect taste, palatability, shelf-life, and nutrient content.

**235. Food Composition and Preparation Laboratory**
First semester. One credit. One 3-hour laboratory period. Prerequisite: NUSC 165 and concurrent registration in NUSC 233. Recommended preparation: CHEM 141 or 243. Enrollment restricted to Nutritional Sciences and Allied Health Dietetic majors. Open to others by consent if space is available. Fernandez

Laboratory techniques related to composition of foods, and the physical and chemical changes that occur during preparation.

**236. Principles of Nutrition**
Second semester. Three credits. Prerequisite: NUSC 165. Recommended preparation: PNB 250 or 265, MCB 203 or 204. Clark

Function and metabolism of carbohydrates, proteins, fats, minerals, and vitamins.

**241. Nutritional Assessment**
Second semester. One credit. One class period and one 2-hour laboratory, every other week. Prerequisite: NUSC 200. Recommended preparation: MCB 203 or 204, PNB 250 or 265. Enrollment restricted to Nutritional Sciences and Kinesiology majors. Clark

Anthropometric, clinical, and biochemical techniques for assessment of human nutritional status.

**250. Nutrition for Exercise and Sport**
Second semester. Three credits. Prerequisite: NUSC 165 and Biology: PNB 250 or 265. Rodriguez

Basic nutrition principles. Physical activity, exercise, sport performance and consequences of nutritional ergogenic aids.

**260. Readings in Human Nutrition**
First semester. Two credits. Two class periods. Prerequisite: NUSC 200.

Readings dealing with utilization and metabolism of nutrients in the human body, with particular emphasis on understanding research methodology.

**265. Medical Nutrition Therapy**
First semester. Three credits. Prerequisite: NUSC 241. Recommended preparation: Biology: MCB 203 or 204. Rodriguez


**266. Medical Nutrition Therapy Recitation**
First semester. One credit. Prerequisite: NUSC 241. NUSC 265 must be taken concurrently. Rodriguez

Case studies and presentations. Medical terminology. Practical aspects of medical nutrition therapy administration.

**267. Principles of Community Nutrition**
First semester. Three credits. Prerequisite: NUSC 200 which may be taken concurrently. Perez-Escamilla

Role of community structures, agencies, services and the professional nutritionist in community health.

**270W. Food Services Systems Management I**
Second semester. Three credits. Two class periods and one 2-hour laboratory/discussion period. Recommended preparation: AH 244 or MGMT 201, NUSC 233, 235, Shanley

Quantity food procurement, preparation and distribution; recipe standardization; sanitation and safety; portion and quality control; food cost control; computer applications; and personnel management.

**272C. Food Service Systems Management II**
First semester. Three credits. Two class periods and one 2-hour laboratory/discussion period. Prerequisite: NUSC 270W. Shanley

Institutional menu development; cost and budgeting; recipe analysis and adaption; equipment layout and design; personnel management; communications skills; computer applications; marketing and merchandising; food delivery systems.
275. Experience in Food Service Systems Management
Either semester. One to six credits. Prerequisite: NUSC 270W. Consent of instructor required. May be repeated for credit. No more than six credits of experience or independent study may apply toward the major. Stanley Application of principles of food service management. Supervised placement.

281. Experience in Community Nutrition
Either semester. One to six credits. Prerequisite: NUSC 165. Recommended preparation: NUSC 267. Consent of instructor required. May be repeated for credit. No more than six credits of experience or independent study may apply toward the major. Ferris, Perez-Escamilla Supervised field work with community nutrition education or problem-solving. Readings and reports.

285. Seminar
Second semester. One credit. One class period. Prerequisite: NUSC 200. May be taken twice. Review, evaluation, and oral and written presentation of contemporary nutrition issues.

286W. Senior Thesis in Nutrition
Either semester. Three credits. Hours by arrangement. Enrollment limited to Nutritional Sciences honors students. Consent of honors advisor and department head required.

288. Special Topics
Either semester. Credits and hours by arrangement. May be repeated for credit with a change of topic. Consent of instructor required. Topics and credits to be published prior to the registration period preceding the semester offerings.

299. Independent Study
Either semester. One to three credits. Consent of instructor and department head required. No more than six credits of experience or independent study may apply toward the major. Individual study and research with faculty. Written report.

Operations and Information Management (OPIM)

Head of Department: Professor James R. Marsden

Department Office: Room 302, School of Business Administration

For major requirements, see the School of Business Administration section of this Catalog.

Courses in this department are open to juniors and seniors only.

203C. Business Information Systems
Either semester. Three credits. Prerequisite: ACCT 131. Open only to School of Business Administration students; others with the consent of the Operations and Information Management Department Head.

Information needs of managers, the structure of the information systems required to fill these needs, systems development, business computing technology, and management applications within major business functional subsystems.

204. Operations Management
Either semester. Three credits. Prerequisite: OPIM 203. Introduction to concepts, models, and information systems applicable to the planning, design, operation and control of systems which produce goods and services. Topics include process design, facility locations, aggregate planning, inventory control, and scheduling.

#205. Introduction to Database Management
Either semester. Three credits. Prerequisite: OPIM 203C or equivalent. Consent of Department Head and BGS Mentor is required. Cannot be used toward fulfilling MIS major requirements.

Introduction to the development and implementation of database applications. Topics covered include costs and benefits of database approach, database design lifecycle, conceptual database design, the relational data model, data administration, database security, database backup and recovery, and database management system selection and implementation. Students participate in the hands-on design and implementation of a small database using the relational architecture.

#206. Business Application Programming
Either semester. Three credits. Prerequisite: OPIM 203C or equivalent. Consent of Department Head and BGS Mentor is required. Cannot be used toward fulfilling MIS major requirements.

Development of business application software using structured and object oriented programming techniques. The emphasis is on programming logic, rapid application development techniques and personal productivity tools. Topics include program design, techniques, programming constructs, interface development techniques, event driven programming, file and database processing, and object linking and embedding.

#207. Internet Technologies and Electronic Commerce
Either semester. Three credits. Prerequisite: OPIM 205, OPIM 206. Consent of Department Head and BGS Mentor is required. Cannot be used toward fulfilling MIS major requirements.

This course introduces Internet technology and tools from the perspective of business users. The focus is on providing knowledge base and functional tools for students as workers in the 21st Century. The specific technologies covered in the class will depend upon state-of-the-art at the time of class offering. However, some of the general concepts include: HTML, client-side programming such as Javascript or VBScript, dynamic content creation and management, electronic business process management, security concerns and solutions, and regulatory/public policy issues. A significant part of the course will involve hands-on training.

#208. System Development and Process Management
Either semester. Three credits. Prerequisite: OPIM 205, OPIM 206. Consent of Department Head and BGS Mentor is required. Cannot be used toward fulfilling MIS major requirements.

The course covers the system development life cycle of business information systems. Topics include business process reengineering, detailed process modeling and data modeling techniques, project management concepts, system architecture, testing and implementation considerations. The potential system issues and relevant up-to-date technologies are also explored in the class. Students participate in a project using supportive software tools.

210. Operations Research for Information Systems Analysis
Either semester. Three credits. Prerequisite: OPIM 203C (may be taken concurrently.)

The philosophy and techniques of Operations Research, including problem definition, modeling, and solution in the context of analysis, design, and implementation of computer-based information systems.

211. Systems Analysis and Design
Either semester. Three credits. Prerequisite: OPIM 203C, 220, 221, 222. Open to MIS majors only.

System development methodologies for business information systems. Project management concepts, hardware and software technology, and organizational considerations are explored. Students participate in a system development project.

212. Advanced Information Technologies
Either semester. Three credits. Prerequisite: OPIM 203C, 220, 221, 222. Open to MIS majors only.

Depends knowledge of application development tools for the design of decision oriented information systems. Emphasis will be placed on emerging tools and techniques relevant for modern organizational information needs.

220. Business Software Development
Either semester. Three credits. Prerequisite: OPIM 203C (may be taken concurrently). Open to MIS majors only.

The development of computer software for business information processing. Topics include flowcharting, pseudocode, programming with a business oriented computer language, file processing concepts, and on-line and batch processing.

221. Business Data Base Systems
Either semester. Three credits. Prerequisite: OPIM 203C (may be taken concurrently). Open to MIS majors only.

Development and implementation of database applications for business. Topics include: data modeling, relational database concepts, query languages, hands-on design and implementation of a relational database system, database administration, non-relational database models, distributed architectures, and advanced object bases.

222. Network Design and Applications
Either semester. Three credits. Prerequisite: OPIM 203C (may be taken concurrently.) Open to MIS majors only. Open only to juniors and seniors.

Principles and applications of business telecommunications emphasized. Course covers important network systems as well as crucial techniques in building these systems. Students participate in network design and implementation project.

223. Advanced Business Application Development
Either semester. Three credits. Prerequisite: OPIM 203C, 220, 221, and OPIM 222. Open to MIS majors only. Open only to juniors and seniors.

Course designed to cover structured and object-oriented programming methodologies for developing business applications. Program design techniques and logic emphasized. Students participate in a business application design and implementation project.

230. Management of Production/Operations Systems
Second semester. Three credits. Prerequisite: OPIM 204.

In-depth study of the problems and models applicable to the design, operation and control of systems which produce goods and services. Students will learn to define, relate to, and solve production and operations problems using such media and methods as cases, projects, simulations, behavioral and quantitative models.
Students taking this course will be assigned a final grade of S (satisfactory) or U (unsatisfactory).
Pharmacy (PHAR)

For major requirements, see the School of Pharmacy section of this Catalog.

The following courses are open only to students enrolled in the professional program (four years) of the School of Pharmacy.

Drugs and the Diseased State

**Director:** Professor Ronald O. Langner
**Office:** Room R-301, Pharmacy Building

200. Drugs and the Diseased State I
First semester. Three credits. Prerequisite: PHAR 212 and 229. Biology: MCB 203 and 229. *Nieforth*
Basic principles of physiology and pharmacology, basic organ system anatomy and physiology, receptor theory.

214. Drugs and the Diseased State II
First semester. Five credits. Five class periods. Prerequisite: PHAR 200, which may be taken concurrently. *Henkel*
Nervous system physiology, pharmacology and SAR, hemotological pharmacology and SAR.

225. Human Physiology I
First semester. Four credits. Hours by arrangement. Open only with consent of instructor. Not open to pharmacy students. *Fournier*
Basic principles of physiology, basic organ system anatomy and physiology, respiratory and nervous system physiology.

226. Human Physiology II
Second semester. Three credits. Hours by arrangement. Open only with consent of instructor. Not open to pharmacy students. *Fournier*
Cardiovascular, renal, endocrine and GI physiology.

242. Drugs and the Diseased State III
Second semester. Four credits. Four class periods. Prerequisite: PHAR 200 and 214. *Langner*
Cardiovascular, renal and steroid endocrine physiology, pharmacology and SAR.

243. Drugs and the Diseased State IV
Second semester. Four credits. Four class periods. Prerequisite: PHAR 242, which may be taken concurrently. *Manautou*
GI and non-steroidal endocrine physiology, pharmacology and SAR, anti-microbial, anti-viral, antineoplastics, anti-allergic agents and SAR.

243W. Drugs and the Diseased State IV
Open only with consent of the course director. D. *Manautou*

245. Drugs and the Diseased State Laboratory
Second semester. One credit. One 3-hour laboratory period. Taken concurrently with PHAR 242 and 243. *Rosenberg*

254. Mechanisms of Drug Action I
First semester. Three credits. Prerequisite: Biology: PNB 264, 265. Biology: MCB 203, or their equivalents. Open only with consent of instructor. Not open for credit to undergraduate pharmacy students. Not open to sophomores. *Rosenberg*
Basic principles pharmacology, receptor theory, nervous system and respiratory system pharmacology.

255. Mechanisms of Drug Action II
Second semester. Three credits. Prerequisite: PHAR 254. Open only with consent of instructor. Not open for credit to undergraduate pharmacy students. *Langner*
Endocrine, cardiovascular and renal, GI pharmacology, anti-microbial, anti-viral, antineoplastics, anti-allergic agents.

**Drugs and Dosage Forms**

**Director:** Associate Professor Kevin R. Sweeney
**Office:** Room C2019, Health Center (Farmington)

229. Drugs and Dosage Forms I
Second semester. Five credits. Five class periods per week. Prerequisite: PHAR 207, 208, 209 and MATH 110. *Burgess*

230C. Drugs and Dosage Forms II
Second semester. Three credits. One 4-hour laboratory and two 1-hour lectures per week. Prerequisite: PHAR 207, 208, 209 and MATH 110. *Palmer*
Preparation and dispensing of dosage forms. Pharmacy-practice computer systems are utilized for selected clinical and administrative functions.

233. Drugs and Dosage Forms III
First semester. Four credits. Two 2-hour class periods. Prerequisite: PHAR 229, 230C. *Kramer*
Basic principles of pharmacokinetics; compartmental analysis; drug absorption, distribution, and excretion; optimization of both single and multiple dose regimens.

233W. Drugs and Dosage Forms III

**Physico-Chemical Principles of Drug Systems**

**Director:** Professor J. Michael Edwards
**Office:** Room 254, Pharmacy Building

207. Physico-Chemical Principles of Drug Systems I
First semester. Four credits. Five class periods. Prerequisite: PHYS 122 and CHEM 244. Open only to Pharmacy students enrolled in the Professional Program. *Bogner*
Basic physical and chemical phenomena applied to drug systems. Thermodynamics, solution theory, ionic equilibrium, non-covalent interactions, interfacial phenomena.

208. Physico-Chemical Principles of Drug Systems II
First semester. Four credits. Prerequisite: PHYS 122 and CHEM 244. Open only to Pharmacy students enrolled in the Professional Program. *Rhodes*

209. Physico-Chemical Principles of Drug Systems III
Second semester. Two credits. One 3-hour laboratory and one 1-hour lecture per week. Prerequisite: PHYS 122 and CHEM 244. Open only to Pharmacy students enrolled in the Professional Program. *Moring*
Pharmaceutical analysis.

212. Physico-Chemical Principles of Drug Systems IV
Second semester. Five credits. Five class periods. Prerequisite: Biology: MCB 203 and 229, PHAR 207, 208, 209 and CHEM 245. *Nieforth*
Physical and chemical properties of drug molecules.

212W. Physico-Chemical Principles of Drug Systems IV

213. Physico-Chemical Principles of Drug Systems V
Second semester. Two credits. One 3-hour laboratory and one 1-hour lecture per week. Prerequisite: PHAR 207, 208, 209 and CHEM 245. *Witczak*
A laboratory for Pharmacy 212.

**Drugs and Society**

**Director:** Associate Professor Kenneth A. Speranza
**Office:** Room 136, Pharmacy Building

240. Drugs and Society I: Social and Legal Aspects of Pharmacy Practice
First semester. Three credits. Prerequisite: PHAR 240. *Speranza*
Economic and societal constraints on the delivery of health and pharmaceutical care. Pharmacoeconomics, professional ethics, U.S. health care system, managed care and third party financing.

246. Drugs and Society II: Management of Pharmacy Systems
Second semester. Three credits. Prerequisite: PHAR 246. Open only to students who have passed all the courses of the first professional year. *Kelly*
Organizational theory and the delivery of health and pharmaceutical care. Finance and personnel management in pharmaceutical care systems.

266W. Drugs and Society III: Management of Pharmacy Systems

**Other Required Courses**

241. Immunology
Second semester. Three credits. Prerequisite: Biology: MCB 229. *Hubbard*

280. Therapeutics
First semester. Five credits. Four class periods. Prerequisite: PHAR 214, 242, 243, and PATH 297. *Cardoni*
Basic pathophysiology, diagnosis, and pharmacotherapy of human disease.

280W. Therapeutics

281. Principles of Toxicology
First semester. Three credits. Prerequisite: PHAR 200 and Biology: MCB 203. *Cohen*
Target organs, environmental chemicals and biochemical mechanisms.

291. Institutional Clerkship
Either semester. Five credits. Prerequisite: PHAR 233, 280, and 281. Open only with consent of instructor. *Chapron*
Introduction to the practice of pharmacy in an institutional setting.
292. Community Pharmacy Externship
Either semester. Five credits. Hours and sequencing by arrangement. Prerequisite: Completion of the third and fourth year of the Pharmacy curriculum and attendance at an orientation meeting. Open only with consent of instructor. Site assignments and sequencing arrangements will be made by instructor. Students register for each of the two sections. Kelly

293. Hospital Pharmacy Externship
Both semesters and summers. Five credits. Hours by arrangement. Prerequisite: Completion of the third and fourth year of the Pharmacy curriculum. Open only with consent of instructor. Palmer

An experience program conducted at participating hospitals. Duties of a hospital pharmacist pertaining primarily to the drug distribution and administrative roles.

Elective Courses Pharmacy (PHAR)

150. Toxic Chemicals and Health
Second semester. Three credits. Not open to pharmacy students in the Professional Program. Morris

An elementary service course which will provide an understanding of the issues and problems associated with evaluating human health risks from voluntary and involuntary exposure to toxic chemicals. An appreciation of toxic chemical risks as compared to other societal health risks, the processes of scientific risk assessment, and social management of toxic chemical risks will be gained.

201. Pharmacy Research Seminar
First semester. One credit. One class period. A divisional grade point of 2.3 or above is normally required for enrollment. May be repeated up to two times for credit. Bogner

A seminar series providing an overview of current research areas and contemporary issues in pharmacy practice and the pharmaceutical sciences.

247-248. Pharmacology
Both semesters. Three credits each semester. Prerequisite: Biology: PNB 264, 265; Biology: MCB 203 and CHEM 141, or 243, 244. Not open for credit to pharmacy students. Gianutsos

A study of the effect produced by drugs and the mechanisms whereby these effects are produced.

262. Geriatric Pharmacy Practice
Second semester. Three credits. Prerequisite: PHAR 200, 214, and 233. Kelly

The course is designed to present basic concepts in aging and their concomitant effects on the drug use process to students of pharmacy. The course deals with physical, social and economic aspects of the aging individual. The population focus is the ambulatory elderly. Basic concepts and applications will be presented to expose the student to potential problem-solving activities in pharmacy practice.

263. Industrial Pharmacy
Either semester. Three credits. Two class periods and one 3-hour laboratory period. Prerequisite: PHAR 207 and 229. Kalonia

A study in the formulation and preparation of pharmaceutical dosage forms using modern manufacturing techniques.

269. Non-Prescription Medication
First semester. Three credits. Prerequisite: PHAR 243. Open only with consent of instructor. Palmer

Drug products designed for self-medication (non-prescription or over-the-counter drugs). Drugs are discussed and evaluated from a pharmaceutical and pharmacological standpoint.

277. Hospital Pharmacy Administration
Second semester. Three credits. Open to Professional Program Pharmacy students. Rubino

A detailed overview of the administration, functions, and organization of contemporary hospital pharmacy services.

294. Advanced Clinical Experience
Second semester. Five credits. Prerequisite: PHAR 291. Open only with consent of instructor. Kelly

An advanced level clinical pharmacy practicum in one of a variety of specialized rotations.

295. Introduction to Clinical Pharmacy
Second semester. One credit. Prerequisite: PHAR 214. Open only with consent of instructor. Cereto

A course intended for those students wishing to obtain some exposure to the operations and activities that take place in the clinical environment before enrolling in Pharmacy 291. Physical assessment practices, organization of problem-oriented medical records, patient-practitioner communication skills, and clinical interactions in several therapeutic areas, including the cardiovascular and central nervous systems.

296. Home Health Care
First semester. Two credits. Two class periods. Tocci

An introduction to the area of home health care with special emphasis on those topics which impact upon pharmacy practice. Emphasis is placed on the devices, aids, and products used in home health care.

297W. Honors Thesis in Pharmacy
Either semester. Three credits. Hours by arrangement. Open only to honors students within the School of Pharmacy with consent of the instructor and Associate Dean. Bogner

298. Special Topics
Either semester. Credits by arrangement. Open only with consent of instructor. This course may be repeated for credit. Fournier

299. Undergraduate Research
Either semester. Credits by arrangement. Open only with consent of instructor and Associate Dean. This course may be repeated for credit.

This course is designed primarily for qualified students who wish to extend their knowledge in the various fields represented in the School of Pharmacy. A divisional and pharmacy cumulative grade point average of 2.8 or above is normally required for enrollment. A written summary of work performed is required at the end of each semester.

277. Hospital Pharmacy Administration
Second semester. Three credits. Open to Professional Program Pharmacy students. Rubino

A detailed overview of the administration, functions, and organization of contemporary hospital pharmacy services.

294. Advanced Clinical Experience
Second semester. Five credits. Prerequisite: PHAR 291. Open only with consent of instructor. Kelly

An advanced level clinical pharmacy practicum in one of a variety of specialized rotations.

295. Introduction to Clinical Pharmacy
Second semester. One credit. Prerequisite: PHAR 214. Open only with consent of instructor. Cereto

A course intended for those students wishing to obtain some exposure to the operations and activities that take place in the clinical environment before enrolling in Pharmacy 291. Physical assessment practices, organization of problem-oriented medical records, patient-practitioner communication skills, and clinical interactions in several therapeutic areas, including the cardiovascular and central nervous systems.

296. Home Health Care
First semester. Two credits. Two class periods. Tocci

An introduction to the area of home health care with special emphasis on those topics which impact upon pharmacy practice. Emphasis is placed on the devices, aids, and products used in home health care.

297W. Honors Thesis in Pharmacy
Either semester. Three credits. Hours by arrangement. Open only to honors students within the School of Pharmacy with consent of the instructor and Associate Dean. Bogner

298. Special Topics
Either semester. Credits by arrangement. Open only with consent of instructor. This course may be repeated for credit. Fournier

299. Undergraduate Research
Either semester. Credits by arrangement. Open only with consent of instructor and Associate Dean. This course may be repeated for credit.

This course is designed primarily for qualified students who wish to extend their knowledge in the various fields represented in the School of Pharmacy. A divisional and pharmacy cumulative grade point average of 2.8 or above is normally required for enrollment. A written summary of work performed is required at the end of each semester.

Pharmacy (PHRM)

Courses for the Doctor of Pharmacy (Pharm.D.)

Associate Dean for Academic Affairs: Associate Professor Donna J. Fournier
Office: Room 152, School of Pharmacy, Hewitt Building

For major requirements, see the School of Pharmacy section of this Catalog.

The following courses are open only to students enrolled in the professional program of the School of Pharmacy.

200. Evaluation Skills
First semester. Three credits. Three class periods.

201. Pharmaceutical Care I
First and second semester. One credit total. Hours by arrangement. Rafferty

202. Health Care Organization
First semester. One credit. Prerequisite: ECON 111. Speranza

A study of the United States health care system, with emphasis given to its historical development, its activities, and the major organizational forms and financing mechanisms supporting it and consideration of pharmacy’s role within the current and future United States health care system.

203. Social And Behavioral Aspects Of Pharmacy
First semester. Two credits. Two class periods. Fournier

204. Administrative Aspects Of Pharmacy
First semester. Four credits. Four class periods. Prerequisite: ECON 111. Kelly

205. Principles Of Interpersonal Communication
First semester. Three credits. Three class periods. Prerequisite: ECON 111. Kelly

206. Interpersonal Skills Development in Pharmacy Practice
Second semester. Two credits. One class period and one two-hour laboratory. Prerequisite: COMS 105; PHRM 202, 203, 204, 205. Fucinetti

Principles of interpersonal communications: effective questioning, empathic listening, reflective responding, assertiveness, and other socio-behavioral aspects of patient care. Skill development in patient counseling and interprofessional communications.

207. Pharmaceutical Care II
First and second semester. One credit total. Hours by arrangement. Silk

208. Pharmacy Law And Ethics
Second semester. Three credits. Three class periods. Prerequisite: PHRM 206. Speranza

208W. Pharmacy Law And Ethics
Second semester. Three credits. One class period. Prerequisite: PHRM 206. Jeffery

Continuation of historical perspective of pharmacy practice, development of a theoretical foundation for
the practice of pharmaceutical care and experiential opportunities for the student to begin to develop skills in providing pharmaceutical care.

210. Non-Prescription Medication
Second semester. Three credits. Three class periods.
Rettman
Self-medication based on a foundation of pharmaceutical technology, pharmacology and therapeutics. Emphasis will be placed on the role of the pharmacist in enhancing the rational selection and use of non-prescription (OTC) medications by consumers.

211. Introduction to Clinical Practice
Second semester. Two credits. Hours by arrangement. Prerequisite: PHRM 255, concurrent with PHRM 256
Cambridge
Development of skills necessary in professional practice of pharmacy. Emphasis on patient assessment skills necessary for providing pharmaceutical care and approaches in conducting medication regimen review and pharmaceutical consultation.

212. Prescription Processing (lab)
Second semester. Three credits. One two-hour lecture and three-hour laboratory period. Prerequisite: PHRM 255; concurrent with PHRM 256.
James
Practice oriented course focused on prescription processing, home diagnostic and monitoring devices, compliance enhancement programs, computer usage and relevant contemporary issues in pharmacy.

219. General Principles & Organ System Overview
First semester. Three credits. Three class periods. Prerequisite: Must have satisfied all science and math requirements of the first two years.
Arenskevich
Basic principles of physiology, pharmacology and receptor site theory and overview of cell biology and all the organ systems.

220. Nervous System
Second semester. Five credits. Five class periods.
Prerequisite: PHRM 219. Gianutsos
Functions of the autonomic, somatic and central nervous systems; pharmaco- logical effects and mechanism of action of drugs and biotechnology derived products used to treat diseases of the autonomic nervous system, sensory system disorders and neurological and psychiatric diseases, and structural features imparting biological activity and the design of drugs used to treat diseases of the autonomic nervous system, sensory system disorders, and neurological psychiatric diseases.

221. Cardiovascular/Renal/Respiratory Systems
First semester. Four credits. Four class periods. Prerequisite: PHRM 220. Langner
A study of the physiology, pharmacology, and structure-activity relationships of drugs affecting the cardiovascular, renal, and respiratory systems.

221W. Cardiovascular/Renal/Respiratory Systems
Second semester. Three credits. Three class periods.
Prerequisite: PHRM 221. Manautou
A study of the physiology, pharmacology, and structure-activity relationships of drugs affecting the gastrointestinal and endocrine systems.

223. Pharmacology Discussion / Lab
First semester. One credit. Three hours of laboratory/conference. Prerequisite: PHRM 222. Arenskievich
Continuing development of problem solving based skills. Topics and issues will be related to pharmacology didactic concepts and theory acquired through the first two professional years.

224. Chemotherapy
First semester. Two credits. Two class periods. Prerequisite: PHRM 222, 234, 254; PVS 297. D. Hubbard
Development of an understanding of the clinical indications, pharmacology, adverse drug events and structure activity relationships of drugs used in the treatment of infectious diseases.

225. Toxicology
First semester. Two credits. Two class periods. Prerequisite: PHRM 222, 234, 254; PVS 297. Manautou
Development of an understanding of basic principles of toxicology which determine effects of therapeutic, occupational, or environmental chemicals on human health. Rationale for and nature of procedures required during preclinical safety assessment of therapeutic agents will be discussed.

226. Immunology
Second semester. Three credits. Three class periods. Prerequisite: PHRM 222, 234, 254; PVS 297. Hubbard
Development of an understanding of principles of immunology focusing on mechanisms underlying disease processes and the role of immunotherapeutics and biopharmaceuticals in altering outcome of immunologic disease.

First semester. Three credits. Three class periods. Prerequisite: Must have satisfied all science and math requirements of the first two years.
Rhodes
Development of the fundamental medicinal and natural products chemistry knowledge, as well as the critical thinking and problem solving skills to apply this knowledge which will be required in the provision of pharmaceutical care and will serve as the foundation for the Pharmacy graduate’s continuing professional maturation, education and development.

234. Pharmaceutical Bio-Organic Chemistry II
First semester. Three credits. Three class periods. Prerequisite: PHRM 233. Bouvier
A continuation of PHRM 233.

234W. Pharmaceutical Bio-Organic Chemistry II
Second semester. One credit. One laboratory session and one pre-laboratory session. Must be taken concurrently with PHRM 234.
Vigil-Cruz
A study of organic compounds, having pharmaceutical significance with ten laboratory exercises which include physical properties and chemical reactivities of drug molecules, their chromatographic analysis, the study of enzymes, and biotechnological techniques and their isolation from natural products.

242. Solution & Solid Dosage Forms
First semester. Four credits. Four class periods. Prerequisite: Must have satisfied all science requirements of first two years. Kalonia
An investigation of the principles underlying the formulation, dissolution, stability, and release of drug products for optimum delivery. Solution dosage forms, parenteral formulations, tablets and capsules are considered in detail.

242W. Solution & Solid Dosage Forms
First semester. One credit. One discussion period and one three-hour laboratory. Prerequisite: Must have satisfied all science requirements of first two years. To be taken concurrently with PHRM 242. Pikal
Extemporaneous preparation of sterile and non-sterile dosage forms, with particular attention to solutions, solids and dispersed systems.

245C. Pharmacokinetics
First semester. Three credits. Three class periods. Prerequisite: Must have satisfied all science requirements of first two years. PHRM 220, 234. Kramer
A study of the basic principles of Pharmacokinetics and their application to the rational design of both dosage forms and dosing regimens, optimizing the latter to further the likelihood of safe effective drug therapy in a variety of clinical situations.

246. Dispersed Systems
Second semester. Three credits. Three class periods.
Prerequisite: PHRM 242. Burgess
Investigation of the principles and factors affecting the performance of dosage forms classified as dispersed systems: suspensions, aerosols, emulsions, suspensions, transdermals, and ointments.

247. Dosage Forms Preparation Laboratory II
Second semester. One credit. One class period and one three-hour laboratory. Prerequisite: Must be taken concurrently with PHRM 246. Bogner
Extemporaneous preparation of sterile and non-sterile dosage forms, with particular attention to solutions, solids and dispersed systems.

253. Therapeutics I
First semester. Two credits. One class period and one three-hour conference. Prerequisite: PHRM 220 and concurrent with PHRM 221. Cardoni
A study of the clinical features of diseases of the central nervous system and the provision of pharmaceutical care to psychiatric, neurologic, and pain syndrome patients. Drug related problems concerned with the treatment of these patients is emphasized.

254. Therapeutics II
Second semester. Three credits. Two class periods and one three-hour conference. Prerequisite: PHRM 253. Reddy, Wang
A study of the etiology, clinical manifestations, and treatment regimens of cardiovascular diseases, acid peptic disease, inflammatory bowel diseases, and liver and respiratory diseases.

254W. Therapeutics II
Second semester. Three credits. Three class periods. Prerequisite: PHRM 254. Chapron
Development of skills necessary to make meaningful therapeutic contributions to the investigation and management of patients with various renal, electrolyte, acid-base, endocrine and metabolic disorders and further develop the student’s ability to apply problem-solving strategies in the above clinical situations.

256. Therapeutics IV
Second semester. Three credits. Three class periods. Prerequisite: PHRM 255. Aeschlimann
Development of skills necessary to make meaningful therapeutic contributions to the investigation and management of patients with infectious diseases, cancers, and immunologically mediated diseases and further develop the student’s ability to apply problem-solving strategies in the above clinical situations.

257. Clinical Pharmacokinetics
First semester. Three credits. Three class periods. Prerequisite: PHRM 245, 254. Sweeney
Development of an understanding of drug dosing regimen design with application to these concepts to relevant drugs. Emphasis will be placed on recogni-
tion of special dosing situations due to potentially altered pharmacokinetics and drugs exhibiting unique pharmacokinetics.

262. Professional Experience in Community Pharmacy *
Either semester. Four credits. Hours by arrangement. Prerequisite: PHRM 210, PHRM 211, PHRM 212, PHRM 256. James
The student will apply drug therapy knowledge and communication skills to the provision of pharmaceutical care in a community pharmacy. Emphasis is on the development of skills in patient assessment and patient education in optimizing response to pharmacotherapy. Introduction to the administrative aspects of the provision of pharmaceutical care in the community pharmacy is provided.

263. Professional Experience in Institutional Pharmacy I
Either semester. Four credits. Prerequisite: PHRM 210, PHRM 211, PHRM 212, PHRM 256. Silk
The student will apply pharmacy knowledge and skills to the provision of pharmacy services and pharmaceutical care in an institutional setting. Topics include pharmaceutical procurement and distribution, quality control, formulary system, provision of drug information, inpatient and outpatient provision of pharmaceutical care, and administrative aspects of institutional pharmacy.

264. Professional Experience in Ambulatory Care Pharmacy *
Either semester. Four credits. Prerequisite: PHRM 210, PHRM 211, PHRM 212, PHRM 256. Jeffery
The student will apply knowledge of disease therapeutics and communication skills to the provision of pharmaceutical care in the ambulatory setting. Emphasis is on optimizing medication-related outcomes in patients through medication assessment, multidisciplinary treatment planning, efficacy and safety assessment, and patient education.

265. Professional Experience in General Medicine *
Either semester. Four credits. Prerequisite: PHRM 210, PHRM 211, PHRM 212, PHRM 256. Reddy
The student will apply knowledge of therapeutics of general medical disorders to the provision of pharmaceutical care to general medicine inpatients. Emphasis is on rational selection and use of medications in an effective, safe, and cost-conscious manner. Optimization of medication-related outcomes is stressed and includes medication assessment, multidisciplinary treatment planning, efficacy and safety monitoring, and patient education.

Electives, minimum of 5 (one month each). At least 2 of the electives must be direct patient contact.
Direct patient contact indicated by *

266. Professional Experience in Cardiology *
Either semester. Four credits. Prerequisite: PHRM 210, PHRM 211, PHRM 212, PHRM 256. White
The student will apply knowledge of therapeutics of cardiovascular disorders to the provision of pharmaceutical care in cardiology patients. Emphasis is on optimization of medication-related outcomes in critically-ill cardiac patients through medication assessment, multidisciplinary treatment planning, efficacy and safety monitoring, and patient education.

267. Professional Experience in Infectious Disease *
Either semester. Four credits. Prerequisite: PHRM 210, PHRM 211, PHRM 212, PHRM 256. Aeschlimann
The student will apply knowledge of pharmacotherapy of infectious disease to the provision of pharmaceutical care to infectious disease inpatients. Emphasis is on optimization of medication-related outcomes in patients with serious infectious diseases through past and current medication assessment, multidisciplinary treatment planning, efficacy and safety monitoring, and patient education.

268. Professional Experience in Oncology *
Either semester. Four credits. Prerequisite: PHRM 210, PHRM 211, PHRM 212, PHRM 256. Pham
The student will apply knowledge of therapeutics of adult neoplastic disorders to the provision of pharmaceutical care to oncology patients. Emphasis is on rational drug selection of curative or palliative medications in an effective, safe, and cost-conscious manner. Optimization of medication-related outcomes is stressed and includes medication assessment, multidisciplinary treatment planning, efficacy and safety monitoring, and patient education.

269. Professional Experience in Psychiatry *
Either semester. Four credits. Prerequisite: PHRM 210, PHRM 211, PHRM 212, PHRM 256. Cardoni
The student will apply knowledge of the therapeutics of psychiatric disorders and communication skills to the provision of pharmaceutical care to psychiatric inpatients. Emphasis is on the optimization of medication-related outcomes in psychiatric patients through past and current medication assessment, multidisciplinary treatment planning, efficacy and safety monitoring, and patient education.

270. Professional Experience in Pediatrics *
Either semester. Four credits. Prerequisite: PHRM 210, PHRM 211, PHRM 212, PHRM 256. Bessermerten
The student will apply knowledge of the therapeutics of pediatric disorders to the provision of pharmaceutical care to non-intensive care pediatric inpatients. Emphasis is on the optimization of medication-related outcomes in pediatric patients through medication assessment, multidisciplinary treatment planning, efficacy and safety monitoring, and patient education.

271. Professional Experience in Geriatrics *
Either semester. Four credits. Prerequisite: PHRM 210, PHRM 211, PHRM 212, PHRM 256. Chapron, Jeffery
The student will apply knowledge of therapeutics of chronic and acute disorders in the elderly to the provision of pharmaceutical care in a skilled nursing facility. Emphasis is on rational selection of medications in an effective, safe, and cost-conscious manner. Optimization of medication-related outcomes in geriatric patients is stressed and includes medication assessment, multidisciplinary treatment planning, efficacy and safety monitoring, and patient education.

272. Professional Experience in Community Practice II *
Either semester. Four credits. Prerequisite: PHRM 210, PHRM 211, PHRM 212, PHRM 256. James
A continuation of PHRM 262. The student will expand the application of drug therapy knowledge and communication skills to the provision of pharmaceutical care in a community pharmacy. Emphasis is on continued development of patient assessment and patient education skills in optimizing response to medications.

273. Professional Experience in Critical Care *
Either semester. Four credits. Prerequisite: PHRM 210, PHRM 211, PHRM 212, PHRM 256. White
The student will apply knowledge of pharmacotherapy of major medical disorders and post-surgical drug therapy to the provision of pharmaceutical care to critical care patients in medical, surgical, and specialized intensive care units. Emphasis is on optimization of medication-related outcomes in seriously-ill patients through medication assessment, multidisciplinary treatment planning, and efficacy and safety monitoring.

274. Professional Experience in Dermatology
Either semester. Four credits. Prerequisite: PHRM 210, PHRM 211, PHRM 212, PHRM 256
The student will apply knowledge of pharmacotherapy of common dermatological diseases to the provision of pharmaceutical care to patients with these diseases. Emphasis is on optimization of medication-related outcomes in patients with common dermatological disorders through past and current medication assessment, efficacy and safety monitoring, and patient education.

275. Professional Experience in Drug Control
Either semester. Four credits. Prerequisite: PHRM 210, PHRM 211, PHRM 212, PHRM 256
The student will apply knowledge of pharmacy and state and Federal pharmacy laws to the drug control activities of the Drug Control Division of the Department of Consumer Protection of the State of Connecticut. Emphasis is on active participation in daily activities of drug control officers in enforcing state and Federal drug control laws.

276. Professional Experience in Emergency Medicine
Either semester. Four credits. Prerequisite: PHRM 210, PHRM 211, PHRM 212, PHRM 256
The student will apply knowledge of pharmacotherapy of medical, surgical, toxicologic, and psychiatric emergencies to the provision of pharmaceutical care for adults and children treated in the emergency department. Emphasis is on optimization of medication-related outcomes in patients in need of emergency treatment, including medication assessment, efficacy and safety monitoring, and patient education.

277. Professional Experience in Home Health Care
Either semester. Four credits. Prerequisite: PHRM 210, PHRM 211, PHRM 212, PHRM 256. Jeffery
The student will apply knowledge of pharmacy practice and skills in patient interaction to the provision of pharmaceutical care to patients in their homes. Emphasis is on optimization of medication-related outcomes in patients with common medical disorders served by home health care pharmacists, including medication assessment, efficacy and safety monitoring, and patient education.

278. Professional Experience in Institutional Pharmacy II
Either semester. Four credits. Prerequisite: PHRM 210, PHRM 211, PHRM 212, PHRM 256. Silk
A continuation of PHRM 263. The student will expand application of pharmacy knowledge and skills to the provision of pharmacy services in an institutional setting. Emphasis is on problem-solving project activity related to the provision of pharmaceutical care by the Department of Pharmacy.

279. Professional Experience in Industry
Either semester. Four credits. Prerequisite: PHRM 210, PHRM 211, PHRM 212, PHRM 256. Chapron
The student will apply knowledge of pharmacy and pharmaceutical science to the practice of pharmacy in the pharmaceutical industry. Emphasis is on
development of skills needed in basic pharmaceutical science, information dissemination, drug development, and product marketing.

280. **Professional Experience in Managed Care**
Either semester. Four credits. Prerequisite: PHRM 210, PHRM 211, PHRM 212, PHRM 256.

The student will apply pharmacy knowledge and communication skills to the practice of managed care pharmacy. Emphasis is on the development of strategies that optimize pharmacotherapy of major medical diseases, surgical procedures, and psychiatric disorders within the economic constraints of a managed care health care delivery system.

281. **Professional Experience in Nuclear Pharmacy**
Either semester. Four credits. Prerequisite: PHRM 210, PHRM 211, PHRM 212, PHRM 256.

The student will apply pharmaceutical science knowledge and communication skills to the provision of pharmaceutical care in nuclear pharmacy. Emphasis is on optimization of therapeutic outcomes related to diagnostic and therapeutic use of radioisotopes, including medication assessment, multidisciplinary treatment planning, efficacy and safety monitoring, and patient education.

282. **Professional Experience in Nutrition**
Either semester. Four credits. Prerequisite: PHRM 210, PHRM 211, PHRM 212, PHRM 256.

The student will apply knowledge of therapeutics of nutritional disorders to the provision of pharmaceutical care to patients with these disorders. Emphasis is on optimization of medication-related outcomes in nutrition disorder patients through current and past medication assessment, multidisciplinary treatment planning, efficacy and safety monitoring, and patient education.

283. **Professional Experience in Obstetrics/Gynecology**
Either semester. Four credits. Prerequisite: PHRM 210, PHRM 211, PHRM 212, PHRM 256.

The student will apply knowledge of pharmacotherapy of OB-GYN disorders to the provision of pharmaceutical care to patients with these disorders. Emphasis is on optimization of medication-related outcomes in patients with OB-GYN disorders through past and current medication assessment, multidisciplinary treatment planning, efficacy and safety monitoring, and patient education.

284. **Professional Experience in a Skilled Care Nursing Facility**
Either semester. Four credits. Prerequisite: PHRM 210, PHRM 211, PHRM 212, PHRM 256.

Chapron

The student will apply knowledge of pharmacotherapy of medical diseases and psychiatric disorders and communication skills to patients in a skilled care nursing facility. Emphasis is on optimization of medication-related outcomes in skilled care nursing facility patients through medication assessment, multidisciplinary treatment planning, efficacy and safety monitoring, and patient education.

285. **Professional Experience in Surgery**
Either semester. Four credits. Prerequisite: PHRM 210, PHRM 211, PHRM 212, PHRM 256.

The student will apply knowledge of pharmacotherapy to pre-surgical, surgical, and post-surgical use of drugs. Emphasis is on the optimization of medication-related outcomes in the surgical patient, including medication assessment, multidisciplinary treatment planning, efficacy and safety monitoring, and patient education.

286. **Professional Experience in General Medicine II**
Either semester. Four credits. Prerequisite: PHRM 265. May be taken concurrently with PHRM 265.

Reddy

A continuation of PHRM 265. The student will expand, in depth and in breadth, the application of pharmacotherapy principles to the provision of pharmacotherapy to general medicine inpatients. Emphasis is on continued development of the process of rational drug selection that encompassed the use of medications in an effective, appropriate, safe, and cost effective manner.

287. **Professional Experience in Ambulatory Care**
Either semester. Four credits. Prerequisite: PHRM 212. May be taken concurrently with PHRM 264.

Jeffery

A continuation of PHRM 264. The student will expand, in depth and in breadth, the application of pharmacotherapy principles to the provision of pharmacotherapy to general medicine outpatient. Emphasis is on continued development of the process of rational drug selection that encompassed the use of medications in an effective, appropriate, safe, and cost effective manner.

288. **Professional Experience in Pharmacist-Directed Anticoagulation Service**
Either semester. Four credits. Prerequisites: PHRM 210, PHRM 211, PHRM 212, PHRM 256.

Chapron

The student will apply knowledge of pharmacotherapy of acute and chronic thrombotic disorders to the provision of pharmaceutical care to patients requiring anticoagulation therapy. Emphasis is on the optimization of medication-related outcome in anticoagulated patients through past and current medication assessment, multidisciplinary treatment planning, efficacy and safety monitoring, and patient education.

289. **Professional Experience in Gastroenterology**
Either semester. Four credits. Prerequisites: PHRM 210, PHRM 211, PHRM 212, PHRM 256.

Chapron

The student will apply knowledge of pharmacotherapy of acute and chronic gastroenterologic disorders to the provision of pharmaceutical care to patients requiring such therapy. Emphasis is on the optimization of medication-related outcome in gastroenterologic patients through past and current medication assessment, multidisciplinary treatment planning, efficacy and safety monitoring, and patient education.

290. **Professional Experience in Hospice Care**
Either semester. Four credits. Prerequisites: PHRM 210, PHRM 211, PHRM 212, PHRM 256.

Phan

The student will apply knowledge of pharmacotherapy of the final stage of terminal disorder to the provision of pharmaceutical care to hospice patients requiring palliative therapy. Emphasis is on the optimization of medication-related outcome in hospice patients through past and current medication assessment, multidisciplinary treatment planning, efficacy and safety monitoring, and family education.

291. **Professional Experience in Sub-acute Care and Chronic Disease and Rehabilitative Medicine**
Either semester. Four credits. Prerequisites: PHRM 210, 211, 212, 256.

Chapron

The student will apply knowledge of pharmacotherapy of chronic and subacute disorders to the provision of pharmaceutical care to patients undergoing physical rehabilitation. Emphasis is on the optimization of medication-related outcome in rehabilitation patients through past and current medication assessment, multidisciplinary treatment planning, efficacy and safety monitoring, and patient education.

298. **Elective Courses**

**Pharmacy (PHAR)**

See course descriptions in PHAR section.

299. **Special Topics**

291. **Elective Course in Pharmacology**

**Philosophy (PHIL)**

Head of Department: Professor Crawford L. Elder Department Office: Room 101, Manchester Hall

For major requirements, see the College of Liberal Arts and Sciences section of this Catalog.

101. **Problems of Philosophy**

Either semester. Three credits. No student may receive more than 6 credits for PHIL 101, 102, 103, 104, 105, 106.

Topics may include skepticism, proofs of God, knowledge of the external world, induction, free-will, the problem of evil, miracles, liberty and equality.

102. **Philosophy and Logic**

Either semester. Three credits. No student may receive more than 6 credits for PHIL 101, 102, 103, 104, 105, 106.

Techniques for evaluating inductive and deductive arguments; applications to specific arguments about philosophical topics, for example the mind-body problem or free will vs. determinism.

102C. **Philosophy and Logic**

103. **Philosophical Classics**

Either semester. Three credits. No student may receive more than 6 credits for PHIL 101, 102, 103, 104, 105, 106.

Discussion of selections from such philosophers as Plato, Aristotle, Descartes, and Hume.

104. **Philosophy and Social Ethics**

Either semester. Three credits. No student may receive more than 6 credits for PHIL 101, 102, 103, 104, 105, 106.

Topics may include the nature of the good life, the relation between social morality and individual rights, and practical moral dilemmas. At least one section each term emphasizes women-men issues: sex relations, sex roles, sex equality, abortion, the family, etc. Other sections may emphasize issues concerning Science and
PHILOSOPHY 165

105. Philosophy and Religion
Either semester. Three credits. No student may receive more than 6 credits for PHIL 101, 102, 103, 104, 105, 106.

Topics may include proofs of the existence of God, the relation of religious discourse to other types of discourse, and the nature of religious commitment.

106. Non-western and Comparative Philosophy
Either semester. Three credits. No student may receive more than 6 credits for PHIL courses 101, 102, 103, 104, 105, 106.

Classic non-Western texts on such problems as the nature of reality and of our knowledge of it, and the proper requirements of social ethics, along with comparison to classic Western approaches to the same problems.

175. Ethical Issues in Health Care
Either semester. Three credits. Krimerman

Theories of ethics, with specific application to ethical issues in modern health care.

185W. Philosophy and Literature
Either semester. Three credits. Prerequisite: ENGL 105 and 109; the latter may be taken concurrently.

Philosophical problems raised by, and illuminated in, major works of literature.

200. Philosophical Issues in Contemporary Life
Either semester. Three credits. Prerequisite: At least one of PHIL 101, 102, 103, 104, 105, 106. May be repeated with a change in topic for a maximum of six credits.

Philosophical dimensions of problems in contemporary life. Topics vary by semester.

205. Aesthetics
Either semester. Three credits. Prerequisite: At least one of PHIL 101, 102, 103, 104, 105, 106. Open to sophomores.

The fundamentals of aesthetics, including an analysis of aesthetic experience and judgment, and a study of aesthetic types, such as the beautiful, tragic, comic and sublime. Recent systematic and experimental findings in relation to major theories of the aesthetic experience.

205W. Aesthetics

210. Metaphysics and Epistemology
Either semester. Three credits. Prerequisite: At least one of PHIL 101, 102, 103, 104, 105, 106. Open to sophomores.

Topics may include time, personal identity, free-will, the mind-body problem, skepticism, induction, perception, a priori knowledge.

210Q. Metaphysics and Epistemology

211. Symbolic Logic I
Either semester. Three credits. Prerequisite: At least one of LING 106, POLS 101, 102, 103, 104, 105, 106. Open to sophomores. Lehmann, Wheeler

Systematic analysis of deductive validity; formal languages which mirror the logical structure of portions of English; semantic and syntactic methods of verifying relations of logical consequence for these languages.

211V. Symbolic Logic I (Q,C)
Emphasis on computer-related material.

212. Philosophy of Science
Either semester. Three credits. Prerequisite: At least one of PHIL 101, 102, 103, 104, 105, 106. Open to sophomores.

Issues concerning the nature and foundations of scientific knowledge, including, for example, issues about scientific objectivity and progress.

212W. Philosophy of Science

213. Philosophy of Social Science
Either semester. Three credits. Prerequisite: At least one of PHIL 101, 102, 103, 104, 105, 106. Open to sophomores.

Nature and extent of social phenomena; nature and consequence of group membership; methods of investigation of social phenomena; problems of interpretation. Related doctrines of classic and contemporary theorists such as Durkheim, Weber, Simmel, Wittgenstein.

214O. Symbolic Logic II
Second semester. Three credits. Prerequisite: PHIL 211. Lehmann

Logical concepts developed in PHIL 211 applied to the study of philosophical issues in the foundations of mathematics.

215. Ethics
Either semester. Three credits. Prerequisite: At least one of PHIL 101, 102, 103, 104, 105, 106. Open to sophomores.

Judgments of good and evil, right and justice, the moral ‘ought’ and freedom; what do such judgments mean, is there any evidence for them, and can they be true?

215W. Ethics

217. Social and Political Philosophy
Either semester. Three credits. Prerequisite: At least one of PHIL 101, 102, 103, 104, 105, 106. Open to sophomores.

Conceptual, ontological, and normative issues in political life and thought; political obligation; collective responsibility; justice; liberty; equality; community; the nature of rights; the nature of law; the justification of punishment; related doctrines of classic and contemporary theorists such as Plato, Rousseau, John Rawls.

217W. Social and Political Philosophy

218. Feminist Theory
Either semester. Three credits. Prerequisite: At least one of PHIL 101, 102, 103, 104, 105 or WS 103, 104, or 124. Meyers

Philosophical issues in feminist theory. Topics may include the nature of gender difference, the injustice of male domination and its relation to other forms of domination, the social and political theory of women’s equality in the home, in the workplace, and in politics.

221. Ancient Philosophy
(Also offered as CAMS 257.) Either semester. Three credits. Prerequisite: At least one of PHIL 101, 102, 103, 104, 105, 106. Open to sophomores.

Greek philosophy from its origin in the Pre-Socratics through its influence on early Christianity. Readings from the works of Plato and Aristotle.

221W. Ancient Philosophy

222. Seventeenth and Eighteenth-Century Philosophy
Either semester. Three credits. Prerequisite: At least one of PHIL 101, 102, 103, 104, 105, 106. Open to sophomores. Trover

Central philosophical issues as discussed by philosophers such as Descartes, Locke, Berkeley, Hume and Kant.

222W. Seventeenth and Eighteenth-Century Philosophy

224. Nineteenth-Century Philosophy
Either semester. Three credits. Prerequisite: At least one of PHIL 101, 102, 103, 104, 105, 106. Open to sophomores.

Readings from philosophers such as Kant, Hegel, Marx and Engels, Bentham, Mill Schopenhauer, Nietzsche, and Kierkegaard; topics such as the debate between individualism and collectivism in the nineteenth century.

224W. Nineteenth-Century Philosophy

225W. Analysis and Ordinary Language
Either semester. Three credits. Prerequisite: At least one of PHIL 210, 221, 222, 227.

The reaction, after Russell, against formal theories and the belief in an ideal language, and the turn to familiar common-sense “cases” and everyday language in judging philosophical claims. Russell, Moore, Wittgenstein, Ryle and Strawson.

226. Philosophy of Law
Either semester. Three credits. Prerequisite: At least one of PHIL 101, 102, 103, 104, 105, 106, which may be taken concurrently.

The nature of law; law’s relation to morality; law’s relation to social facts; the obligation to obey the law; interpreting texts; spheres of law; international law; the justification of state punishment; the good of law; related doctrines of contemporary theorists such as Herbert Hart and Ronald Dworkin.

228. American Philosophy
Either semester. Three credits. Prerequisite: At least one of PHIL 101, 102, 103, 104, 105, 106. May be taken concurrently.

Doctrines advanced by recent American philosophers.

230. Contemporary Marxism and Its Foundation
Either semester. Three credits. Prerequisite: At least one of PHIL 101, 102, 103, 104, 105, 106, which may be taken concurrently.

Marx’s criticisms of capitalism; the distinctive functional explanations Marx offered for the relations of production and the superstructure; application of such explanations to aspects of American culture.

230W. Contemporary Marxism and Its Foundation

231. Philosophy of Religion
Either semester. Three credits. Prerequisite: At least one of PHIL 101, 102, 103, 104, 105, 106. Open to sophomores.

Various religious absolutes, their meaning and validity, existentialism and religion, the post-modern religious quest.

234. Phenomenology
Second semester. Three credits. Prerequisite: At least one of PHIL 101, 102, 103, 104, 105, 106. Elder

Husserl’s theory of meaning; its promise of silencing skepticism and setting philosophy on a new footing; the challenge to it posed by applying it to talk about other minds.

241. Language: Meaning and Truth
Either semester. Three credits. Prerequisite: PHIL 102 or 211, and at least one of PHIL 210, 221, 222, 227.

An analysis of the concepts used in thinking about language.

243W. Philosophy of History
Either semester. Three credits. Prerequisite: At least one of PHIL 101, 102, 103, 104, 105, 106.

Philosophical problems concerning the nature of
245. Philosophy and Economics
(Also offered as ECON 206.) Either semester. Three credits. Prerequisite: ECON 102, 112, or 113.
An examination of the normative assumptions and implications of modern economics (for example, the connections between Classical Utilitarianism and Welfare Economics). Attention to methodological controversies in contemporary economic theory.

250. Philosophy of Mind
Either semester. Three credits. Prerequisite: At least one 200-level, three-credit philosophy course or consent of instructor.
Contemporary issues in the philosophy of mind. Topics may include the nature of the mental; the relation of the mental to the physical; specific phenomena such as emotions, beliefs, or sensations, and relevant scientific developments.

261. Medieval Philosophy
Second semester. Three credits. Prerequisite: At least one of PHIL 210, 221, 222, 227. McGrade Readings from the principal philosophers between the fourth and fourteenth centuries.

263. Oriental Philosophy and Religion
Either semester. Three credits. Prerequisite: At least one of PHIL 101, 102, 103, 104, 105, 106, Layster
The historical, religious, and philosophical development of Hinduism, Buddhism, Taoism, and Confucianism.

264. Classical Chinese Philosophy and Culture
Either semester. Three credits. Prerequisite: At least one of PHIL 101, 102, 103, 104, 105, 106. Classical Chinese philosophy, including such works as The Analects of Confucius and the works of Chuang Tzu, and their influence on Chinese culture.

293. Foreign Study
Either or both semesters. Credits and hours by arrangement. Consent of Department Head required, preferably prior to the student’s departure. Special topics taken in a foreign study program.

296W. Senior Thesis in Philosophy
Either semester. Three credits. Hours by arrangement. Open only with consent of instructor and Department Head. Independent study authorization form required. Prerequisite: Twelve credits in Philosophy at the 200’s level or above, three of which may be taken concurrently.

297. Variable Topics
Either semester. Three credits. With a change in topic, may be repeated for credit. Prerequisites and recommended preparation vary.

298. Special Topics
Either semester. Credits and hours by arrangement. With a change in content, may be repeated for credit. Prerequisites and recommended preparation vary.

299. Independent Study
Either or both semesters. Credits and hours by arrangement. Advanced and individual work. Open only with consent of instructor. May be repeated for credit with a change in topic.

Physical Therapy (PT)

Head of Department: Professor Scott M. Hassan
Department Office: Room 214, Koons Hall

For major requirements, see the School of Allied Health section of this Catalog.

The following courses are open only to the students enrolled in the Physical Therapy Program unless otherwise noted. Others must obtain the permission of the Director of the Physical Therapy Program.

210. Fundamentals of Assessment
Either semester. Five credits. Hours by arrangement. Clinical field experiences will be required. Open only to Physical Therapy students. Prerequisites: PT 213, PT 215, PT 217 and PT 220.

This course provides a foundation for the physical therapy assessment process, introducing the student to more general observational and interview skills to gather, document and analyze evaluation data. Students build skill in specific evaluation procedures which are fundamental to the practice of physical therapy. Students explore the scientific evidence which supports or questions the measuring characteristics of selected evaluation procedures. Students begin to use information from assessments in decisions for diagnosis, program planning and referrals.

212. Fundamentals of Treatment: Acute Care
Either semester. Six credits. Hours by arrangement. Clinical Field experiences will be required. Open only to Physical Therapy students. Prerequisites: PT 213, PT 215, PT 217, PT 210 and PT 240.


213. Human Anatomy
(Formerly offered as HESC 213.) Either semester. Three credits. Three hours of lecture and two hours of laboratory. Open to students in Physical Therapy; EKIN students second semester only; others with consent of instructor. Prerequisites: PNB 264; PT 215 and PNB 265, either of which may be taken concurrently.

Discussion of the conceptual and structured bases of osteology, myology, neurology, human development and basic kinesiology and biomechanics. Selected anatomical and physiological dysfunctions will also be analyzed.

215. Human Anatomy Laboratory
(Formerly offered as HESC 215.) Either semester. Three credits. Laboratory and discussion. Open to students in Physical Therapy; EKIN students second semester only; others with consent of instructor. Prerequisites: PNB 264; PT 213 and PNB 265, either of which may be taken concurrently.

Laboratory and discussion utilizing bones, models, audiovisuals and prosected human specimens to provide in-depth study of the skeletal, articular, muscular, cardiovascular, respiratory and nervous systems of the entire human body.

217. Human Physiology
(Formerly offered as HESC 217.) Either semester. Three credits. Open to students in Physical Therapy and EKIN students; others with consent of instructor. Prerequisites: PT 213 and 215 or the equivalent, which may be taken concurrently.

Discussion of the biochemical, nutritional, cellular and physiological principles necessary for the analysis of the normal and abnormal function and for the rehabilitation of the human musculoskeletal, cardiovascular and respiratory systems. The effects of exercise and of selected pathologies upon these systems will also be analyzed.

220. Tissue Dysfunction
Either semester. Hours by arrangement. Open only to Physical Therapy students. Prerequisites: PT 213, PT 215; and PT 217 which may be taken concurrently.

After a general introduction to cellular mechanisms by which an organism becomes dysfunctional, pathological conditions common to the musculoskeletal, gastrointestinal, genitourinary, endocrine, integumentary, central and peripheral nervous and cardiopulmonary systems are overviewed. Focus is on knowledge of pathology and disease management as a basis for program planning in physical therapy. Discussion groups may be scheduled.

221. Pharmacology for Physical Therapy
Either semester. Two credits. Hours by arrangement. Open only to Physical Therapy students. Prerequisites: PT 217 and PT 220.

The body’s response to single and multiple medications, radiation and chemical treatments are considered as they relate to safe, comprehensive and effective outcomes of physical therapy care.

222. Musculoskeletal Dysfunction
Either semester. Four credits. Hours by arrangement. Open only to Physical Therapy students. Prerequisites: PT 210, PT 240; and PT 221 which may be taken concurrently.

Pathology related to the musculoskeletal system is overviewed. Focus is on knowledge of pathology and disease management as a basis for assessment, diagnosis, program planning, treatment and referrals in physical therapy. Interaction with physicians and other health professionals gives students an understanding of the role physical therapy plays in a complex multiprofessional health care system.

224. Neuromuscular Dysfunction
Either semester. Three credits. Hours by arrangement. Open only to Physical Therapy students. Prerequisites: PT 210, PT 221 and PT 260.

Focus is on pathology related especially to the neuromuscular systems. Knowledge of pathology and disease management is presented for assessment, diagnosis, program planning, treatment and referrals in physical therapy. Interaction with physicians and other health professionals as well as consumers gives the students the basis for understanding the role physical therapy plays in a complex multiprofessional health care system.

226. Field Work in Socialization and Leisure Time Activity with Persons with Disabilities
Either semester. Two credits. Hours by arrangement. Field work and independent study. Open only to Physical Therapy majors and Sophomore Pre-Allied Health majors in the College of Liberal Arts & Sciences; others with consent of instructor.

Students will have the opportunity to meet and work with persons with disabilities outside of the regular clinical setting through participation in residential weekends at an outdoor recreational center. In addition to studying the common physical barriers, students will examine the common psychological and social difficulties encountered in an attempt to reach an optimal level of productivity in society. Students are required to provide their own transportation.
227. Field Work in Normal Motor Development
Either semester. Three credits. Hours by arrangement. Open only to Physical Therapy majors and Sophomore Pre-Allied Health majors in the College of Liberal Arts & Sciences; others with consent of instructor.
This course provides an opportunity for observation of normal motor skill development through participation in the educational programming, daily care, and social and emotional support offered to infants, toddlers, and preschool age children. Students are required to spend six hours per week participating in programming and care of the children. Field work and independent study are used to develop expertise in a selected area of motor development and students are required to present in-service training in their chosen area.

240. Clinical Kinesiology
Either semester. Three credits. Hours by arrangement. Prerequisite: PHYS 122; PT 213 and 215 which may be taken concurrently.
Students will analyze the impact of force systems on the human body during functional motion, thus preparing the student to apply knowledge of normal anatomical structure and function to therapeutic intervention.

260. Functional Neurology and Movement
Either semester. Four credits. Hours by arrangement. Prerequisite: PT 213 and 215.
The goal of this course is to provide the students with basic information on the central nervous system structure and function in order that they may better understand normal movement, the movement of patients with neurological disorders and the neurological basis behind treatment procedures. Emphasis will be placed on the analysis of segmental motion as seen in the acquisition of posture, postural reactions and adult movement patterns.

298. Special Topics
Either semester. Credits and hours by arrangement. Open only with consent of instructor. (Investigation of special topics is available to qualified students.) May be repeated for credit.
Investigation of special topics related to, but not ordinarily covered in the undergraduate offerings. These courses will be announced in advance for each semester.

299. Independent Study for Undergraduates
Either semester. Credits and hours by arrangement. Open only with consent of instructor. May be repeated for credit.
The course is designed primarily for students who wish to extend their knowledge in some specialized subject in the field of physical therapy.

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Physics (PHYS)
Head of Department: Professor William C. Stwalley
Department Office: Room 101, Physics Building
For major requirements, see the College of Liberal Arts and Sciences section of this Catalog.

101Q. Elements of Physics
Either semester. Four credits. Three class periods and one 2-hour laboratory period. Not open for credit to students who have passed PHYS 121, 131, 141 or 151.
Basic facts and principles of physics with introduction to quantitative laboratory.

103Q. Physics of the Environment
Either semester. Three credits. Not applicable to any requirement that specifies a course in "general physics."
Concepts of physics applied to current problems of the physical environment: energy, transportation, pollution. No previous knowledge of physics is assumed.

104Q. Physics of the Environment with Laboratory
Either semester. Four credits. Three 1-hour lectures and one 2-hour laboratory. No previous knowledge of physics is assumed. Not open for credit to students who have passed Physics 103Q.
Concepts of physics applied to the physical environment, particularly to current problems related to energy, transportation, and pollution. These relationships will be further explored in the laboratory section.

107Q. Physics of Music
First semester. Four credits. Three class periods and one 2-hour laboratory period. Prerequisite: Satisfactory performance on Q-readiness Test or equivalent. Physics 101Q and 107Q may not both be combined to satisfy the Group 8 requirement.
Basic principles of physics and scientific reasoning will be taught in the context of the production and perception of music, emphasizing the historic and scientific interplay between physics and music. Basic quantitative laboratories pertaining to sound, music, and waves. No previous knowledge of physics or music is assumed.

121Q-122Q. General Physics
Either semester. Four credits. Three class periods and one 3-hour laboratory period. Prerequisite: MATH 112 or 109 or 118 or passing score on the calculus readiness test or equivalent. PHYS 121 not open for credit to students who have passed PHYS 131, 141 or 151. PHYS 122 not open for credit to students who have passed PHYS 132, 142 or 152. PHYS 121 required for PHYS 122.
Basic facts and principles of physics. The laboratory offers fundamental training in precise measurements.

123Q. General Physics Problems
Either semester. Three credits. Prerequisite: PHYS 122 and MATH 114 or 116, both of which may be taken concurrently. Not open for credit to students who have passed PHYS 141 or 151.
Problems, including applications of calculus, dealing with topics in general physics.

125Q. General Physics Problems for Engineers
Either semester. Four credits. Three class periods and one 1-hour recitation period. Prerequisite: PHYS 122 and MATH 114 or 116, both of which may be taken concurrently. Not open for credit to students who have passed PHYS 123, 141 or 151.
Problems, including applications of calculus, dealing with topics in general physics. Intended for those students who have taken or are taking PHYS 122 and who desire to have a calculus-based physics sequence equivalent to PHYS 151-152.

131Q-132Q. General Physics with Calculus
Either semester. Four credits. Three class periods and one 3-hour laboratory period. Prerequisite: PHYS 131 required for PHYS 132. Recommended preparation: MATH 113 or 115, for PHYS 131, and MATH 114 or 116, for PHYS 132. PHYS 131 is not open for credit to students who have passed PHYS 141 or 151. PHYS 132 not open for credit to students who have passed 142 or 152. PHYS 131 may be taken for not more than 2 credits, with the permission of the instructor, by students who have received credits for PHYS 121. PHYS 132 may be taken for not more than 2 credits, with the permission of the instructor, by students who have received credit for PHYS 122.

Quantitative study of the basic facts and principles of physics. The laboratory offers fundamental training in physical measurements. This course is recommended for students planning to apply for admission to medical, dental or veterinary schools. It is also recommended for science majors for whom a one year introductory physics course is adequate.

140Q. Introduction to Modern Physics
First semester. Four credits. Two class periods, two recitations, and one 3-hour laboratory. Recommended preparation: MATH 109, which may be taken concurrently, or a pass on the Calculus Readiness Test.
Quantitative exploration of the structure of matter, including gas laws, electric and magnetic forces, the electron, x-rays, waves and light, relativity, radioactivity, and spectra. This course is recommended for prospective Physics majors.

141Q. Fundamentals of Physics I
Second semester. Four credits. Three class periods and one 3-hour laboratory period. Recommended preparation: MATH 113 or 115 or 120, any of which may be taken concurrently. MATH 120 is preferred for Physics majors. Not open for credit to students who have passed PHYS 131 or 151. May be taken for not more than three credits, with the permission of the instructor, by students who have received credit for PHYS 121.
Fundamental principles of mechanics, statistical physics, and thermal physics. Basic concepts of calculus are used. This course is recommended for prospective Physics majors.

142Q. Fundamentals of Physics II
First semester. Four credits. Three class periods and one 3-hour laboratory period. Recommended preparation: MATH 141, and MATH 114 or 116 or 121, any of which may be taken concurrently. MATH 121 is preferred for Physics majors. Not open for credit to students who have passed PHYS 132 or 152. May be taken for not more than three credits, with the permission of the instructor, by students who have received credit for PHYS 122.
Fundamental principles of electromagnetism, optics and wave propagation. Basic concepts of calculus are used. This course is recommended for prospective Physics majors.

143Q. Fundamentals of Physics III
First semester. Four credits. Three class periods and one 3-hour laboratory period. Recommended preparation: PHYS 132, or 142, or 152; and MATH 210 or 220, which may be taken concurrently.
Optics, wave propagation, statistical and thermal physics. This course is the third semester of a two year introductory physics sequence which begins with PHYS 140-141 in the first year.

151Q. Physics for Engineers I
Either semester. Four credits. Three class periods and one 3-hour laboratory period. Recommended preparation: PHYS 101 or secondary school physics; and CE 211 or 213, as well as either MATH 210 or 220, which may be taken concurrently. Not open for credit to students who have passed PHYS 131 or 141. PHYS 151 may be taken for not more than 2 credits, with the permission of the instructor, by students who have received credit for PHYS 121.
Basic facts and principles of physics. Elementary concepts of calculus are used. Classical dynamics, rigid-body motion, harmonic motion, wave motion, acoustics, relativistic dynamics, thermodynamics.
152Q. Physics for Engineers II
Either semester. Four credits. Three class periods and one 3-hour laboratory period. Prerequisite: PHYS 151. Not open for credit to students who have passed PHYS 132 or 142. PHYS 152 may be taken for not more than 2 credits, with the permission of the instructor, by students who have received credit for PHYS 122.

Electrical and magnetic fields, electromagnetic waves, quantum effects, introduction to atomic physics.

155Q. Introductory Astronomy
Either semester. Three credits. Two class periods and one 2-hour laboratory period. Prerequisite: Satisfactory performance on Q-Readiness Test or equivalent mathematics.

A basic introductory astronomy course including celestial coordinate systems, fundamental optics and telescope design, recent space probe results, applications of fundamental physical laws to the sun, stars and groups of stars, stellar evolution, modern cosmology and the early universe. Basic quantitative laboratory techniques relevant to astronomy.

191. Directed Study in General Physics
Either or both semesters. One credit. One class period. To be taken concurrently with any of the following: PHYS 121, 122, 141, 142, 151, or 152. Open only with consent of instructor. With a change in content this course may be repeated for credit.

A special study course for students who desire extra work and credit in certain 100-level physics courses.

209Q. Intermediate Physics I
First semester. Three credits. Prerequisite: PHYS 132 or 142 or 152 or, with consent of instructor, PHYS 122.

Classical mechanics, electricity, and magnetism.

210Q. Intermediate Physics II
Second semester. Three credits. Prerequisite: PHYS 132 or 142 or 152 or, with consent of instructor, PHYS 122.

Kinetic theory, introduction to quantum mechanics.

230Q. The Development of Quantum Physics
Second semester. Three credits. Prerequisite: PHYS 132, 142; or PHYS 152, which may be taken concurrently; or PHYS 122 with consent of instructor. Open to sophomores.

The inadequacies of classical physical concepts in the submicroscopic domain. The revision of physical principles that led to special relativity and modern quantum theory. Application to topics chosen from atomic and molecular physics, solid state physics, nuclear physics and elementary particle physics.

242Q. Mechanics I
First semester. Three credits. Prerequisite: PHYS 142 or, with consent of instructor, PHYS 123 or 152 or 209; MATH 210 or 220, which may be taken concurrently. Open to sophomores.

Newton’s Laws of motion applied to mass points, systems of particles, and rigid bodies.

246Q. Mechanics II
Second semester. Three credits. Prerequisite: MATH 211 or 221 and PHYS 242 or CE 212. Open to sophomores.

Further applications of Newton’s Laws: continuous media; Lagrange’s and Hamilton’s formulation of dynamics.

255Q. Electricity and Magnetism I
First semester. Three credits. Prerequisite: PHYS 143; or, with consent of instructor, PHYS 123 or 152 or 210; MATH 210 and 211, or 220 and 221.

Properties of electric and magnetic fields; direct and alternating current circuits.

256Q. Electronics
Second semester. Three credits. Two class periods and one 3-hour laboratory period. Recommended preparation: PHYS 132 or 142 or 152, or consent of instructor.

The principles of devices and their applications to instrumentation in science and engineering. Rectification, filtering, regulation, input and output impedance, basic transistor circuits, operational amplifiers, preamplifiers for photodiodes and other transducers, logic gates, and digital circuits.

275Q. Electricity and Magnetism II
Second semester. Three credits. Prerequisite: PHYS 255.

Mathematical theory of the electromagnetic field; electric and magnetic properties of matter.

258Z-259Z. Laboratory in Electricity, Magnetism, and Mechanics (Q, W, C)
Both semesters. Three credits. Each semester.

Experiments in modern and classical physics are independently designed, performed, and evaluated. Experiments are chosen from the areas of atomic, solid state and thermal physics, as well as from acoustics and optics. Computers are utilized for control of the experimental process, data acquisition and analysis.

291. Seminar in Current Topics
Either or both semesters. One credit. One class period. To be taken concurrently with any of the following: PHYS 242, 246, 255, 257, 261, 262, 271 or 281. Open only with consent of instructor. With a change in content this course may be repeated for credit only once.

Lectures on topics relevant to current research.

293. Foreign Study
Either or both semesters. Credits and hours by arrangement. May be repeated for credit. Consent of Department Head required, normally to be granted prior to the student’s departure. May count toward the major with consent of the advisor.

Special topics taken in a foreign study program.

295. Variable Topics
Either semester. Three credits. With a change in topic, may be repeated for credit. Prerequisites and recommended preparation vary.

298. Special Topics
Either semester. Credits and hours by arrangement. With a change in content, may be repeated for credit. Prerequisites and recommended preparation vary.

299. Independent Study
Either or both semesters. Credits by arrangement, not to exceed 3 each semester. Open only with consent of instructor. With a change of topic, this course may be repeated for credit.

An introduction to geometrical and physical optics. Thick lenses, stops, aberrations, interference, diffraction, polarization.

285Z. Experimental Physics Design Laboratory (Q,W,C)
Either semester. Three credits. Two 3-hour laboratory periods and additional reading assignments. A written description of the proposed method must be submitted and approved before each experiment, and a subsequent written critical evaluation of each experiment is required. Prerequisite: PHYS 230, 246, and 257; PHYS 261, which may be taken concurrently; and PHYS 258 or 259 or ECE 262 or MTGY 236.

Experiments in modern and classical physics are independently designed, performed, and evaluated. Experiments are chosen from the areas of atomic, solid state and thermal physics, as well as from acoustics and optics. Computers are utilized for control of the experimental process, data acquisition and analysis.

214. Hormones and Behavior
First semester, alternate years. Three credits. Prerequisite: PNB 250 or PNB 274-275 or MCB 259 or consent of instructor. Goldman

Neuroendocrine and environmental factors in the control of biological rhythmicity, especially circadian and annual rhythms. Emphasis on animals.

230. Hormones and Behavior
First semester, alternate years. Three credits. Prerequisite: PNB 250 or PNB 262 or PNB 274-275 or consent of instructor. Goldman

Hormones and regulation of behaviors: reproductive, parental, social, and aggressive
behaviors, as well as migration, hibernation, learning and memory.

235. Fish Physiology and Endocrinology
Second semester. Three credits. Prerequisite: EEB 200 (may be taken concurrently). Chapple, Chen, Crivello, Laufer, Renfro
Mechanisms and regulation of basic physiological processes in fish. Mainly teleost fishes of commercial value; also invertebrate physiological processes important to aquaculture.

250. Animal Physiology
First semester. Three credits. Prerequisite: BIOL 107 and either 108 or 110. Open to sophomores. Crivello, Renfro
Physiological mechanisms and regulation in vertebrate animals.

250W. Animal Physiology
251. Biology of the Brain
Second semester. Three credits. Two class periods. Prerequisites: PNB 250 or PNB 274-275 or consent of instructor. Lofrro
Brain functions, from molecular and cellular to overall central nervous system organization. Topics of current scientific interest.

260. Microtechnique
First semester. Four credits. One class period and two 3-hour laboratory periods. Offered in alternate years. Open only with consent of instructor.
Preparation of cells and tissues for microscopic examination, using histological stains, immunohistochemistry, and photomicrography.

262. Mammalian Endocrinology
Second semester. Two credits. Two class periods. Prerequisite: PNB 250 or PNB 274-275 or consent of instructor. Gallo
Functions of hormones in mammalian physiology emphasizing humans.

263W. Investigations in Neurobiology
First semester. Three credits. One 1-hour discussion, one 4-hour laboratory period. Prerequisite: PNB 250 or PNB 274-275. Moiseff
Experimental investigations in neurobiology. Emphasis on designing and carrying out independent research projects, and on communicating the results.

264.-265. Human Physiology and Anatomy
Both semesters. Four credits each semester. Three class periods and one 3-hour laboratory. Prerequisite: CHEM 122Q or 127Q. Recommended preparation: BIOL 107, PHYS 101 or 122. Open to sophomores. Not open to students who have passed PNB 274-275.
These courses must be taken in sequence to obtain credit, and may not be counted toward the Biological Sciences or Physiology and Neurobiology majors.
Chapple, Kimball, Moiseff, Nishiyama
Fundamentals of human anatomy and physiology for students in medical technology, physical therapy, nursing, and education (Sport Science).

274.-275. Enhanced Human Physiology and Anatomy
Both semesters. Four credits each semester. Three class periods and one 3-hour laboratory. Prerequisite: BIOL 107, CHEM 127Q. Recommended preparation: PHYS 121, 131, or 141. Not open to students who have passed PNB 264-265. Must be taken in sequence to obtain credit. Open to sophomores. Chapple, Kimball, Moiseff, Nishiyama
Fundamentals of human physiology and anatomy enhanced through inquiry-based laboratories.

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292W. Senior Research Thesis in Physiology and Neurobiology
Either semester. Three credits. Hours by arrangement. Prerequisite: Three credits of PNB 299, which may be taken concurrently. Open only with consent of instructor and departmental honors committee. Not limited to honors students. Special research or independent investigation for advanced undergraduates. Involves research and writing a thesis.

295. Variable Topics
Either semester. Three credits. With a change in topic, may be repeated for credit. Prerequisites and recommended preparation vary.

297. Undergraduate Seminar
Either or both semesters. Credits and hours by arrangement. May be repeated for credit with a change in topic.

298. Special Topics
Either semester. Credits and hours by arrangement. With a change in content, may be repeated for credit. Prerequisites and recommended preparation vary.

299. Independent Study
Either or both semesters. Credits and hours by arrangement. Open only with consent of instructor and the department honors committee. May be repeated for credit with change in topic.
Designed for the advanced undergraduate student who desires to pursue a special problem as an introduction to independent investigation.

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Plant Science (PLSC)

Head of Department: Professor Gerald A. Berkowitz
Department Office: Room 119, W.B. Young Building
For major requirements, see the College of Agriculture and Natural Resources section of this Catalog.

Agronomy

124. Turfgrass Management
First semester. Three credits. Two class periods and one 2-hour laboratory. Not open to students who have passed PLS 289. Guilard
An overview of turfgrass adaptation, selection, and management. Topics include turfgrass growth, physiology, soil interactions, weeds and diseases, morphology and identification, establishment, and maintenance. Cultural system practices for lawns, golf courses, athletic fields, and other turf areas.

150. Agricultural Technology and Society
Second semester, alternate years (odd). Three credits. Allinson
Development of agricultural systems and technologies and their influence on societies. Topics include plant and animal domestication, food and industrial crops and centers of production, environmental issues, and agricultural ethics.

205. Soil Morphology, Genesis, and Taxonomy
First semester, alternate years (even). Four credits. Two class periods, one 4-hour field laboratory session. Prerequisite: PLS 250, GEOL 102 or GEOL 101 or consent of instructor. Not open for credit to students that have passed PLS 207 and 208. Students that have passed either PLS 207 or PLS 208, but not both, will be allowed to take an appropriately modified version of the course for two credits.
Students will be expected to master the nomenclature and techniques required to describe and characterize soils as natural bodies occurring on geomorphic surfaces. Theories of soil genesis and major systems of soil taxonomy will be rigorously examined, both in theory and in practice. Field trips are required.

224. Turfgrass Physiology and Ecology
Second semester. Three credits. Three class periods. Prerequisite: PLS 212 or PLS 289. Guillard
Turfgrass physiology related to growth and development. Response to temperature, light, water, traffic, and wind. Turfgrass community dynamics, competition, and environmental effects of turfgrass culture.

250. Soils
Second semester. Three credits. Two class periods and one 2-hour laboratory period. Prerequisite: CHEM 122, 127 or 129. Open to sophomores. Luce
Introduction to the physical, chemical and biological properties of soils: the relationship between soils and the growth of higher plants.

253. Soils, Environmental Quality, and Land Use
Second semester, alternate years (even). Three credits. Three class periods plus required field trips. Prerequisite: PLS 250. Not open for credit to students that have passed Plant Science 209.
Principles and procedures for using soils information in solving environmental and land use problems. The functions of soils in natural ecosystems and in the hydrologic cycle will be included.

253W. Soils, Environmental Quality, and Land Use
254. Forage Crops
First semester, alternate years (even). Three credits. Two class periods and one 2-hour laboratory period. Allinson
Production, utilization, and storage of species used as forages and their relationship to the ruminant animal.

257. Ecology and Control of Weeds
First semester. Three credits. Two class periods and one 2-hour laboratory. Prerequisite: A course in plant physiology or consent of instructor.

258. Soil Fertility
First semester. Three credits. Two class periods and one 2-hour laboratory period. Prerequisite: PLS 250. Offered in odd-numbered years. Schulthess
Factors governing nutrient uptake by plants, fate of nutrients applied to soils, principles and practices in the manufacture and use of fertilizers for crop production, laboratory and greenhouse studies of soil and plant response to applied nutrients.

259C. Soil Chemistry
First semester, alternate years (even). Three credits. Two class periods and one 2-hour laboratory period. Prerequisite: CHEM 128. PLS 206 and PLS 250 are recommended. Schulthess
Basic concepts of the physical chemistry of soil constituents. Topics include clay mineralogy, soil organic matter, weathering processes, ion-exchange, extraction of sorbed compounds, formation of colloids, and the mobility of contaminants.

285. Plant Gene Transfer Techniques
Second semester. Three credits. Li
Techniques of plant gene delivery and transgenic plant production. Verification and analysis of transgenic plants.
Horticulture

203. Plant Diseases  
First semester. Three credits. Two class periods and one 2-hour laboratory. Prerequisite: BIOL 108 or 110.

von Bodman  
The causes, development and management of diseases of economic plants. Lectures cover general principles and laboratories review specific examples of plant diseases of horticultural and agronomic crops.

204. Integrated Pest Management  
First semester. Three credits. Gauthier  
Principles of integrated pest management covering insect, disease, and weed problems in agronomic crops, vegetables, fruits, turfgrass, ornamentals, and greenhouse production. Environmental impacts and pest control strategies will be covered.

212. Vegetable Crops and Their Environment  
Second semester. Four credits. Three class periods and one 2-hour laboratory period. Bible  
The responses of vegetable crops to mineral nutrients, soil pH, plant population, temperature, photoperiod, pest organisms and to the modification of these factors by technology. Radish, lettuce, tomato, cucumber, sweet corn, basil, califlower and watercress are grown by students in the laboratory.

213. Physiology of Economic Plants  
Second semester. Three credits. Two class periods and one 2-hour laboratory period. Prerequisite: BIOL 110 and CHEM 122 or 127. Bible  
Water uptake, water potential, transpiration, stomatal movement, ion uptake, nutrient deficiencies, respiration, photosynthesis, phytotormones, phytochrome, circadian leaf movement, flowering, dormancy, cold injury and allelochemicals.

225. Greenhouse Technology and Operations  
First semester. Four credits. Three class periods and one 2-hour laboratory period. Field trips required. Elliott  
Introduction to greenhouse systems with emphasis on structures, environmental control, root media, irrigation and fertilization, and pest control, in relation to requirements for plant growth and crop production. Laboratories provide experience in greenhouse operations and crop production.

226. Greenhouse Crop Production I  
Second semester. Three credits. Two class periods and one 2-hour laboratory period. Field trips required. Prerequisite: PLSC 225. Taught jointly with SAPL 26. Not open for credit to graduate students. Elliott  
Environmental and cultural requirements and scheduling of major greenhouse crops, exclusive of edible produce. Emphasis on cut flowers and flowering potted plants and bedding and garden plants produced for spring and early summer markets. Laboratories provide experience in crop production.

230. Floral Art  
Second semester. Two credits. One class period and one 2-hour studio period. Taught jointly with SAPL 030. Open to sophomores.  
The study of flower arrangement as an art form with emphasis on historical background, artistic principles, color harmony and care of perishable media. Individual expression is encouraged in the creation of floral composition.

231. Herbaceous Ornamental Plants  
Second semester. Three credits. Taught jointly with SAPL 031. Open to sophomores. Bridgen  
Identification, nomenclature and culture of over 160 herbaceous perennials, biennials, annuals and bulbous plants. Live plants and visual presentation are used to highlight plant characteristics and morphology. Lectures include discussions of organic growing, composting, plant morphology, trough and container gardens, and underground storage structure. Field trips to retail and wholesale businesses are a part of this class.

235. Advanced Floral Design  
Second semester. Two credits. Taught concurrently with SAPL 035. Not open for credit to graduate students. One class period and one 2-hour lab. Prerequisite: PLSC 230. Pastormerlo  
In-depth study of post-harvest requirements for specialized floral crops. Exposure to novel floral materials and abstract, tribute, high-style, and wedding designs. Retail price structuring, wire services, and mass-production concepts.

238. Plant Propagation  
Second semester. Three credits. Two class periods and one 2-hour laboratory period. Bridgen, Elliott  
Fundamental principles of reproducing plants by seeds, cuttings, grafting, layering, divisions, and tissue culture. Techniques of propagating plants to establish and maintain clones.

240. Nursery Management  
First semester, alternate years (odd). Three credits. Two class periods and one 2-hour laboratory period. Corbett  
Principles of field and container production of nursery stock. Emphasis on production practices for woody nursery stock from propogule to sale.

240W. Nursery Management  
Second semester. Three credits. Prerequisites: One of PLSC 213, BIOL 110, BIOL 201. BIOL 204. Li  
Principles of recombinant DNA and plant gene transfer technologies. Applications of plant biotechnology in agriculture, horticulture, forestry, human/animal health care, and pharmaceutical industry. Social and environmental impacts of plant biotechnology.

244. Garden Center Management  
First semester. Three credits. Taught concurrently with SAPL 71. Not open for credit to graduate students. Ashley  
Fundamentals related to horticultural specialty businesses with particular emphasis on the retail and contracting areas. Specialty and mass merchandising firms are considered and compared.

245. Landscape Plant Maintenance  
Second semester. Three credits. One three-hour class period. Taught concurrently with SAPL 68. Not open for credit to graduate students.  
Provides practical information on the planting and maintenance of trees and shrubs in the landscape. Includes learning how to plan landscape projects, install plant material and maintain the established landscape through proper pruning, mulching, irrigation, fertilization and other horticultural practices.

246. Biotechnology - Science, Application, Impact, Perception  
Second semester. Three credits. von Bodman  
Scientific, legal, and ethical aspects of Biotechnology application in agriculture, health medicine, forensics, and the environment. Designed for students with diverse departmental affiliations.

260. Woody Landscape Plants: Deciduous  
First semester. Three credits. Two class periods and one 2-hour laboratory. Auer  
Appropriate landscape use, ornamental features and taxonomy of deciduous ornamental trees, shrubs, vines and ground covers. Laboratories present field identification features and require the examination of plants in the landscape.

261. Woody Landscape Plants: Evergreen  
Second semester. Three credits. Two class periods and one 2-hour laboratory. Auer  
Appropriate landscape use, ornamental feature and taxonomy of coniferous or broadleaf evergreen ornamental trees, shrubs, vines and ground covers. Laboratories present field identification features and require the examination of plants in the landscape.

263. Fruit Culture  
First semester. Three credits. Offered in even-numbered years. Bible  
Biology of small fruit and tree fruit species, technology of fruit production, major aspects and recent advances in pomology.

264. Fruit Production Laboratory  
Second semester, alternate years (odd). Two credits. Two 2-hour laboratory periods.  
Practical application of techniques associated with the production of fruit crops. Emphasis is on apples, pears, peaches, raspberries, blueberries, and grapes. Oral and written reports are required. Field trips are required.

274. Plant Breeding  
Second semester. Three credits. Two class periods and one 2-hour laboratory period. Prerequisite: Biology: MCB 213 or consent of instructor. Offered in even-numbered years.  
Principles of cultivated plant improvement, breeding techniques and germplasm manipulation.

292. Plant Micropropogation  
First semester, odd-numbered years. Three credits. One class period and two 2-hour laboratory periods. Prerequisite: CHEM 122 or 127 and consent of instructor. Bridgen  
The use of aseptic techniques for the micropropogation of plants of economic interest. Laboratory techniques covered include rapid propagation of plants in vitro, meristem culture for the elimination of diseases, somaclonal variation, somatic embryogenesis and media preparation.

Landscape Architecture

202. Design of Small Spaces  
Second semester. Two credits. One class period and one 2-hour studio. Prerequisites: PLSC 255 and PLSC 275. Not open to Landscape Architecture majors.  
Studio-based course emphasizing the acquisition skills necessary for the landscape design for small spaces. The skills will include: visualization methods, methodology in design process, derivation of basic forms and planting design.

241C. Computer Applications in Landscape Architecture  
First semester. Three credits. Prerequisites: PLSC 256 and 262 or consent. Westa  
This course will provide basic knowledge of a wide variety of computer applications related to Landscape Architecture. A central theme of this course will be the selection and use of the appropriate applications and integrating data between applications.

247. Landscape Contracts  
Second semester. Three credits. Westa  
A study of the various contract documents, their legality, and their relationship to landscape construction and maintenance. Practice in writing contract
255. Landscape Design Drawing
First semester. Three credits. Three 2-hour studios. Open only with consent of instructor. Open to sophomores. Schwab
An introductory drawing course aiming to introduce the landscape design student to the communication of ideas through sketches and presentation drawings. One-point and two-point perspective and isometric drawing techniques are taught. Various drawing media are used in a studio environment.

256. Landscape Design Communication
Second semester. Three credits. Three 2-hour studios. Open only with consent of instructor. Open to sophomores. Alexopoulos
The presentation of landscape designs in plan form are covered through studio drawing assignments. The color rendering of plans, the making of cross-sections, elevations and models are studies in a studio environment.

262. Landscape Design Fundamentals
Second semester. Three credits. One lecture and two 2-hour studios. Prerequisite: PLSC 256 which may be taken concurrently. Open to sophomores. Miniutti
Introduction to basic landscape design concepts, theory and the design process.

265. Intermediate Landscape Design I
First semester. Four credits. One class period and two 3-hour studios. Prerequisite: PLSC 255, 262 and 275. PLSC 275 may be taken concurrently. Field trips are required. Miniutti
The development of a design process utilizing small-scale design projects. A comprehensive investigation of site analysis methods is also covered.

266. Intermediate Landscape Design II
Second semester. Four credits. Three 3-hour studios. Prerequisite: PLSC 265. Field trips are required. Schwab
Landscape design studio. Application of the design of landscapes: planning theory, land use planning, visual assessment, urban design, transportation, public participation.

267. Advanced Landscape Design
Second semester. Four credits. Three 3-hour studios. Prerequisite: PLSC 266 and 281. Field trips are required. Miniutti
A comprehensive course which covers the range of projects which the design professional might encounter in practice. Students will be expected to provide recommendations for case studies varying in subject and scale, depending on the particular expertise of the instructor.

268. Planting Studies in Landscape Architecture
First semester. Three credits. Three 2-hour studios. Prerequisite: PLSC 260, 261, 266. Open to landscape architecture majors only. Alexopoulos
The role and use of plants in the landscape architectural design process. Technical, functional, and design aspects of plantings are included. Not open to students who have passed PLSC 278. Field trips are required.

271. Professional Practice
Second semester. Three credits. Prerequisite: PLSC 256 and PLSC 262 or consent of instructor. Westa
The course will cover many of the business and professional aspects of Landscape Architecture including: various modes of practice, resumes and portfolios, licensure and ethics, developing and administering contracts, and preparing for the professional registration exam.

275. Landscape Design
First semester. Two credits. Two class periods. Open only with consent of instructor. Open to sophomores. Miniutti
An introduction to landscape architecture: landscape history, natural and human factors; planning and design for parks, housing, urban spaces, etc.

276. Community Planning and Design
First semester. Four credits. Three 3-hour studios. Prerequisite: PLSC 266 or consent of instructor. Open to landscape architecture majors only. Field trips are required. Westa
Studio based course which investigates current theories and design of large scaled landscapes with an emphasis on residential, commercial and industrial subdivisions as well as the redesign of town centers.

277. The Development of Landscapes
First semester. Three credits. Prerequisite: PLSC 275 or consent of instructor. Alexopoulos
The development of man-made landscapes through time and their influence on present styles and trends.

278. Planting Design
First semester. Four credits. Three 3-hour studios. Prerequisite: PLSC 260, 261, and 266. Alexopoulos
The use of plants to strengthen design concepts and to achieve special effects.

280. Landscape Construction Materials and Methods
First semester. Three credits. Two class periods and one 2-hour studio. Prerequisite: PLSC 256 or consent of the instructor. Schwab
Basic hard materials used in landscape construction: masonry, wood, metals, etc. Construction documents. Layout and detail drawings for landscape structures. Computer applications.

281. Landscape Site Engineering
Second semester. Three credits. One class period and two 2-hour studios. Prerequisite: PLSC 256. Alexopoulos
Fundamental site engineering concepts and methods are investigated. Basic grading and drainage of landform are emphasized with the aim to develop essential skills. Earthwork computation, drainage systems, sedimentation and erosion control, and roadway design are also covered.

290W. Environmental Planning and Landscape Design
Second semester. Three credits. Two class periods and one recitation period. Schwab
Theories, concepts and methods for planning and designing the land to meet societal needs and goals. Topics include landscape planning theory, land use planning, visual assessment, urban design, and other contemporary issues significantly affecting landscape development.

293. Seminar in Landscape Architecture
Either semester. One credit. Open only with consent of instructor. Course may be repeated with credit. Presentations of topics in landscape architecture.

Plant Science Research and Seminar

287. Field Study Internship
Either semester or summer. One to 6 credits. Hours by arrangement. Open to Upper Division students who have demonstrated outstanding academic ability and who possess excellent professional potential as identified by their advisor. Open only with consent of Head of the Department of Plant Science and the advisor. This course may be repeated provided that the sum total of credits earned does not exceed six.

Students will work with professionals in an area of research or management.

295. Seminar
Either semester. One credit. Open only with consent of instructor. Course may be repeated for credit.
Professional presentations of current topics in Plant Science.

298. Special Topics
Either semester. Credits and hours by arrangement. May be repeated for credit with a change of topic. Open only with consent of instructor.
Topics and credits to be published prior to the registration period preceding the semester offerings.

299. Independent Study
Either or both semesters. Credits and hours by arrangement. Open to qualified students with consent of instructor and Department Head. Students are expected to submit written reports. Course may be repeated for credit.

Political Science (POLS)

Department Head: Professor John T. Rourke
Department Office: Room 137, Monteith Building
For major requirements, see the College of Liberal Arts and Sciences section of this Catalog.

106. Introduction to Political Theory
Either semester. Three credits.
Major themes of political theory such as justice, obligation, and equality, and their relevance to contemporary political concerns.

121. Introduction to Comparative Politics
Either semester. Three credits.
A survey of institutions, politics, and ideologies in democratic and non-democratic states.

121W. Introduction to Comparative Politics

132. Introduction to International Relations
Either semester. Three credits.
The nature and problems of international politics.

132W. Introduction to International Relations

143. Introduction to Nonwestern Politics
Either semester. Three credits.
A survey of institutions, ideologies, development strategies, and the political processes in nonwestern culture.

173. Introduction to American Political Processes
Either semester. Three credits.
Analysis of the organization and operation of the American political system.

173W. Introduction to American Political Processes

201. Classical and Medieval Political Theory
First semester. Three credits.
An examination of Greek, Roman and early Judeo-Christian political ideas and institutions, and their relevance to the present.

202. Modern Political Theory
Second semester. Three credits.
Major political doctrines of the contemporary
period, and their influence upon political movement and institutions as they are reflected in the democratic and nondemocratic forms of government. 

203W. **Women in Political Development** (Also offered as WS 203W.) Second semester. Three credits.

Analysis of the role of women in the process of political development in Africa, Asia and Latin America. The importance of gender to the understanding of development and modernization will be explored and the ways in which change in traditional societies has affected the position of women, economically, socially and politically will be examined.

204. **Women and Politics** (Also offered as WS 204). Either semester. Three credits.

An introduction to feminist thought, the study of women as political actors, the feminist movement and several public policy issues affecting women.

204W. **Women and Politics**

206W. **Western Marxist Tradition** Either semester. Three credits.

Exploration of the social and political theories of Marx and Engels, and of later interpretations and modifications of their ideas.

207. **American Political Thought and Ideology** Second semester. Three credits.

American political thought from the colonial to the contemporary period. Political thought discussed as the ideological expression of the larger sociopolitical situation.

208. **Politics, Propaganda, and Cinema** Second semester. Three credits. Four class hours (three lecture/film, one discussion).

Lectures, discussions, and films from several nations serve to illustrate techniques and effects of propaganda, analyzing the pervasive impact that propaganda has on our lives. The course concentrates on the World War II era.

211. **Contemporary International Politics** Either semester. Three credits. Not open for credit to students who have passed POLS 213.

Problems in international relations with emphasis on changing characteristics of international politics.

212. **Global Interdependence and the Crisis of World Order** Second semester. Three credits.

The nature and meaning of interdependence: origins and consequences of development and underdevelopment; international resource politics; future world models.

215. **American Diplomacy** First semester. Three credits.

A chronological examination of the foreign relations of the United States from 1776 to the first World War.

216. **International Political Economy** Either semester. Three credits.

Politics of international economic relations: trade, finance, foreign direct investment, aid.

217. **Recent American Diplomacy** Second semester. Three credits.

The foreign relations of the United States from the first World War to the present.

218. **Inter-American Relations** Second semester. Three credits.

Major problems in inter-American relations; the Western hemisphere in contemporary world politics.


Instructions, forces and processes in the making of American foreign policy. Emphasis will be on contemporary issues.

220. **Simulation and Gaming in Foreign Policy** Second semester. Three credits.

A comparative study of foreign policy making. Use of computer-assisted simulation provides realistic experience in foreign policy decision making and international negotiation.

221. **National and International Security** Either semester. Three credits.

Key American national security issues as integral parts of the larger problem of global security.

222. **Foreign Policies of the Russian Federation and the Former USSR** Second semester, alternate years. Three credits.

The Soviet Union’s role in world affairs as background for studying the international consequences of the breakup of the USSR; the foreign policies of the former soviet republics among themselves, and of Russia and selected other republics.

224. **American Diplomacy in the Middle East** Either semester. Three credits.

The strategic, political, and economic interests that have shaped U.S. policy in the Middle East. U.S. responses to regional crises, peace efforts, arms transfers, covert operations and military intervention.

225. **International Organizations and Law** Second semester. Three credits.

The role of general, regional and functional international organizations and international law in modern diplomacy, with special attention to questions of war, peaceful settlement of disputes, and social and economic development.

226. **International Relations of the Middle East** Either semester. Three credits.

The foreign policies and security problems of Middle Eastern States; sources of regional conflict and competition – oil, water, borders, religion, ideology, alliances, geopolitics, refugees, and superpower intervention.

227W. **International Politics in East Asia** First semester. Three credits.

Comparison and analysis of foreign policies of the states of East Asia, with special emphasis on the impact of the former Soviet Union (Russia), People’s Republic of China, Japan, and the United States.

228W. **East Asian Governments and Politics** First semester. Three credits.

The processes of political modernization in Japan and other East Asian areas.

229. **Chinese Government and Politics** Second semester. Three credits.

Chinese political processes, with emphasis on ideology and problems of development.

230W. **Politics in Eastern Europe** Second semester. Three credits.

The politics of the East European states in a comparative and analytical framework, stressing ideology, political culture, participation, and elite behavior.

231. **Political Institutions and Behavior in Western Europe** Either semester. Three credits. Open to sophomores. Not open for credit to students who have passed POLS 233.

Comparative analysis of the governments and politics of Western Europe.

231W. **Political Institutions and Behavior in Western Europe** (Formerly offered as POLS 233.) Open to sophomores.

233. **Comparative Political Parties and Electoral Systems** Either semester. Three credits.

A focus on political party and electoral systems around the world, including advanced industrial nations, transitional nations, and less developed nations. Issues such as the relationship between electoral and party systems, democratic reform, voting behavior, and organization of political parties are examined.

233W. **Comparative Political Parties and Electoral Systems**

235. **Latin American Politics** First semester. Three credits.

Theories and institutions of Latin American politics, with emphasis on issues of stability and change.

236W. **Political Leadership in the Third World** Second semester, alternate years. Three credits.

The objectives and effectiveness of national leaders, with case studies from Asia, Africa, and Latin America.

237. **Politics of Russia and the Former Soviet Union** First semester. Three credits. Not open for credit to students who have passed POLS 238.

The social and political structure of the former Soviet Union, the causes and outcome of efforts to reform it, and the development of democratic politics in Russia and other former Soviet republics.

237W. **Politics of Russia and the Former Soviet Union** (Formerly offered as POLS 238.)

239W. **Politics in Africa** First semester, alternate years. Three credits.

The political systems in contemporary Africa; the background of the slave trade, imperialism, colonialism, and the present concerns of nationalism, independence, economic development and military rule. Emphasis on sub-Saharan Africa.

240. **Contemporary German Politics** First semester. Three credits.

The development of the German polity in the 20th century, focusing on the period since 1945: the forces leading to division in 1945; the comparative analysis of the two German States (1949-1990); and the politics of a unified Germany.

241. **American Political Parties** Either semester. Three credits. Prerequisite: POLS 173. Open to sophomores. Not open for credit to students who have passed POLS 243.

An analysis of the aims, organization, and growth of parties in the United States.

241W. **American Political Parties** (Formerly offered as POLS 243.) Open to sophomores.

242. **Political Opinion and Electoral Behavior** Either semester. Three credits.

Analysis of public opinion and its potential to affect government policies. Emphasis on explaining elections and the basis for voters’ decisions.
244. Politics of South Africa
First semester. Three credits.
Internal development of the South African state and the external response to apartheid policies, with special attention to both white and African politics, U.S. policy, and other selected topics.

246. Comparative State Politics
Second semester. Three credits. Not open for credit to students who have passed POLS 247.
A comparison of the political parties of the 50 states. The development and the relationship of the local and state parties in the federal system.

246W. Comparative State Politics
(Formerly offered as POLS 247.)

248. African-American Politics
Either semester. Three credits.
Political behavior, theory, and ideology of African-Americans, with emphasis on contemporary U.S. politics.

251. Law and Society
(Formerly offered as POLS 254.) Either semester. Three credits. When students intend to take several courses in the Judicial Process field (250’s series), it is recommended that 251 be taken first.
Leading schools of legal thought, fundamental principles and concepts of law, the basic framework of legal institutions, and judicial procedure. Particular attention is devoted to the general features of American law as it affects the citizen, and primary emphasis is placed on the function of law as a medium for attaining a balance of social interests in a politically organized society.

252. Constitutional Law
Either semester. Three credits.
The role of the Supreme court in expounding and developing the United States Constitution. Topics include judicial review, separation of powers, federalism, and due process.

253. Judiciary in the Political Process
Second semester. Three credits. Prerequisite: POLS 173.
The Supreme Court in the Political Process.

255. Politics of Crime and Justice
Either semester. Three credits.
Criminal justice in the United States, with emphasis on the links between law, politics, and administration.

256. Constitutional Rights and Liberties
Either semester. Three credits. Prerequisite: POLS 252 or HIST 235 or consent of instructor.
The role of the Supreme Court in interpreting the Bill of Rights. Topics include freedoms of speech and religion, criminal due process, and equal protection.

260. Public Administration
Either semester. Three credits.
The politics of public administration. Role of administrative agencies and officials in American national, state, and local governments.

263W. Urban Politics
(Also offered as Urban Studies 263W.) Either semester. Three credits. Not open for credit to students who have passed URBN 263.
Political systems and problems confronting urban governments.

264. Politics of Budgeting
Either semester. Three credits.
Examination of the decision-making processes and role of the budget in public bureaucracies and policy implementation. Contemporary controversies in budgeting are used to illustrate and apply basic principles.

264W. Politics of Budgeting
Second semester. Three credits.

270W. Connecticut State and Municipal Politics
First semester, alternate years. Three credits.
An examination of contemporary Connecticut politics on the state and municipal levels.

274. State and Local Government
Either semester. Three credits. Open to sophomores.
The practical working of democracy and the role of state and local governments.

275. The Presidency and Congress
First semester. Three credits.
The contemporary Presidency and its interactions with the Congress in the formation of public policy.

276. The Policy-making Process
Second semester. Three credits. Not open for credit to students who have passed POLS 277.
Introduction to the study of policy analysis. Consideration of description and prescriptive models of policy-making. Examination of several substantive areas of national policy in the United States.

276W. The Policy-making Process
(Formerly offered as POLS 277.)

278. Science, Technology, and Public Policy
Second semester, alternate years. Three credits. Hiskes
An examination of how policy is made regarding scientific and technological development; focusing on agencies, citizens and current issues in the areas of science and technology.

279. South Asia in World Politics
Either semester. Three credits.
Relations among countries of South Asia and between this region and the rest of the world. Problems of development and security confronting South Asian countries.

279W. South Asia in World Politics

287. Foreign Study
Either or both semesters. Credits (up to a maximum of 15) and hours by arrangement. May be repeated for credit. Consent of Department Head required, normally to be granted before the student’s departure. May count toward the major with consent of the advisor.
Special topics taken in a foreign study program.

288W. Senior Thesis
Either semester. Three credits. Hours by arrangement. Prerequisite: POLS 289. Open only with consent of instructor and Department Head. All honors and distinction students writing an honors or distinction thesis must register for this course in their last semester.

289. Senior Seminar
First semester. Three credits. Open only with consent of instructor.
Recommended for students in the Honors Program, required of distinction students not in the Honors Program, and open to other qualified students. A weekly seminar on selected topics in political science.

291V. Quantitative Analysis in Political Science (Q,C)
Either semester. Three credits. Prerequisite: Recommended preparation: High School Algebra II. Open to sophomores.

Explanation of the quantitative methods used in political science. Application of these methods for the analysis of substantive political questions.

296. Political Issues
Either semester. Three credits. May be repeated for credit with a change in subject matter. Open to sophomores.
An exploration of the fundamental nature of political conflicts on the national and international levels.

296W. Political Issues

1297. Supervised Field Work
Either or both semesters. Credits up to 12. Hours by arrangement. Open only with consent of the department head.

298. Special Topics
Either semester. Credits and hours by arrangement. With a change in content, may be repeated for credit. Prerequisites and recommended preparation vary.

299. Independent Study
Either or both semesters. Credits and hours by arrangement. This course may be repeated for credit with a change in subject matter. Open only with consent of instructor and department head.

Portuguese (PORT)

Head of Department: Professor David K. Herzberger
Department Office: Room 228, J.H. Arjona Building
Consult the Modern and Classical Languages Departmental listing in this Catalog for requirements for Majors in Portuguese.
Consult the Departmental Handbook for courses offered in the appropriate semesters and further description of these courses.

135-136. Elementary Portuguese I and II
Both semesters. Four credits each semester. Four class periods and one hour of laboratory practice. The fourth class period is devoted to culture and society. Not open for credit to students who have had three or more years of Portuguese in high school, except with Departmental consent.
Emphasis is on oral and written communication skills.

137-138. Intermediate Portuguese I and II
Both semesters. Four credits each semester. Four class periods including one 1-hour class on Portuguese, Brazilian and Afri-Portuguese culture and social issues, and one hour of laboratory practice. Prerequisite: PORT 136 or two years of Portuguese in high school.
Further development of understanding, speaking, reading and writing skills within a cultural setting. Readings to enhance awareness of the Portuguese-speaking world.

140. Major Works of Portuguese and Brazilian Literature in Translation
Either semester. Three credits. Knowledge of Portuguese is not necessary.
A study of major works selected from Portuguese and Brazilian writers.

193. Foreign Study
Either or both semesters. Credits and hours by arrangement. May be repeated for credit. Consent of Depart-

† Students taking this course will be assigned a final grade of S (satisfactory) or U (unsatisfactory).
220. Contemporary Portugal
Either semester. Three credits. Prerequisite: PORT 138 or consent of instructor.
An analysis of the social structures and cultural life of Portugal today.

221. Contemporary Brazil
Either semester. Three credits. Prerequisite: PORT 138 or consent of instructor.
An analysis of the politics, economics, social structures and cultural life of Brazil in relation to other Latin American countries.

224. Portuguese Composition
Either semester. Three credits. Prerequisite: PORT 138 or consent of instructor.
Treatment of the finer points of Portuguese grammar. Exercises in translation and free composition. Stylistic analysis of texts chosen from Portuguese and Brazilian authors, newspapers and magazines.

226. Modern Brazilian Literature
Either semester, alternate years. Three credits. Prerequisite: PORT 232-233, or 240 and 241, which may be taken concurrently.
Prose, poetry, and theatre of nineteenth- and twentieth-century Brazil.

227. Modern Portuguese Literature
Either semester, alternate years. Three credits. Prerequisite: PORT 232-233, or 240 and 241, which may be taken concurrently.
Prose, poetry, and theatre of nineteenth- and twentieth-century Portugal.

230. Studies in Portuguese Literature I
Either semester. Three credits. Prerequisite: PORT 138 or consent of instructor.
Selected novels, plays, and poems of the Middle Ages and the 16th, 17th, and 18th centuries. Literature in relation to society.

231. Studies in Portuguese Literature II
Either semester. Three credits. Prerequisite: PORT 138 or consent of instructor.
Selected novels, plays, and poems of the 19th and 20th centuries in relation to social and cultural issues.

232. Studies in Brazilian Literature I
Either semester. Three credits. Prerequisite: PORT 138 or consent of instructor.
Selected novels, stories, plays and poems from the 16th to the 19th century, focusing on a particular aspect of Brazilian cultural history.

233. Studies in Brazilian Literature II
Either semester. Three credits. Prerequisite: PORT 138 or consent of instructor.
Selected novels, stories, plays, and poems of the 19th and 20th centuries. Emphasis is on aesthetic, social and cultural qualities particular to Brazilian literature.

234. Portuguese Literature of the Discoveries
Either semester. Three credits. Prerequisite: PORT 138 or consent of instructor.
Selected readings from Camões’ Os Lusíadas, Fernão Mendes Pinto’s Peregrinação, História Trágico-Marítima, and other major works.

251. Advanced Portuguese Conversation
Either semester. Three credits. Prerequisite: Four years of high school Portuguese or PORT 138 or instructor’s consent.
Extensive practice in oral Portuguese based on authentic cultural materials. Development of language skills and vocabulary for effective communication and self-expression through debates and oral reports on Portuguese films and news programs viewed in class.

270. Business Portuguese
Either semester. Three credits. Prerequisite: PORT 138, which may be taken concurrently, or consent of instructor.
Intensive review of Portuguese grammar. Introduction to commercial terminology. Designed to meet the needs of students desiring to use Portuguese as a tool for industry or commerce.

275. Portuguese for Students With a Background in Other Romance Languages
Either semester. One credit. Consent of instructor.
Basic Portuguese grammar and intensive practice in reading prose and poetry, in preparation for the Ph.D. reading examination.

276. Portuguese for Reading Knowledge
Either semester. One credit. Consent of instructor.
Basic Portuguese grammar and intensive practice in reading prose and poetry, in preparation for the Ph.D. reading examination.

278. Foreign Study
Either or both semesters. Credits and hours by arrangement. May be repeated for credit. Consent of Department Head required, normally to be granted prior to the student’s departure. May count toward the major with consent of the advisor.
Special topics taken in a foreign study program.

279. Variable Topics
Either semester. Three credits. With a change in topic, may be repeated for credit. Prerequisites and recommended preparation vary.

280. Portuguese Seminar
Either semester. Credits and hours by arrangement. Prerequisite: Consent of instructor. With a change in content, may be repeated for credit.
A study of selected writers and problems in the literature of the Portuguese-speaking world.

283. Foreign Study
Either or both semesters. Credits and hours by arrangement. May be repeated for credit. Consent of Department Head required, normally to be granted prior to the student’s departure. May count toward the major with consent of the advisor.
Special topics taken in a foreign study program.

285. Variable Topics
Either semester. Three credits. With a change in topic, may be repeated for credit. Prerequisites and recommended preparation vary.

286. Special Topics
Either semester. Credits and hours by arrangement. With a change in content, may be repeated for credit. Prerequisites and recommended preparation vary.

288. Independent Study
Either or both semesters. Credits and hours by arrangement. Open only with consent of instructor. With a change in content, may be repeated for credit.

290. Portuguese Seminar
Either semester. Three credits. Prerequisite: PORT 138, which may be taken concurrently, or consent of instructor.
Intensive review of Portuguese grammar. Introduction to commercial terminology. Designed to meet the needs of students desiring to use Portuguese as a tool for industry or commerce.

291. Advanced Portuguese Conversation
Either semester. Three credits. Prerequisite: Four years of high school Portuguese or PORT 138 or instructor’s consent.
Extensive practice in oral Portuguese based on authentic cultural materials. Development of language skills and vocabulary for effective communication and self-expression through debates and oral reports on Portuguese films and news programs viewed in class.

292. Business Portuguese
Either semester. Three credits. Prerequisite: PORT 138, which may be taken concurrently, or consent of instructor.
Intensive review of Portuguese grammar. Introduction to commercial terminology. Designed to meet the needs of students desiring to use Portuguese as a tool for industry or commerce.

295. Variable Topics
Either semester. Three credits. Prerequisite: PORT 138 or instructor’s consent.
Intensive review of Portuguese grammar. Introduction to commercial terminology. Designed to meet the needs of students desiring to use Portuguese as a tool for industry or commerce.

298. Special Topics
Either semester. Credits and hours by arrangement. Prerequisite: Consent of instructor. With a change in content, may be repeated for credit. Prerequisites and recommended preparation vary.

299. Independent Study
Either or both semesters. Credits and hours by arrangement. Open only with consent of instructor. With a change in content, may be repeated for credit.

202Q. Principles of Research in Psychology
Either semester. Four credits. Three 1-hour lectures and one 2-hour laboratory/discussion. Prerequisite: PSYC 135 or 133 and STAT 100 or 110 (or Statistics Q 100 level). Open to sophomores.
Design and analysis of psychological research. Experimental and quasi-experimental designs, laboratory and correlational techniques, research ethics.

210W. Laboratory in Cognition
Semester by arrangement. Three credits. One 3-hour laboratory period and additional hours by arrangement. Prerequisite: PSYC 202Q, and PSYC 220 or 256, which may be taken concurrently. Rueckl
Selected experiments from the following topics: memory processes, categorization, language comprehension and problem solving.

211W. Psycholinguistics Laboratory
Either semester. Three credits. Two 3-hour laboratory periods. Prerequisite: PSYC 202Q. Recommended preparation: PSYC 221 or PSYC 256 or LING 202. May be taken concurrently. Tabor
Introduction to the experimental study of language understanding and use. Topics selected from among speech perception, word recognition, sentence processing, language production, and corpus phenomena.

215W. Laboratory in Sensation and Perception
Semester by arrangement. Three credits. Two 3-hour laboratory periods. Prerequisite: PSYC 202Q, and PSYC 254, which may be taken concurrently. Carello, Growney
Techniques for the study of sensory capacities and perceptual processes.
The techniques necessary for performing psychological research on young children; advanced topics.

236. Developmental Psychology
Either semester. Three credits. Prerequisite: PSYC 135 or 133. Open to sophomores. Gustafson, Sanders

Social behavior, personality, perception, cognition, language, intelligence, learning, biobehavioral processes, and research methodology in developmental perspective.

238. Child Psychology
Either semester. Three credits. Prerequisite: PSYC 236. Dickerson

Historical and contemporary theories of development. Includes Piaget, Vygotsky, Freud, Erikson, social-learning theory, ethological theory, and information-processing theory.

239. Current Topics in Developmental Psychology
Either semester. Three credits. Prerequisite: PSYC 236 or consent of instructor. With change of topic, may be repeated for credit. Selected topics (e.g., infant development, peer relations, cognitive development, and developmental psychology) that may vary with each offering.

249. Emotional/Behavioral Disorders of Childhood
Either semester. Three credits. Prerequisite: PSYC 236. Theory, research, treatment, and prevention in developmental psychopathology from infancy through adolescence.

253. Animal Behavior
Either semester. Three credits. Prerequisite: BIOL 100 or 102 or 107, and PSYC 132. Principles of animal behavior derived from a review of descriptive and analytic studies in laboratory and field. Sometimes offered in multimedia format.

258. Hormones and Behavior
Second semester. Three credits. Prerequisite: PSYC 253, and consent of instructor. Interactions among hormones, behavior, and psychological states and processes.

260. Computer Modelling of Cognitive Processes
Semester by arrangement. Three credits. Prerequisite: PSYC 254 or 256. Dickinson

Symbolic and connectionist approaches to modeling vision, problem solving, planning, deduction, language understanding, learning, and memory.

263. Laboratory in Animal Behavior and Learning
Either semester. Three credits. One 3-hour laboratory period and additional hours by arrangement. Prerequisite: PSYC 202Q, 253, and consent of instructor. Salamone

A laboratory course to supplement PSYC 253.

267. Laboratory in Physiological Psychology
Semester by arrangement. Three credits. One 3-hour laboratory period and additional hours by arrangement. Prerequisite: PSYC 202Q, and PSYC 257, which may be taken concurrently. Techniques employed in experimental investigation of the anatomical and physiological bases of behavior.

268. Industrial Psychology
Either semester. Three credits. Prerequisite: PSYC 135 or 133. Barnes-Farrell, Henning, Mellor, Sohn

Applications of psychology in the workplace: Measurement, personnel decisions, performance appraisal, training, motivation, worker attitudes, leadership, ergonomics and job design, workplace health and safety.

269. Introduction to Clinical Psychology
Either semester. Three credits. Prerequisite: 245 or 245W

History of clinical psychology as a profession; graduate training and ethical responsibilities; assessment and treatment of psychological disorders; and clinical sub-specialties.

270. Black Psychology
First semester. Three credits. Prerequisite: PSYC 135 or 133 and consent of instructor. Williams

Empirical and theoretical literature on psychological experiences of African Americans. Impact of race, culture, and ethnicity on psychological development.

270W. Black Psychology
Students taking this course will be assigned a final grade of S (satisfactory) or U (unsatisfactory).
206. Introduction to the History of Science
(Also offered as HIST 206.) First semester. Three credits. Open to sophomores. Consent of instructor is required.

207. Introduction to Sociology
Either semester. Three credits.

212. Language and Society
Either semester. Three credits. Lecture and laboratory work. Majors in sociology should take this required course in their sophomore year.

217. Deviant Behavior
Either semester. Three credits. McNeal
Behaviors labeled as deviant, such as crime, prostitution, suicide, alcoholism, drug abuse, and mental illness.

218. Juvenile Delinquency
Second semester. Three credits. Wright
An overview of sociological theory and research on juvenile delinquency.

219. Drugs and Society
Either semester. Three credits. Sanders
Drug taking as a social problem, the “war on drugs,” drug education, treatment and prevention approaches, the illegal drug market.

220. Sociology of Criminology
First semester. Three credits. Prerequisite: SCI 240, may be taken concurrently.

221. Sociological Perspectives on Asian American Women
(Also offered as AASI 221.) Either semester. Three credits.

222. Asian Indian Women
Either semester. Three credits. Prerequisites: SOCI 107, 115 or 125.

226. Modern Africa
Either semester. Three credits. Any course may be repeated for credit.

227. Revolutionary Social Movements Around the World
Either semester. Three credits. One 3-hour class per week. Open to sophomores. Lectures and documentary films on the Russian, Chinese, Vietnamese, Cuban and Nicaraguan revolutions and movements in South Africa and the Middle East.

228. Social Movements and Social Change
Structural analysis of social movements, the political role of movements and the development of the field of social movement research.

229. Independent Study
Either semester. Credits and hours by arrangement. Open only with consent of instructor. May be repeated for credit.


240. **Ethnicity and Race**  
Either semester. Three credits. *Oates, Villemez*  
Ethnic groups, their interrelations, assimilation, and pluralism. Culture, and identity that arise from differences in race, religion, nationality, region, and language.

240W. **Ethnicity and Race**  
Either semester. Three credits. *Ratecliff*  
Social factors shaping women's health, health care, and their roles as health-care providers.

242. **American Jewry**  
(Also offered as JUDS 242.) Either semester. Three credits. *Dashefsky*  
Historical, demographic, organizational, and sociopsychological perspectives.

242W. **American Jewry**

243. **Prejudice and Discrimination**  
Either semester. Three credits. *McNeal, Taylor*  
Sources and consequences of racial and ethnic prejudice and discrimination.

243W. **Prejudice and Discrimination**

244. **Sociology of Mental Illness**  
Either semester. Three credits. *Broadhead, Oates*  
Madness in human societies: its history, incipience, epidemiology, etiology, institutionalization, and other issues.

244W. **Sociology of Mental Illness**

246. **Human Sexuality**  
Either semester. Three credits. Open to sophomores.  
How sexual behavior is molded by culture and social structure. Among the topics are premartial sex, homosexuality, pornography, and rape.

246W. **Human Sexuality**  
Open to sophomores.

247. **Sociology of Health**  
Either semester. Three credits. *Ratecliff*  
Social factors related to health, illness, and health-care systems.

247W. **Sociology of Health**

248. **Aging in American Society**  
(Also offered as HDFS 248.) Either semester. Three credits. This course may be used only once to meet the distribution requirements. *Sheehan*  
Social gerontology: the role and status of older people in a changing society.

248W. **Aging in American Society**  
(Also offered as HDFS 248W.)

249. **Sociological Perspectives on Poverty**  
Either semester. Three credits. *Cazenave, Neubeck, Villemez*  
Poverty in the U.S. and abroad, its roots, and strategies to deal with it.

249W. **Sociological Perspectives on Poverty**

250. **Sociology of the Family**  
Either semester. Three credits. Open to sophomores. *McDonald*  
The American family, its changing forms and values, and the social conditions influencing it: mate selection, marital adjustment, the responsibilities and opportunities of parenthood, and resolving family crises.

250W. **Sociology of the Family**

252. **Sociological Perspectives on Women**  
Either semester. Three credits. *McDonald, Tuchman*  
The status of women in American society.

252W. **Sociological Perspectives on Women**

253. **Sociology of Religion**  
Either semester. Three credits.  
Religion in social context: differences of church, denomination, sect, and cult; religious culture, organization, and ideology.

253W. **Sociology of Religion**

255. **Population**  
Either semester. Three credits. *Hadden*  
Size, growth, composition and distribution of population; social factors in population change.

255W. **Population**

258. **The Developing World**  
 Either semester. Three credits. *Gugler*  
Social and economic conditions in Asia, Africa, and Latin America and attempts to improve them.

258W. **The Developing World**

259. **Energy, Environment, and Society**  
Either semester. Three credits.  
Sociological perspectives on energy production, distribution and consumption, environmental and social organization.

259W. **Energy, Environment, and Society**

260. **Social Organization**  
Either semester. Three credits. Prerequisite: SOCI 107. *Villemez, Weakliem*  
Social organization and structure in modern society. Sociology majors should take this required course in their junior year.

260W. **Social Organization**

265. **Complex Organizations**  
Either semester. Three credits. *Villemez*  
Theories and research on complex organizations in society; relationship between organizations and their environments; varieties of organizational forms, structures, and processes.

267. **Public Opinion and Mass Communication**  
Either semester. Three credits. *Ferree, Tuchman*  
Contemporary public opinion and ideology, the process and effects of mass communication, and the measurement of public opinion.

267W. **Public Opinion and Mass Communication**

268. **Class, Power, and Inequality**  
Either semester. Three credits. *Glasberg, Neubeck, Villemez*  
Inequality and its consequences in contemporary societies.

268W. **Class, Power, and Inequality**

269. **Political Sociology**  
Either semester. Three credits. *Glasberg, Neubeck, Weakliem*  
Social analysis of power, democracy and voting, society and the state, and political economy.

269W. **Political Sociology**

270. **Social Theory**  
Either semester. Three credits. Prerequisite: SOCI
293. Foreign Study
Either or both semesters. Credits and hours by arrangement up to a maximum of six credits. Consent of Department Head required, preferably prior to the student’s departure.
Special topics in a foreign-study program.

294W. Senior Thesis in Sociology
Either semester. Three credits. Prerequisite: Fifteen credits in sociology and consent of instructor and Department Head.

296. Field Experience
Either semester. Variable (1-9) credits, by arrangement. Class and field work by arrangement with instructor and field agency. May be repeated for credit, not to exceed 9 credits total for 296 and 296W. Prerequisite: Sociology 107. Logan, Neubeck, Ratcliff
Internship in a social-welfare agency or institution.

296W. Field Experience
Three credits may be taken for W credit.

297. Variable Topics
Either semester. Three credits. With a change in topic, may be repeated for credit. Prerequisites and recommended preparation vary.

298. Special Topics
Either semester. Credits and hours by arrangement. With a change in content, may be repeated for credit. A lecture course. Topics vary by semester.

299. Independent Study
Either semester. Credits and hours by arrangement. Open only with consent of instructor. With a change in content, may be repeated.

Spanish (SPAN)

Head of Department: David Herberger
Department Office: Room 228, J.H. Árjona Building
Consult the Modern and Classical Languages Departmental listing in this Catalog for requirements for Majors in Spanish.
Consult the Departmental Handbook for courses offered in the appropriate semesters and further description of these courses.

181-182. Elementary Spanish I and II
Both semesters. Four credits each semester. Four class periods and additional laboratory practice. Not open for credit to students who have had three or more years of Spanish in high school, except with Departmental consent.
Development of ability to communicate in Spanish, orally and in writing, to satisfy basic survival needs within a cultural setting.

183-184. Intermediate Spanish I and II
Both semesters. Four credits each semester. Four class periods and additional laboratory practice. Prerequisite: SPAN 182 or two years of Spanish in high school.
Further development of understanding, speaking, reading, and writing skills within a cultural setting. Readings to enhance cultural awareness of the Spanish-speaking world.

185-186. Spanish for Reading Knowledge
Both semesters. Three credits each semester. Open only to seniors and graduate students. Not open for credit to undergraduates who have had SPAN 181-182. May not be used to meet the undergraduate foreign language requirement or as a prerequisite for other Spanish courses.
Basic Spanish grammar and intensive practice in reading expository prose in a variety of subjects, for use as a research tool and in preparation for the Ph.D. reading examination.

187. Major Works of Hispanic Literature in Translation
Either semester. Three credits. Knowledge of Spanish is not required.
A study of major works selected from the best of Spanish and Spanish-American literature.

190. Language, Culture, and Health in Spanish-Speaking Societies
Four credits. Semester and hours by arrangement. Prerequisite: Two years of high school Spanish or equivalent and consent of instructor. Open to graduate and undergraduate students in the health professions as well as practicing health professionals. May be repeated once for credit with a change in topic. May not be used to meet the undergraduate foreign language requirement.
Content-based language instruction with a focus on the cultural construct and context of “health” in Spanish-speaking environments. Development of Spanish language skills through intensive work with authentic materials drawn from technical literature, fiction, print media, video, radio, and other sources.

193. Foreign Study
Either or both semesters. Credits and hours by arrangement. May be repeated for credit. Consent of Department Head required, normally before the student’s departure.
Special topics taken in a foreign study program.

199. Spanish Civilization to the Modern Period
Either semester. Three credits. Recommended preparation: SPAN 278 or consent of instructor.
An interdisciplinary course analyzing the politics, social structures, and cultural life of Spain from its beginnings to the start of the nineteenth century.

201. Ibero-American Civilization and Culture
Either semester. Three credits. Recommended preparation: SPAN 278 or consent of instructor.
History of the major social, intellectual, and artistic trends of Spanish-speaking America.

202. Studies in Spanish-American Literature
Readings and discussions of specific aspects of Spanish-American literature. May be repeated for credit once with a change of topic. Consult department for particulars each year.

204. Language and Culture of U.S. Hispanics
Either semester. Three credits. Prerequisite: SPAN 184 or consent of instructor.
Comparison of linguistic, historical and cultural backgrounds of various Hispanic groups in the U.S. through fiction, non-fiction, films, music, and guest speakers.

205. Contemporary Spanish America
Either semester. Three credits. Recommended preparation: SPAN 278 or consent of instructor.
An interdisciplinary course concerned with present-day cultural, social, and political structures of Spanish America. Revolution and counter-revolutionary ideas in contemporary society and the struggle for social, political and economic stability.

206. Contemporary Spain
Either semester. Three credits. Recommended preparation: SPAN 278 or consent of instructor.

An interdisciplinary course analyzing the politics, social structures and cultural life in Spain today. Spain in relation to Western Europe and the community of nations.

207. Women’s Studies in Spanish
Either semester. Three credits. Recommended preparation: SPAN 278 or consent of instructor.

208. Issues in Hispanic Thought
Either semester. Three credits. Recommended preparation: SPAN 278 or consent of instructor. With a change in topic, may be repeated for credit.
Selection for study of a major world issue debated in the Iberian Peninsula or in Ibero-America by great thinkers. A history of the issue, taking into account international cultural contexts.

209. Film and Literature
Either semester. Three credits. One three-hour class period. Recommended preparation: SPAN 278 or consent of instructor.
Films from the Spanish or Portuguese-speaking worlds are viewed and literature examined to show how literature is transformed into cinema.

210. Spanish for Social Workers
Either semester. Two credits. Two class periods. Open only to graduate students in the School of Social Work. Offered at the Hartford Campus.
Development of conversational skills within the cultural perspective of Hispanics in the U.S. Emphasis on intake interviewing techniques using vocabulary and structures relevant to human service contexts.

214. Topics in Hispanic Cultures
Either semester. Three credits. Recommended preparation: five semesters of college Spanish. May be repeated for credit with a change in topic.
Selected topics. Cross-disciplinary approach to the study of Peninsular and Hispanic American cultures: the colonial heritage in Latin America; intellectual traditions and national identities; cultural production under military regimes; and experience of exiles; among possible topics.

220. Introduction to Literary Study
Either semester. Three credits. Recommended preparation: SPAN 278 or consent of instructor.
Introduction to literary analysis through a variety of critical approaches: readings in poetry, drama, and prose fiction with explanation of terms useful to the study of literature.

223. Old Spanish Language and Literature
Either semester. Three credits. Prerequisite: SPAN 281.
Linguistic and literary analysis of Medieval and Renaissance Spanish texts.

224. Studies in Spanish Golden Age Literature
Either semester. Three credits. Recommended preparation: SPAN 200. May be repeated for credit once with a change in topic. Consult department for particulars each year.
Readings and discussions of specific aspects of Golden Age literature.

225. Studies in Spanish Literature of the Eighteenth and Nineteenth Centuries
Either semester. Three credits. Recommended preparation: SPAN 200. May be repeated for credit once with a change in topic. Consult department for particulars each year.
226. Studies in Spanish Literature of the Twentieth Century 
Either semester. Three credits. Recommended preparation: SPAN 200. May be repeated for credit once with a change in topic. Consult department for particulars each year. Readings and discussions of specific aspects of the literature of the period.

270. Business Spanish 
Either semester. Three credits. Prerequisite: SPAN 184 or consent of instructor.
Introduction to commercial terminology in Spanish. Designed to meet the needs of students desiring to use Spanish as a tool for industry or commerce.

278. Intermediate Spanish Composition 
Either semester. Three credits. Prerequisite: SPAN 184 or three or more years of Spanish in high school.
This course provides a thorough review of grammar and methodical practice in composition leading to command of practical idioms and vocabulary.

279. Spanish Conversation: Cultural Topics 
Either semester. Three credits. Recommended preparation: SPAN 278 or consent of instructor.
In-depth development of speaking skills through cultural readings, group discussions and oral presentations on selected topics concerning the Spanish-speaking world.

280. Composition and Reading for Speakers of Spanish 
Either semester. Three credits. Prerequisite: Consent of instructor.
Grammar, written composition, and readings for speakers of Spanish with little or no formal training. Emphasis is on Puerto Rican literature.

281. Great Works of Spanish Literature from Its Origins to the Golden Age 
Either semester. Three credits. Recommended preparation: SPAN 278 or consent of instructor.
The study of selected poems, plays, fables and novels reflecting the development of Spanish society from feudalism to world empire.

282. Literature of Crisis in Modern Spain 
Either semester. Three credits. Recommended preparation: SPAN 278 or consent of instructor.
The study of selected poems, plays, short fiction, and novels reflecting the clash between tradition and progress in nineteenth- and twentieth-century Spain.

289. Variable Topics 
Either semester. Three credits. With a change in topic, may be repeated for credit. Prerequisites and recommended preparation vary.

290. Spanish Phonetics 
Either semester. Three credits. Recommended preparation: SPAN 278.
A study of the sounds of the language and drills to improve pronunciation. Recommended for all majors and for those who expect to teach Spanish.

291. Advanced Spanish Composition 
Either semester. Three credits. Recommended preparation: SPAN 278.
Treatment of the finer points of Spanish grammar. Exercises in translation and free composition. Stylistic analysis of texts chosen from Spanish authors, newspapers and magazines.

292. Selected Topics in Hispanic Literature 
Either semester. Three credits. May be repeated for credit once with a change of topic. Consult department for particulars each year.

293. Foreign Study 
Either or both semesters. Credits and hours by arrangement. May be repeated for credit. Consent of Department Head required, normally to be granted prior to the student’s departure. May count toward the major with consent of the advisor.
Special topics taken in a foreign study program.

294. Literature of Puerto Rico and the Spanish Caribbean 
Either semester. Three credits. Recommended preparation: SPAN 278 or consent of instructor.
Readings and discussions of major authors and works of the Spanish Caribbean with special emphasis on Puerto Rico.

295. Spanish-American Literature: The Formative Years 
Either semester. Three credits. Recommended preparation: SPAN 278 or consent of instructor.
The emergence of the New World in the chronicles of the conquest and colonization of Spanish America. Selected texts from “barroco de Indias” (Sor Juana Inés de la Cruz), and from the period of political independence. The coming of age of Spanish-American literature with the pioneer texts of José Martí and the first “Modernismo.”

296. Great Works of Modern Spanish-American Literature 
Either semester. Three credits. Recommended preparation: SPAN 278 or consent of instructor.
Study of the most significant texts of “Modernismo” with focus on Rubén Darío. The “avant-garde” in Spanish America. The narrative of the “boom” and its impact on present-day literature.

297. Spanish-American Fiction 
Lectures, readings and reports on the development of the Spanish-American novel and short story.

298. Special Topics 
Either semester. Credits and hours by arrangement. With a change in content, may be repeated for credit. Prerequisites and recommended preparation vary.

299. Independent Study 
Either or both semesters. Credits and hours by arrangement. Open only with consent of instructor. With a change in content, may be repeated for credit.

Study Abroad in Spain
The University of Connecticut sponsors an academic program at the University of Granada, Spain, which is open to those who have successfully completed a fifth semester Spanish course or the equivalent. Courses include Spanish language and linguistics, literature, culture, history, economics, political science and art history.

Study Abroad in Latin America
Students who have taken at least two years of college-level Spanish are eligible for University of Connecticut sponsored programs in Argentina, Chile, the Dominican Republic and Mexico. Courses are offered in liberal arts and social sciences.

Statistics (STAT)
Head of Department: Professor D. Dey
Department Office: Room 428, Mathematical Sciences Building

For major requirements, see the College of Liberal Arts and Sciences section of this Catalog.

Credit restrictions: 100 level statistics courses are not open for credit to students who have passed a 200 level statistics course or who are taking such a course concurrently. Students can receive no more than four credits from Statistics 100 and 110.

100V. Introduction to Statistics I (Q, C) 
Either semester. Four credits. Three class periods and one discussion period. See credit restrictions above.
A standard approach to statistical analysis primarily for students of business and economics; elementary probability, sampling distributions, normal theory estimation and hypothesis testing, regression and correlation, exploratory data analysis. Learning to do statistical analysis on a personal computer is an integral part of the course.

110V. Elementary Concepts of Statistics (Q, C) 
Either semester. Four credits. Three class periods and one discussion period. See credit restrictions above.
Standard and nonparametric approaches to statistical analysis; exploratory data analysis, elementary probability, sampling distributions, estimation and hypothesis testing, one- and two-sample procedures, regression and correlation. Learning to do statistical analysis on a personal computer is an integral part of the course.

210Q. Introduction to Statistics II 
Either semester. Four credits. Prerequisite: STAT 100 or 110. Open to sophomores.
Analysis of variance, multiple regression, chi-square tests, and non-parametric procedures.

220Q-221Q. Statistical Methods (Calculus Level) 
Either semester. Three credits each semester. Prerequisite: MATH 114 or 116 or 121.
Basic probability distributions, point and interval estimation, tests of hypotheses, correlation and regression, analysis of variance, experimental design, non-parametric procedures.

224Q. Probability Models for Engineers 
Either semester. Three credits. Prerequisite: MATH 210Q or 220Q. Students may not receive more than three credits from STAT 224 and STAT 220 or from STAT 224 and STAT 230.
Probability set functions, random variables, expectations, moment generating functions, discrete and continuous random variables, joint and conditional distributions, multinomial distribution, bivariate normal distribution, functions of random variables, central limit theorems, computer simulation of probability models.

230Q-231Q. Introduction to Mathematical Statistics 
Both semesters. Three credits each semester. Prerequisite: MATH 210 or 220. Students may not receive credit for both STAT 230 and 315, or both STAT 231 and 316.
The mathematical theory underlying statistical methods. Probability spaces, distributions in one and several dimensions, generating functions, limit theorems, sampling, parameter estimation, Neyman-Pearson theory of hypothesis testing, correlation, regression, analysis of variance.
235Q. Elementary Stochastic Processes (Also offered as MATH 232Q.) Either semester. Three credits. Prerequisite: STAT 220 or 230 or MATH 231. Not open for credit to students who have passed MATH 232Q.

Conditional distributions, discrete and continuous time Markov chains, limit theorems for Markov chains, random walks, Poisson processes, compound and marked Poisson processes, and Brownian motion. Selected applications from actuarial science, biology, engineering, or finance.

242Q. Analysis of Experiments Either semester. Three credits. Prerequisite: STAT 201 or 220 or consent of instructor. Credit may not be received for both STAT 242 and 342.

Straight-line regression, multiple regression, regression diagnostics, transformations, dummy variables, one-way and two-way analysis of variance, analysis of covariance, stepwise regression.

243Q. Design of Experiments Second semester. Three credits. Prerequisite: STAT 201 or 220 or consent of instructor. Credit may not be received for both STAT 243 and 343.

Methods of designing experiments utilizing regression analysis and the analysis of variance.

252Q. Sampling Theory Either semester. Three credits. Prerequisite: STAT 231 or consent of instructor.

Sampling and nonsampling error, bias, sampling design, simple random sampling, sampling with unequal probabilities, stratified sampling, optimum allocation, proportional allocation, ratio estimators, regression estimators, super population approaches, inferences in finite populations.

253Q. Nonparametric Methods First semester. Three credits. Prerequisite: STAT 231 or consent of instructor.

Basic ideas, the empirical distribution function and its applications, uses of order statistics, one-two- and c-sample problems, rank correlation, efficiency.

261V. Statistical Computing Second semester. Four credits. Prerequisite: STAT 220 or STAT 230. Recommended preparation: An applied statistics course. Open only with consent of instructor.

Introduction to computing for statistical problems; introduction to the use of mathematical and statistical techniques to solve a wide variety of organizational problems. Topics include linear programming, network analysis, queueing theory, decision analysis.

294. Field Study Internship Either semester. Credits and hours by arrangement. Prerequisites: Completion of Lower Division General CLAS requirements. Completion with a grade of “C” or better of STAT 220 or STAT 230 and STAT 242 or STAT 243.

Supervised field work relevant to some area of Statistics with a regional industry, government agency, or non-profit organization. Evaluated by the field supervisor and by the instructor (based on a detailed written report submitted by the student).

295. Variable Topics Either semester. Three credits. With a change in topic, may be repeated for credit. Prerequisites and recommended preparation vary.

296. Undergraduate Research Either semester. Three credits. Hours by arrangement. Open only with consent of instructor.

Supervised research in probability or statistics. A final written report and oral presentation are required.

298. Special Topics Either semester. Credits and hours by arrangement. With a change in content, may be repeated for credit. Prerequisites and recommended preparation vary.

299. Independent Study Either semester. Credits and hours by arrangement. Open only with consent of instructor. May be repeated for credit.

Urban Studies (URBN)

Director, Urban Studies Program: Peter L. Halvorson
Office: Room 442, College of Liberal Arts and Sciences Building
For major requirements, see the College of Liberal Arts and Sciences section of this Catalog.

130. The City in the Western Tradition (Also offered as GEOG 130.) Either semester. Three credits. Allen, Cooke, Halvorson

A broad discussion of the role and structure of the city in the western tradition from ancient Mesopotamia to contemporary America. Special emphasis will be placed on the mechanisms by which cities and ideas about them have been diffused from one place to another and on the changing forces that have shaped the western city.


Halvorson

Introduction to the analysis of urban development with particular stress on those problems pertinent to the American central city. This course is also listed under Anthropology, Geography, and Sociology.

231. Internship in Urban Studies: Field Study Either semester. Credits, not to exceed three, by arrangement. Hours by arrangement with hosting agency. To be elected concurrently with URBN 232. Prerequisite: Consent of instructor. Cooke

A fieldwork internship program under the direction and supervision of a member of the Urban Studies faculty. Students will be placed in agencies or industries where their academic training will be applied. One 8-hour work day per week (or its equivalent) for the host agency during the course of the semester will be necessary for three academic credits.

232. Internship in Urban Studies: Seminar Either semester. Credits, not to exceed three, by arrangement. To be elected concurrently with URBN 231. Prerequisite: Consent of instructor. Cooke

Description, analysis, and evaluation of the fieldwork portion (URBN 231) of the internship. Written reports are required.

233. Urban Geography (Formerly offered as URBN 212.) (Also offered as GEOG 233.) Either semester. Three credits. Not open for credit to students who have passed GEOG 233. Halvorson, Meyer

Analysis of the growth, distribution, and functional patterns within and among Western cities. Particular attention is placed on applying urban geographical concepts to city planning problems.

241. The History of Urban America (Also offered as HIST 241.) Second semester. Three credits. Not open for credit to students who have passed HIST 241. Slave

The development of urban America with emphasis on social, political, physical, and environmental change in the industrial city.

241W. The History of Urban America (Also offered as History 241W.)

248. Urban Anthropology (Also offered as ANTH 248.) First semester. Three credits. Not open for credit to students who have passed ANTH 248. Magubane

A general course on urbanization, emphasizing contrasts between “developed” and “developing” countries.

259. Urban and Regional Economics (Also offered as ECON 259.) Second semester. Three credits. Prerequisite: ECON 218 or 219Q. Recommended preparation: ECON 111, 102 or 113 and One of: MATH 106Q, 113Q, 115Q, 118Q, or 120Q. Heffley, Miceli

Economic problems of cities and regions: urban markets for land, labor, and housing; location decisions of businesses and households; metropolitan transportation problems; urban/suburban fiscal relations; urban and regional environmental quality; and the economics of crime.

† Students taking this course will be assigned a final grade of S (satisfactory) or U (unsatisfactory).
Women’s Studies (WS)

Director, Women’s Studies Program: Mary Crawford
Office: Room 426 Beach Hall
For major requirements, see the College of Liberal Arts and Sciences section of this Catalog.

103. Introduction to Women’s Studies in the Social Sciences
First semester. Three credits.
An introduction to research on women and gender in a variety of social science fields. Considers interpersonal relationships, socioeconomic status, power and authority as women experience them and explores the myths and realities of difference between women and men, and of differences among women of different race, class or ethnic backgrounds in the U.S.

104. Introduction to Women’s Studies in the Arts
Either semester. Three credits. D’Alleva
Interdisciplinary examination of the representations of women and works by women in one or more of the following genres – drama, art, music, or film. Key issues of feminist criticism and scholarship in the arts are introduced and discussed.

124. Changing Roles of Women and Men: A Global Perspective
Either semester. Three credits.
Exploration of the social position and relations of women and men (political, economic, cultural and familial) in selected non-western societies. Emphasis is given both to understanding the origins of culturally distinctive patterns and to recognizing the ways in which these relationships have been and are being transformed.

193. Foreign Study
Either or both semesters. Credit and hours by arrangement. May be repeated for credit. Consent of program director required, normally before the student’s departure.

203W. Women in Political Development
(Also offered as POLS 203W.) Second semester. Three credits. Crewev
Analysis of the role of women in the process of development in Africa, Asia and Latin America. The importance of gender to the understanding of development and modernization will be explored and the ways in which change in traditional societies has affected the position of women economically, socially, and politically will be examined.

204. Women and Politics
(Also offered as POLS 204). Either semester. Three credits.
An introduction to feminist thought, the study of women as political actors, the feminist movement and several public policy issues affecting women.

210. History of Women and Gender in Early America
(Also offered as HIST 210.) Either semester. Three credits. Not open to students who have taken HIST 202 or WS 202 before fall 1998. Dayton
Compares the evolving gender systems of native American groups, transplanted Africans, and immigrant Europeans up to the early Nineteenth Century. Topics include women’s work, marriage and divorce, witch-hunting, masculinity, and women’s Revolutionary War roles.

215. History of Women and Gender in the United States, 1790-Present
(Also offered as HIST 215.) Either semester. Three credits. Not open to students who have taken HIST 202 or WS 202 before fall 1998. Porter-Benson
A discussion of the various forms of violence against women in our society, including rape, battering, incest and pornography; treats the social, political and personal meaning of violence.

224. Gender in the Workplace
First semester. Three credits.
An examination of the role of gender in shaping the American workplace and the lives of workers. Discussion of important issues such as comparable worth and sexual harassment drawing on research done in a variety of social science disciplines.

250. Feminisms
Three credits. Prerequisites: WS 103, 104, or 124. Meyers
Current feminist theories and related social and political issues.
This course may be repeated for credit with a change in content, may be repeated for credit. Prerequisites and recommended preparation vary.

279. Special Topics
Either semester. Three credits. Prerequisite: SAAG 090 or exemption by examination. Taught concurrently with ARE 150.

An introduction to agricultural economics, the role of agriculture in today’s United States economic system, and relationships that regulate the entire economic environment.

280. Agribusiness Management
Either semester. Three credits. Prerequisite: SAAG 050.

Covers concepts and techniques essential in managing an agribusiness firm. Topics include: finance, production planning, marketing, and personnel management.

086. Special Topics
Either semester. Credits and hours by arrangement. Open only with consent of instructor. May be repeated for credit with a change of topic.

087. Independent Study
Either or both semesters. Credits and hours by arrangement. Consent of instructor required. May be repeated for credit. Total credits allowed toward graduation requirements are restricted as outlined in Ratcliffe Hicks Section.

An independent study project is mutually arranged between a student and an instructor.

Agriculture (SAAG)

081. Introduction to Computer Use
(Formerly offered as SAME 001.) Either semester. Three credits. Two class periods and one 2-hour laboratory period.

Use of computers for solving problems and accessing information. Includes word-processing, spreadsheets, databases and presentation software.

082. Introduction to Agricultural Mechanics
Either semester. Two credits. One class period and one 2-hour laboratory.

Small gas engines, welding and other applications of agricultural equipment in animal science and horticultural operations.

083. Freshman Seminar
First semester. One credit. Singh.

A course designed to assist students in adjusting to college and improving their academic performance. Freshmen will learn about university resources and facilities, and strategies relating to study skills, problem solving, time management, and setting and achieving academic and personal goals.

Animal Science (SAAS)

004-005. Anatomy and Physiology of Domestic Animals
Both semesters. Three credits. Two class periods and one 2-hour laboratory period. Dinger, Riesen

A study of the anatomy and physiology of the animal body including characteristics that impact animal production systems. The physiology of reproduction and digestion will receive emphasis. Management practices and techniques used to maximize production efficiency will be included.

006. Nutrition and Feeding of Livestock
Second semester. Three credits. Two class periods and one 2-hour laboratory period. Stake

This course covers the basic nutrients present in feeds and their breakdown and use by animals. Methods of describing the nutritive value and properties of commonly used feedstuffs are discussed. Nutritive requirements, ration formulations, and feeding problems and practices are covered.

007. Animal Breeding and Genetics
Second semester. Three credits. Two-hour class period and two 2-hour discussion and practice period. Yousif

The principles of genetics, chemistry of nucleic acids, replication, transcription, translation and regulation of genes, population and quantitative genetics, and modern molecular genetic approaches as tools for breeding, and improving livestock production.

008. Introduction to Animal Science
First semester. Three credits. Two class periods and one 2-hour discussion or laboratory period. Taught concurrently with ANSC 120. Darre

The biological, physical and social factors that influence animal production and utilization.
025. Behavior and Training of Domestic Animals
Second semester. Three credits. Two class periods and one 2-hour laboratory. Taught concurrently with ANSC 125. Darre
Application of behavior of cattle, horses, sheep, goats, swine, and poultry to their management, training, and welfare. Basic principles of genetics and physiology of behavior, perception, training, learning, motivation, and stress with consideration of integrated behavioral management and animal welfare.

027. Introduction to Companion Animals
Second semester. Three credits. Taught concurrently with ANSC 127. Stake
Basic concepts of the nutrition, physiology, health and management of companion animals.

035. Horse Production
Second semester. Three credits. Two class periods and one 2-hour laboratory period. Dinger
This course entails the appraisal, structure, use, and management of light horses.

036. Light Horse Training and Management
First semester. Two credits. One class period and one 3-hour laboratory period. Prerequisite: SAAS 035. Callahan
The course includes instruction in the breaking and training of young horses.

037. Methods of Equitation Instruction
Second semester. Two credits. One class period and one 2-hour laboratory or discussion period. Taught concurrently with ANSC 237. Consent of instructor required. Callahan
The techniques and procedures of teaching equitation including the theories of riding and teaching methods. Practice teaching will be required under the supervision of the instructor.

038. Management of the Horse Breeding Farm
Second semester. Three credits. One class period and two 2-hour laboratory or discussion periods. Recommended preparation: SAAS 035. Dinger
This course is designed to develop technical and managerial skills necessary for operating horse farms. Programs for herd health, hoof care, nutrition, breeding, foaling and record keeping will be included.

040. Animal Products
First semester. Three credits. Two class periods and one 3-hour laboratory period. Faustman
An introduction to meat, dairy and poultry products. Issues concerning regulatory standards, nutritive value, safety and quality assessment will be emphasized. Laboratories will emphasize the production and processing of these animal food products. Field trips may be required.

052. Introduction to Poultry Industry
Second semester. Three credits. Two class periods and one 2-hour laboratory period. Darre
A practical application of scientific principles in the poultry industry. It will include classification, selection methods, breeding, incubation and chick development, brooding, nutrient requirements, processing and management practices.

064. Management Skills and Practices – Beef Cattle
Either semester. One credit. Hours by arrangement. May be repeated once for credit.
Practical experience in common management practices is offered by working in the University facilities under supervision.

Either semester. One credit. Hours by arrangement. May be repeated once for credit. Kazmer
Practical experience in common management practices is offered by working in the University facilities under supervision.

066. Management Skills and Practices – Horses
Either semester. One credit. Hours by arrangement. May be repeated once for credit. Darre
Practical experience in common management practices is offered by working in the University facilities under supervision.

067. Management Skills and Practices – Poultry
Either semester. One credit. Hours by arrangement. May be repeated once for credit. Darre
Practical experience in common management practices is offered by working in the University facilities under supervision.

068. Management Skills and Practices – Sheep
Either semester. One credit. Hours by arrangement. May be repeated once for credit. Hoogland
Practical experience in common management practices is offered by working in the University facilities under supervision.

069. Management Skills and Practices – Swine
Either semester. One credit. Hours by arrangement. May be repeated once for credit. Hoogland
Practical experience in common management practices is offered by working in the University facilities under supervision.

070. Livestock Production
First semester. Four credits. Three class periods and one 2-hour laboratory period. Offered in odd-numbered years. Kazmer
Biological and economic aspects of beef, sheep, and swine production. Field trips required.

076. Dairy Herd Management
First semester. Three credits. Two class periods and one 2-hour laboratory period. Taught concurrently with ANSC 275. Offered in even-numbered years. Kazmer
This course is concerned with the biological and economical aspects of commercial milk production, including: milking, sanitation, nutrition, record keeping, and the physiology and anatomy of milk secretion.

077. Applied Dairy Herd Management
Second semester. Three credits. Two class periods and one 2-hour laboratory period. Taught concurrently with ANSC 275. Offered in odd-numbered years. Kazmer
The organization and management of dairy farms with emphasis upon business and economic decision making. Management programs in the areas of nutrition, disease control, waste management, selection, reproduction and milking will be evaluated. Field trips are required.

081. Horse Selection and Evaluation
Second semester. Two credits. One 4-hour laboratory or discussion period. Taught concurrently with ANSC 281. Consent of instructor required. Bennett
Comparative evaluation, classification and selection of horses according to conformation, breed characteristics and performance. Judging skills including justification of placing through presentation of oral reasons will be developed. Field trips required.

088. Advanced Animal and Product Evaluation
First semester. Two credits. Two 2-hour laboratory periods. Taught concurrently with ANSC 288. May be repeated for credit once. Consent of instructor required.
Intensive training in the evaluation of selected species of farm animals or their products. Type standards and the relation of anatomical features to physiological function are emphasized. Evaluation skills including justification of decisions will be developed. Students enrolled in this course will have the option to participate on intercollegiate animal and product evaluation teams. Field trips are required, some of which may occur prior to the start of the semester.

094. Seminar
Second semester. One credit. One 2-hour discussion period. Zinn
A discussion of current employment opportunities in animal agriculture. In addition, students will prepare resumes and give oral presentations.

099. Independent Study
Either semester. Credits and hours by arrangement. Open only for third semester students with consent of instructor and Department Head. Total credits allowed toward graduation requirements are restricted as outlined in Ratcliffe Hicks Section. Andrew, Darre

098. Special Topics
Either semester. Credits and hours by arrangement. Open only with consent of instructor. May be repeated for credit with a change of topic. Total credits allowed toward graduation requirements are restricted as outlined in Ratcliffe Hicks Section. Andrew, Darre

096. Professional Internship
Either semester. Credits and hours by arrangement. Open only with consent of instructor. May be repeated for credit with a change of topic. Total credits allowed toward graduation requirements are restricted as outlined in Ratcliffe Hicks Section. Andrew, Darre

Natural Resources Management and Engineering (SAME)

096. Special Topics
Either semester. Credits and hours by arrangement. Open only with consent of instructor. May be repeated for credit with a change of topic. Total credits allowed toward graduation requirements are restricted as outlined in Ratcliffe Hicks Section. Andrew, Darre

099. Independent Study
Either or both semesters. Credits and hours by arrangement. Consent of instructor required. Students are advised to read the Ratcliffe Hicks regulation limiting the number of credits which may be applied to the minimum graduation requirements.

An independent study project is mutually arranged between student and an instructor.

Students taking this course will be assigned a final grade of S (satisfactory) or U (unsatisfactory).
015. Health and Disease Management of Animals
Second semester, alternate years (even). Three credits.
Bushmich, Khan
This course will include a study of the causes of diseases, practical preventive control measures and specific mammalian and poultry diseases.

098. Special Topics
Either semester. Credits and hours by arrangement. Open only with consent of instructor. May be repeated for credit with a change of topic. Total credits allowed toward graduation requirements are restricted as outlined in Ratcliffe Hicks Section.

099. Independent Study
Either or both semesters. Credits and hours by arrangement. Consent of instructor required. Course may be repeated for credit. Students are advised to read the Ratcliffe Hicks School regulation limiting the number of credits which may be applied toward graduation. An independent study project is mutually arranged between a student and an instructor.

Plant Science (SAPL)

003. Introduction to Plant Science
First semester. Four credits. Three class periods and one 2-hour laboratory period. Allinson
A general course designed to give students a broad view of the field of horticulture as well as a working knowledge of the fundamentals of plant growth.

017. Vegetable Production
First semester. Four credits. Three class periods and one 2-hour laboratory period. Bible
A general course dealing with the fundamentals of vegetable gardening and production. Lectures cover modern methods of culture and their influence on food quality. Selected vegetable crops are grown by students.

022. Introduction to Soil Science
First semester. Three credits. Two class periods and one 2-hour laboratory exercise or field trip. Schulthess
Physical and chemical properties of soils; nature and use of fertilizer and lime materials; management of soils for crop production including soil testing, tillage and fertilization practices, and conservation practices.

024. Turfgrass Management
First semester. Three credits. Two class periods and one 2-hour laboratory period. Taught concurrently with PLSC 124. Guillard
An overview of turfgrass adaptation, selection, and management. Topics include turfgrass growth, physiology, soil interactions, weeds and diseases-morphology and identification establishment, and maintenance. Cultural system practices for lawns, golf courses, athletic fields and other turf areas.

025. Greenhouse Operations
First semester. Four credits. Three class periods and one 2-hour laboratory period. Field trips required. Elliott
Introduction to greenhouse systems with emphasis on structures, environmental control, root media, irrigation and fertilization, and pest control, in relation to requirements for plant growth and crop production. Laboratories provide experience in crop production.

026. Greenhouse Crop Production I
Second semester. Three credits. Two class periods and one 2-hour laboratory period. Field trips required. Prerequisite: SAPL 025. Taught jointly with PLSC 226.

029. Forage Crops
First semester. Three credits. Two class periods and one 2-hour laboratory period. Allinson
A course on the principles of producing and utilizing pasture, hay and silage crops for forage. Emphasis will be placed on environmental, soil and economic factors in forage production. Details of varietal selection, seeding methods, fertilization, cutting management, pest control, and storage will be discussed for each of the major grass and legume species used in the northeast.

030. Floral Art
Either semester. Two credits. One class period and one 2-hour studio period. Taught concurrently with PLSC 230.
The study of flower arrangement as an art form with emphasis on historical background, artistic principles, color harmony, and care of perishable media. Individual expression is encouraged in the creation of floral composition.

031. Herbaceous Ornamental Plants
Second semester. Three credits. Taught jointly with PLSC 231. Bridgen
Identification, nomenclature and culture of over 160 Herbaceous perennials, biennials, annuals and bulbous plants. Live plants and visual presentation are used to highlight plant characteristics and morphology. Lectures include discussions of organic growing, composting, plant morphology, trough and container gardens, and underground storage structure. Field trips to retail and wholesale businesses are a part of this class.

035. Advanced Floral Design
Second semester. Two credits. One class period and one 2-hour studio period. Prerequisite SAPL 030. Taught concurrently with PLSC 235.
In-depth study of post-harvest requirements for specialized floral crops. Exposure to novel floral materials and abstract, tribute, high-style, and wedding designs. Retail price structuring, wire services, and mass-production concepts.

041. Plant Pest Control
First semester. Three credits. Two class periods and one 2-hour laboratory period.
A practical survey of practices used for insect, disease and weed pests of turf, flowers, shrubs, trees and food crops. Consideration will be given to quarantine, mechanical, biological and chemical means of control. Field trips may be required.

042. Integrated Pest Management
Second semester. Three credits. Three class periods. Prerequisite: SAPL 041 or consent of instructor. Gauthier
An overview of integrated pest management (IPM) techniques, from development to implementation, with horticultural crops.

046. Fruit Production
Second semester. Three credits.
A practical course in fruit production, including information for home fruit growing. Particular emphasis is directed toward the culture of apples, peaches, pears, blueberries, grapes, raspberries and strawberries.

047. Fruit Production – Laboratory
Second semester. Two credits. Two 2-hour laboratory periods. Prerequisite: SAPL 046, which may be taken concurrently.
A practical laboratory in the techniques and methods of fruit production and pruning of fruit crops. Emphasis is directed toward apples, peaches, pears, blueberries, grapes and raspberries. Field trips are required.

059. Evaluating and Staging Horticultural Materials
First semester. One credit. Hours by arrangement. Open only with consent of instructor. This course may be repeated once for credit. Bridgen
Organization and staging of horticultural exhibits and contests suitable for fairs, garden clubs, and community projects.

060. Nursery Maintenance
First semester. Three credits. Two class periods and one 2-hour laboratory period. Corbett
A consideration of the culture, care and maintenance of shade trees and nursery stock. Laboratory periods will be devoted to planting, pruning and maintenance of shade trees and nursery material. At least one field trip will be required.

062. Plant Propagation
Second semester. Three credits. Two class periods and one 2-hour laboratory period. Bridgen
The study of methods used to reproduce agricultural and horticultural crops. Discussion will emphasize sexual and asexual propagation techniques. Field trips are required.

066. Plant Materials, Evergreen Plants
Second semester. Three credits. Two class periods and one 2-hour laboratory period. Corbett
Trees, shrubs and vines will be studied. Lectures will be devoted to the characteristics, ornamental value and selection of evergreen plants. Laboratory periods will be devoted to identification.

067. Plant Materials, Non-Evergreen Plants
First semester. Three credits. One class period and two 2-hour laboratory periods. Prerequisite: SAPL 066. Corbett
Trees, shrubs and vines will be studied. Lectures will be devoted to the characteristics, ornamental value and selection of non-evergreen plants. Laboratory periods will be devoted to identification.

068. Landscape Plant Maintenance
Second semester. Three credits. Taught concurrently with PLSC 245. Auer
Lectures will emphasize the ecological dynamics of altered landscapes related to the planting and maintenance of established man-made landscapes. The relationship of ecology to plant installation, plant care during establishment period, and plant care after establishment will be covered. Protection of existing plants during construction and plant-landscape standards will be discussed.

069. Landscape and Planting Design
Second semester. Four credits. Two class periods and two 2-hour laboratory periods. Prerequisite: SAPL 031, 066, and 067 or consent of instructor. Corbett
The principles and techniques of landscaping the home grounds to include site analysis, drawing techniques, selections of materials, and selecting plants to fit the design.

071. Horticultural Retailing
First semester. Three credits. Taught concurrently with PLSC 244. Ashley
A discussion of the principles of retailing as applied
to the sale of horticultural crops. Emphasis is given to planning, customer preference, competition, merchandising, pricing and inventory as they apply to landscaping, flower shop and garden center management.

1074. Horticulture Production Practicum – Nursery
Second semester. Credits and hours by arrangement. Prerequisite: SAPL 060. Consent of instructor. Corbett
Students will be responsible for planning, producing, and marketing a nursery crop. Students may use private facilities or the Ratcliffe Hicks C.R. Burr Teaching Nursery.

1075. Horticulture Production Practicum – Vegetables
Second semester. Credits and hours by arrangement. Prerequisite: SAPL 017. Consent of instructor. Ashley
Students will be responsible for planning, producing, and marketing a vegetable crop on a commercial scale. Requires the availability of private production facilities.

† Students taking this course will be assigned a final grade of S (satisfactory) or U (unsatisfactory).

096. Special Topics
Either semester. Credits and hours by arrangement. Open only with consent of instructor. May be repeated for credit with a change of topic. Total credits allowed toward graduation requirements are restricted as outlined in Ratcliffe Hicks Section.

099. Independent Study
Either or both semesters. Credits and hours by arrangement. Consent of instructor required. Course may be repeated for credit. Total credits allowed toward graduation requirements are restricted as outlined in Ratcliffe Hicks Section.

An independent study project is mutually arranged between a student and an instructor.