Accounting (ACCT)

Head of Department: Professor Richard F. Kochanek

Department Office: Room 417, School of Business

For major requirements, see the School of Business 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.

230P. Advanced Accounting

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

260. 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.

264. Advanced Federal Taxes and Tax Research

Second semester. Three credits. Prerequisite: ACCT 260.

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 preparation: 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. Altobello
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, 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**

257. **Benefit Cost Analysis and Resource Management**
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 Junior - Senior 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 Junior - Senior 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 resource 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.
Agriculture and Natural Resources (AGNR)

193. Foreign Study
Either or both semesters. Credits and topics must be approved by department head or dean of the College of Agriculture and Natural Resources. Courses taken in agriculture, natural resources, and related areas as part of approved Study Abroad programs. May be repeated for credit with change of topic.

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, and 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.

231. Agriculture and Natural Resources Internship
Either semester or summer. One to six credits. Open to Junior - Senior 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.

234. Foreign Study
Either or both semesters. Credits and topics must be approved by department head or dean of the College of Agriculture and Natural Resources. Courses taken in agriculture, natural resources, and related areas as part of approved Study Abroad programs. May be repeated for credit with change of topic.

239. 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. Credit and hours by arrangement. Prerequisite: Open 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, officer/ship/leadership. Air Force mission, military as a profession, and basics of flight.

114. Air Force Studies II
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 III
First semester. One credit. One class period and one 2-hour leadership seminar.
Study of air power from balloons through World War II, WW I, Intervar Years, WW II. Principles of war, Berlin Airlift. Development of communication skills.

124. Air Force Studies IV
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 of study requirement for private pilot’s written examination. (FAC) 203-236. 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 Commands.

Allied Health (AH)

Head of Department: Professor Thomas Miller
Department Office: Room 323, 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)
Cytoatechology (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, 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 pathologies, 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
(Also offered as AASI 215.) 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 AASI 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.

220. Cancer and Your Health
(Formerly offered as CYTO 220.) First semester. Three credits. Three hours of lecture. Prerequisite: One course in Biology or concurrent enrollment in a Biology course.
This course introduces cancer risk education, causes, early detection, prevention, and public education.

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 statistics, 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 110 or 111.

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.
Learning theory and counseling strategies; role of health professional as teacher and counselor; communicating with special groups, individuals and groups.

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.
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.
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.

American Sign Language (ASLN)

Head of Department: Professor David K. Herzberger
Department Office: Room 228, J.H. Arjona Building

101-102. Elementary Levels I and II
103-104. Intermediate Levels I and II
101 and 103 are offered in the first semester, and 102 and 104 in the second. Please refer to the Critical Languages course descriptions in this publication. Consult the Program Director in Arjona 128 or at Ed.Benson@UConn.edu for more information.

Animal Science (ANSC)

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.
For 2-year course listing, refer to Ratcliffe Hicks School of Agriculture (SAAS).

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 physioloogy 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.
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, Dzurec
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, 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/laboratory 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. Reproduction 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, Silburt
Basic principles in tumor biology will be presented with an emphasis on phenotypic changes in transformed cell morphology and behavior. The biochemical 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 risks of cancer. Activation of protooncogenes, 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.

222. Growth Biology and Metabolism of Domestic Livestock
Second semester. Three credits. Two class periods and one 2-hour discussion period. Recommended preparation: 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.

222W. Growth Biology and Metabolism of Domestic Livestock

224. Food Microbiology and Safety
Second semester. Three credits. Prerequisite: BIOL 107. A one semester course in organic chemistry is recommended. 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, Silburt
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, Silburt
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.

227. Food Microbiology Laboratory
Second semester. Even numbered years. One credit. One 3-hour laboratory session. Recommended preparation: MCB 229, Venkitanarayanan
An introductory laboratory course in sampling of foods for microbiological analysis, enumeration of microorganisms in foods, and isolation and identification of major foodborne pathogens from foods.

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 laboratory and one 1-hour laboratory. Open to students 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 types and breeds and their 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 laboratories 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 currently 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, biochemistry, 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. 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.

259. Laboratory Animal Science
Second semester. Three credits. Two class periods and one 2-hour laboratory or discussion period. Prerequisite: BIOL 107 or 108 or equivalent 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.

271. Livestock Management
First semester. Four credits. Three class periods and one 2-hour laboratory period, Haagland
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. Taught concurrently with SAAS 076, 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 discussion period. Taught concurrently with SAAS 077, 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. **Bennet**

Classification, form to function, relationships, grades and value differences of live stock are included. Objective and subjective methods of appraisal are used to evaluate beef cattle, horses, sheep and swine.

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. **Hoogland**

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. **Bennet**

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 reasons 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.

**Anthropology (ANTH)**

*Head of Department: Professor Jocelyn Linnekin*

*Department Office: Room 311, Manchester Hall*

**200W. 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. **Bee**

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 230. **Dussart**

An introduction to the study 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 WS 231.) First semester. Three credits. **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. McBrearty
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. Soss
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.

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.

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.

252. Native American Arts
(Also offered as ARTH 236.) Either semester. Three credits. Not open for credit to students who have passed ARTH 256. One 3-hour class period. Valentino
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.

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. Prerequisite: ANTH 214. McBride
The analysis, interpretation, and presentation of various kinds of archaeological artifacts, floral and faunal remains and sedentary contexts from excavated sites.

263. Ethnohistory of Native New England
Either semester. Three credits. McBride
Combines archaeological and ethnohistorical 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. McBrearty
The African archaeological record from first artifacts to historic times. The stone age, 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. McBrearty
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, Linnenkin
Theoretical foundations and basic methods used to collect and analyze cultural data.

269. World Religions
Either semester. Three credits.
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.

273. **Women in the Bible**  
(Also offered as WS 273.) Either semester. Three credits. Prerequisite: INTD 294.  
An introduction to Biblical interpretation from a feminist perspective, examining how women are represented in the Hebrew Scriptures and the New Testament. Issues of authorship, translation, point of view, cultural context and language.

274. **Women and Religion**  
(Also offered as WS 270.) 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.  
Popular 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. *Sostis*  
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.  
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.

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### Arabic (ARAB)

**Head of Department:** Professor David K. Herzberger  
**Department Office:** Room 228, J.H. Arjona Building

101-102. **Elementary Levels I and II**  
First and second semesters. Three credits. Prerequisite: ARAB 101. *McBride*  
Elementary Arabic and Culture.

103-104. **Intermediate Levels I and II**  
First and second semesters. Three credits. Prerequisite: ARAB 102. *McBride*  
Intermediate Arabic and Culture.

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**  
Either or both semesters. Credits and hours by arrangement. Consent of Department Head required, normally before the student’s departure to study abroad. May be repeated with a change in course content.  
Special topics taken in a foreign study program.

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### Studio Courses

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

113. **Foundation: Criticism and Interpretation**  
First semester. Three credits. Open only to students who have taken ARAB 232.  
An introduction to various current critical approaches to the producers, contexts, audiences, and histories of contemporary visual culture.

193. **Foreign Study**  
Either or both semesters. Credits and hours by arrangement. Consent of Department Head required, normally before the student’s departure to study abroad. May be repeated with a change in course content. Special topics taken in a foreign study program.

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.  
Introduction to techniques and aesthetics of drawing, with emphasis on the camera.

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 credit 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. Graph 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 a 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.

241. Figure Painting
Either semester. Three credits. Two 3-hour studio periods. Prerequisite: ART 153, ART 164.
Investigations in figurative/narrative painting.

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.
Untraditional 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 156 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. Open to sophomores.
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. 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. May be repeated with a change in course content.
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 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.
Section two: 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 Junior-Senior course work and consent of instructor from the major.

296. Cooperative Education in Art
Either semester. Three credits. Hours by arrangement. Prerequisite: Junior - Senior 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.

† Students taking this course will be assigned a final grade of S (satisfactory) or U (unsatisfactory).

For advanced students to develop a special project in advanced studio art.

Art History (ARTH)
Head of Department: Professor Judith Thorpe
Department Office: Room 100, Art Building

209. History of the Print
Either semester. Three credits.
Survey of printmaking in Europe and America from the Renaissance to the present.

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

243W. Greek Art
Open to art history and art majors; others with consent of instructor.

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

246W. Roman Art
Open to art history and art majors; others with consent of instructor.

250. Art of the Northern Renaissance
Either semester, alternate years. Three credits.
Painting, sculpture, graphic arts of the Lowlands and Germany, 1400-1600.

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.

255. 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.

257W. Early Medieval Art
Open to art history and art majors; others with consent of instructor.

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

258W. Romanesque Art
Open to art history and art majors; others with consent of instructor.

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

259W. Gothic Art
Open to art history and art majors; others with consent of instructor.

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

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.

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.
Major trends in painting in China from the Han Dynasty to the present; in Japan from the Nara Period to the present.

289. Buddhist Art in the Orient
Either semester, alternate years. Three credits.

291. Contemporary Art
Either semester. Three credits.
Topics in the art of the second half of the twentieth century.

291W. Contemporary Art
Open to art history and art majors; others with consent of instructor.

292. Impressionism and Post-Impressionism
Either semester. Three credits.
Topics in French Painting, 1860-1900.

292W. Impressionism and Post-Impressionism
Open to art history and art majors; others with consent of instructor.

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: Junior - Senior 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 200-level courses in Art History or consent of instructor.
An introduction to the methods of Art Historical analysis.

299. Independent Study
Either semester. Variable credit to a maximum of 6 credits. May be repeated for a total of 6 credits. Limited to advanced students 7th semester or higher with a departmental G.P.A. of 3.0 or higher. Consent of instructor required. Exceptions only by approval of Department Head.
Designed for advanced students who wish to pursue the study of a special topic, culminating in a project in art history.

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
(Also offered as AH 215.) First semester. Three credits. Palmiswamy
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 AH 216.) Second semester. Three credits. Palmiswamy
Examination of traditional medical systems of Asian origin and their prevalence in the United States.

† Students taking this course will be assigned a final grade of S (satisfactory) or U (unsatisfactory).
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. Purkayastha
An overview of social structures and inter-group relations focusing on the experience of Asian American women.

222. Asian Indian Women
(Also offered as SOCI 222.) First semester. Three credits. Prerequisites: SOCI 107, 115 or 125.
How gender, class and ethnicity/race structure everyday lives of Asian Indian women in both India and the United States.

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

239. Geographical Perspectives on 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 ethnoburb. Diversity among Asian Americans, and comparison with other ethnic groups.

268. Japanese Americans and World War II
(Also offered as HIST 268.) Either semester. Three credits. Buckley
The events leading to martial law and executive order 9066, the wartime experience of Japanese Americans, and national consequences.

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.

287. East Asia to the Mid-Nineteenth Century
(Also offered as HIST 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 HIST 287W.)

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.

Biology (BIOL)

Students with inquiries about an undergraduate major should go to Torrey Life Sciences Building, Room 165. For major requirements, see the College of Liberal Arts and Sciences section of this Catalog.

For course descriptions of Biological Sciences, see these topics listed alphabetically throughout this Directory of Courses:
Ecological and Evolutionary Biology (EEB)
Molecular and Cellular Biology (MCB)
Physiology and Neurobiology (PNB)

102. Foundations of Biology
Either semester. Four credits. Three class periods and one 2-hour laboratory period. Not open for credit to students who have completed a year of advanced biology in high school. Students may not receive more than 12 credits for courses in Biology at the 100's level. A laboratory course designed for non-science majors; surveys major biological principles with emphasis on their importance to humans and modern society.

103. The Biology of Human Health and Disease
(Also offered as PVS 103.) First semester. Four credits. Three lecture periods and one 2-hour laboratory. This course may not be combined with BIOL 102 to satisfy the General Education Group VIII Requirement. Not open for credit to students who have passed PATH 103. Smolin, Terry
A laboratory course which introduces the concepts of biology and their application to the individual, society and humankind by focusing on health and disease issues.

107, 108. Principles of Biology
Either semester. May be taken in either order. Four credits. Three class periods and one 3-hour laboratory period. Students may not receive more than 12 credits for courses in biology at the 100’s level. A course in high school level chemistry or concurrent enrollment in CHEM 127 are recommended for students enrolling in 107. A course designed to provide a foundation for more advanced courses in Biology and related sciences. Topics covered include molecular and cell biology, animal anatomy and physiology (BIOL 107); ecology, evolution, genetics, and plant biology (BIOL 108). Laboratory exercises in BIOL 107 include dissection of preserved animals.

110. Introduction to Botany
First semester. Four credits. Three class periods and one 3-hour laboratory period. Students may not receive more than 12 credits for courses in biology at the 100's level. Goffinet
Structure, physiology and reproduction of seed plants as a basis for an understanding of the broader principles of biology as well as the relation of plants to human life. Includes a survey of the important groups throughout the plant kingdom.

196. Topics in Modern Biology
Either semester. One credit. One class period. Concurrent enrollment in BIOL 107 or 108 required. May be repeated for credit with a change in content. Prerequisites: 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 ECE 272.) First semester. Three credits. Prerequisite: BIOL 107. Corequisite: PHYS 151Q and MATH 210Q. Open to sophomores. Fox

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 both be 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.

254. 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.

261. Biomechanics
Second semester. Four credits. Prerequisite: BME 210.


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.

272. Advanced Biomaterials
Semester by arrangement. Hours by arrangement. Three credits. Prerequisites: BME 210 and BME 271.

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 290.

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 as 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 as 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 Junior-Senior level major requirements of the School of Business.

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)

272. Business Law
Alternate semesters. Three credits. Prerequisite: BLAW 271.

This 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 view points.

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 included are contracts, sales, and negotiable instruments. Also covered are aspects of agency, partnerships, corporations, limited partnership, 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 Freshman-
Sophomore level School of Business 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. Prerequisite: Announced separately for each offering. Starting costs may be repeated for credit. Classroom course in special topics in law as announced in advance for each semester.

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 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 114 or MATH 116, 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; homogenous, heterogenous, 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: CHEM 244. Not open for credit to students who have passed CHEM 280.

Structure, properties, and chemistry of high polymers; solution and phase behavior; physical states, viscoelasticty 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 bioproducts.

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; aeriation 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
Semester, credits and 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.

299. Introduction to Research
Either 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. Preparation for one-semester courses in organic chemistry and biochemistry. Atomic structures, chemical bonding, chemical reactions, stoichiometry, states of matter, and theories of solutions. Does not fulfill the two-semester general chemistry requirement for majors in biology, chemistry, pharmacy, physics and agriculture and natural resources. Does not satisfy the admission requirements of medical and dental schools. With high grade, may serve as a prerequisite for CHEM 128 or 135.

127Q-128Q. General Chemistry
Either semester. Four credits. Three class periods and one 3-hour laboratory period. Students who have passed CHEM 122 will receive only 2 credits for CHEM 127 but 4 credits will be used for calculating the GPA. Very high standing in CHEM 122 may substitute for CHEM 127 with the consent of the instructor. CHEM 127 is not open for credit to students who have passed CHEM 129 or 137 or 153; CHEM 128 is not open to students who have passed CHEM 130 or 138 or 154.
Designed to provide a foundation for more advanced courses in chemistry. Atomic theory; laws and theories concerning the physical and chemical behavior of gases, liquids, solids, and solutions. Properties of some of the more familiar elements and their compounds. Quantitative measurements illustrating the laws of chemical combination in the first semester lab. Equilibrium in solutions and qualitative reactions of the common cations and anions in the second semester lab.

129Q-130Q. Honors General Chemistry
(Honors Course.) Both semesters. Four credits each semester. Three class periods and one 3-hour laboratory period. Prerequisite: CHEM 129 or 130 or 137 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.

129Q-130Q. Honors General Chemistry
(Honors Course.) Both semesters. Four credits each semester. Three class periods and one 3-hour laboratory period. Prerequisite: CHEM 129 or 130 or 137 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.

137Q-138Q. Enhanced General Chemistry
(Formerly offered as Chemistry 153Q and 154Q.) Both semesters. Four credits each semester. Three class periods and one 3-hour laboratory period. Prerequisite: One year of high school chemistry and a high pass on the Q Test. Prerequisite or corequisite: MATH 112 or 115; consent of instructor. Primarily for majors in chemistry and related disciplines. This course can be used as an alternate wherever CHEM 127Q-128Q is listed as a prerequisite. Not open for credit to students who have passed CHEM 129Q-130Q or 135Q-154Q.
Atoms, molecules, ions, chemical bonding. Gases, liquids, solids, solutions, equilibrium, thermodynamics, nuclear chemistry, kinetics and organic chemistry. May include modern materials, environmental chemistry, metallurgy, and biochemistry.

141. Organic Chemistry
First semester. Three credits. Prerequisite: CHEM 122 or 127 or 129 or 137 or 153. Not open for credit to students who have passed CHEM 243.
An abridged course in organic chemistry designed 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 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
A systematic presentation of bonding, structure, properties, and reactions of inorganic compounds.

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.

232Q. 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 265. 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 138 or 152 or 154. Open to sophomores.

Structure and reactions of the simpler classes of the compounds of carbon.

244. Organic Chemistry
Either semester. Three credits. Prerequisite: CHEM 243. Open to sophomores.

A continuation of CHEM 243.

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.

Laboratory experiments in thermodynamics, kinetics and spectroscopy.

263Q-264Q. Physical Chemistry
Both semesters. Four credits each semester. Prerequisite: CHEM 128 or 130 or 138 or 152 or 154; PHYS 123, 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.

265S. 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 CHEM 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.

With 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.

299. Independent Study
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 or corequisite: CE 287 and CE 297. Demars
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. Demars
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. Probability and Statistics in Civil Engineering
(Also offered as ENVE 251.) First semester. Three credits. Open to sophomores. Recommended preparation: MATH 113Q or 115Q/115V. Anagnostou, Aulman-Hall, Garrison
Application of statistical principles to the analysis of civil engineering problems. Topics include probability, random variable distributions, hypothesis testing, and linear regression analysis.

254. Transportation Engineering
Design of transportation facilities. Traffic flow and capacity analysis. Travel demand analysis.

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. Civil Engineering Systems Analysis and Design
Optimization, decision and risk analysis, and simulation in design of civil engineering systems. Network analysis and project scheduling.

256P. Civil Engineering Systems Analysis and Design
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). Abouabd, Smets
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 prerequisite or corequisite: CE 297 or CHEG 223. Abouabd, Holmen, 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 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. Open to sophomores. Hoag, Mackay, Smets

265. Hydraulic Engineering
(Also offered as ENVE 265.) Second semester. Three credits. Prerequisite: CE 297 or (CHEG 223 and CHEG 224). Anagnostou, 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, 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 (CHEM 122, 127, or 129 or 137). Recommended preparation: BIOL 107 or an introductory biology course.
Physical, chemical, and biotic interrelationships of freshwater habitats.

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

271. Geomatics and Spatial Measurement
First semester. Four credits. Three lecture periods and one 3-hour laboratory period. Prerequisite for one P course in Civil Engineering to equal one W course.

275. Route Surveying
Second semester. Three credits. Two class periods. One 3-hour Laboratory. Recommended preparation: MATH 107 or 112 or 115. Open to sophomores.
Elementary plane surveying, geospatial coordinate systems, error and accuracy analysis, introduction to geographic information systems, theory and uses of global positioning systems, introduction to photogrammetry and land-surface remote sensing in the context of civil and environmental engineering.

276. Computer Aided Site Design
Second semester. Three credits. One 3-hour class period. Prerequisite: CE 271; and prerequisite or corequisite: CE 254.
Grading and earthwork, runoff and drainage structures for highway design and site development using computer software.

279. Environmental Modeling
(Also offered as ENVE 279.) Second semester. Three credits. Prerequisite: CE 263 and (CHEG 223 or CE 297).
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: Senior standing. Leonard, Smith.
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 seminars 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: ENGR 150 or CSE 110 or CSE 123C; and prerequisite or corequisite: MATH 210 or MATH 220. Open to sophomores. Accorsi, Demars, DeWolf, Frantz, Leonard, Malia, Smith, Uthgennant.
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 and (MATH 210 or MATH 220). This course and CE 213 may not both be taken for credit. Open to sophomores. Epstein, Malia, Uthgennant.
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: CE 211 or CE 214. Open to sophomores. Accorsi, Davis, DeWolf, Epstein, Malia, Smith, Uthgennant.
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 or corequisite: CE 212 or CE 215; and prerequisite: (MATH 210 or MATH 220) and MATH 211. This course and ME 250 may not both be taken for credit. Anagnostou, Ogden.
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.

Classics and Ancient Mediterranean Studies (CAMS)

Head of Department: Professor David K. Herzberger
Department Office: Room 228, J.H. Arjona Building
Consult the Modern and Classical Languages Department section of this Catalog for requirements for Majors in Classics and Ancient Mediterranean Studies.

(Taught in English)

101. Greek Civilization
(Formerly offered as CLAS 101.) First semester. Three credits. A knowledge of Greek is not required. Travis.
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. Johnson.
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. Travis.
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. Travis.
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. Johnson.
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 Apeleius, and a variety of other pagan, Jewish, and Christian fictions.

250. The Early Church and Christian Thought
(Also offered as HIST 257.) (Formerly offered as CLAS 250.) Either semester. Three credits. Recommended preparation: HIST 216 or CAMS 255. Caner.
A critical approach to the evolution of Christian thought, social organization and institutions ca. 50-450 C.E. Topics include gnosticism, apostolic succession, heresy, orthodoxy.

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. Miller.
The history of Near Eastern civilization from the Neolithic period to the Persian Empire. The birth of civilization in Mesopotamia and Egypt. The political

* See description at end of Classics and Ancient Mediterranean Studies section.
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
(Formerly offered as CLAS 256.) (Also offered as HEB 218, 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 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.

258. Greek Lyric Poetry
(Formerly offered as CLAS 298.) Either semester. Three credits. Prerequisite: CAMS 172.

Selections from the early Greek lyric, elegiac, and iambic poets, including but not limited to Archilochus, Mimnermus, Solon, Sappho, Alcaeus, Anacreon, Xenophanes, Theognis, and Simonides.

259. The Greek New Testament
(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.

260. Private Study
* 293. Independent Study

261. Foreign Study
* 293. Foreign Study

262. Variable Topics
* 295. Variable Topics

263. Special Topics
* 298. Special Topics

264. Latin

121-122. Elementary Latin I and II
(Formerly offered as CLAS 121-122.) Both semesters. Four credits each semester. Four class periods. Not open to students who have had three or more years of Latin in high school, except with Departmental consent.

A study of the essentials of Latin grammar designed to prepare the student to read simple classical Latin prose.

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.

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

265. Medieval Latin
(Formerly offered as CLAS 217.) Either semester, alternate years. Three credits. Prerequisite: CAMS 124, or three or more years of Latin in high school.

Reading of Latin of the European Middle Ages from 1000 to 1500, with an emphasis on the Chanson de Roland and the works of Dante.

266. Latin Lyric Poetry
(Formerly offered as CLAS 214.) Either semester, alternate years. Three credits. Prerequisite: CAMS 172.

Selections from Horace, Catullus, Juvenal, Martial, and Ovid.

267. Latin Epic
(Formerly offered as CLAS 224.) Either semester, alternate years. Three credits. Prerequisite: CAMS 127, or three or more years of Latin in high school.

The story of the Iliad and the Odyssey with special emphasis on the Homeric epics.

268. 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.

Selections from Plautus, Terence, and Seneca, with lectures on Roman theatre and the development of drama.

269. Independent Study
(Formerly offered as CLAS 299.) 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.

Special topics taken in a foreign study program.

270. 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.

271. Special Topics
(Formerly offered as CLAS 298.) Either or both semesters. Credits and hours by arrangement. With a change in content, may be repeated for credit. Prerequisites and recommended preparation vary.

272. 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
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. Buck
Facial expression, body movement, spatial behavior and paralanguage, 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. 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 an opportunity to participate in a variety of supervised research activities in communication.

212. 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. VanLear
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.

220. Communication Processes in Advertising
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.

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.
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.

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 citizenship; 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.

242. Directed Observations
Both semesters. One credit.
Directed observations of speech-language pathology and audiology diagnostic and treatment procedures. How such procedures change with various etiologies.

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.

251. Introduction to Articulation, Voice, and Fluency Disorders
Three credits. Prerequisites: COMS 201, 202, and 247. Gilbert
Communication problems resulting from disorders of speech, voice, and fluency. Assessment and management strategies in settings including public schools, hospitals, and rehabilitation centers.

253. Introduction to Language Pathology in Children
Three credits. Prerequisite: COMS 202. Grela

255. Motivation and Emotion
(Also offered as PSYC 255.) Either semester. Three credits. Prerequisites: PSYC 135 or 133.
Cognition, brain mechanisms, biofeedback, aggression, sex, competence, social influence, and conformity.

260. Media and Special Audiences
(Also offered as PRLS 260.) Either semester. Three credits. Recommended preparation: COMS 102. Rios
Media content and audience responses. Ethnic, racial, and gender issues in mainstream and ethnic media. Special audiences include Latina/o, African Americans, Asian Americans, Women, Gays, Lesbians.

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 foreign study program.

296W. Senior Thesis
Either semester. Credits and hours by arrangement. Open only with consent of instructor.

Preparation of a thesis and its presentation to the department.

Comparative Literary and Cultural Studies (CLCS)

Program Chair: Associate Professor Lucy McNeice
Office: Room 242, J.H. Arjona Building

101. Classics of World Literature I
Either semester. Three credits.
Introduction to classics of world literature. Comparative approach to canonical works of Asia, Africa, the Middle East, and Latin America, as well as Europe, from antiquity to the early modern period (1600).

102. Classics of World Literature II
Either semester. Three credits.
An introduction to classics of world literature. A comparative approach to representative works of culture of Europe, the Americas, Africa, the Middle East, and Asia, from the Renaissance (1600) to the present.

201. Comparative Literature
(Formerly 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.
101C. Computers in Modern Society
Second semester. Three credits. Two class periods and one 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. Not open for credit to students who have passed CSE 123C or CSE 130C. Either CSE 110C-111 or CSE 123C-124C or CSE 130C is required of students planning on taking advanced CSE courses. Demurjian, Ungar

Introduction to computer organization and the computing process. Design of algorithms for computer solutions of problems, structured programming, and data organization. Analysis of computational errors and their minimization. Methods of solving numerical problems. Logic, design, verification and documentation of programs using current programming languages.

111. Introduction to Non-Numerical Computation
Either semester. Two credits. Two 1-hour class periods and one 1-hour program design period. Prerequisite: CSE 110C or consent of instructor. Not open for credit to students who have passed CSE 124C or CSE 130C. Either CSE 110C-111 or CSE 123C-124C or CSE 130C is required of students planning on taking advanced CSE courses. Ungar

Design of algorithms for the processing of non-numerical information. Linked lists, trees and other advanced data structures. Practice in the design and realization of complex information processing programs.

123C. Introduction to Computing
Both semesters. Two credits. Two class periods of lecture and one 1-hour of laboratory period per week. Prerequisite: Passed Q test. No previous programming experience required. Not open for credit to students who have passed CSE 110C or CSE 130C. Ungar

Problem solving with the computer, basics of data representation and computer organization, procedural and object-oriented programming in a modern language including control structures, functions and parameter passing, one and two dimensional arrays, numerical error and basic numerical methods. Examples taken from various disciplines. Programming projects required. Intellectual property issues discussed.

124C. Computing
Second semester. Four credits. Three class periods of lecture and one 1-hour laboratory per week. Prerequisite: CSE 123C or CSE 110C. Not open for credit to students who have passed CSE 111 or CSE 130C. Ungar

Principles of object oriented programming including polymorphism, information hiding, and inheritance. Principles of object oriented design. Recursion. Strings, lists, stacks, queues, trees, priority queues, heaps and graphs including their use and various implementations using automatic and dynamic data allocation, linked representations, and templates. Algorithm and complexity issues involved with these data types. Sorting and searching algorithms. Introduction to computer history. Programming problems drawn from areas of computer science and engineering.

130C. Fundamentals of Computation
First semester. Four 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 and is recommended for students who have had 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 CSE111 or CSE 123C or CSE 124C. Either CSE 110C-111 or CSE 123C-124C 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. Investigation and selection on data organizations for efficient problem solutions. Analysis of computational errors in numerical calculations. Methods for the design, implementation, verification and documentation 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, CICS, and various parallel architectures.

207. Digital Logic
Either semester. Three credits. Three class periods and one 1-hour discussion period. Prerequisite: CSE 110C or 123C or 130C. Open to sophomores. Ammar, Lipsky, McCartney

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

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

224. 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 credits. Two 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 284W 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. 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; buses; the memory hierarchy; the /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 /O files; optimizing code.

244. Programming Language Translation
Either semester. Three credits. Prerequisite: CSE 230 and 237. 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. Emphasis is placed on efficient use of computers to solve problems posed by either student groups or the instructor.

252. Digital Systems Design
(Also offered as ECE 252.) Either semester. Three credits. Prerequisite: GCE 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.

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. 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

257. Numerical Methods in Scientific Computation
(Also offered as ECE 257.) Either semester. Three credits. Prerequisite: CSE 123C and MATH 210Q and MATH 211Q. 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; buses; the memory hierarchy; the /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 /O files; optimizing code.

264. Programming Language Translation
Either semester. Three credits. Prerequisite: CSE 230 and 237. 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.

265. Independent Design Laboratory
Either semester. Three credits. Prerequisite: CSE 230. May be taken twice for credit. Instructor and department head consent.
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. Prerequisite: ECE 262W or ECE 257 or CSE 257 or CSE 240.

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

The Critical Languages Program is designed to offer basic language instruction (four semesters) in languages not currently offered as major fields of study in the Department of Modern and Classical Languages. The most common languages taught at the University of Connecticut are listed in the footnote below. Other languages may be offered based upon student interest and demand. Critical languages may be used to fulfill the foreign language requirement.

*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 unless taught in a self-study format.

Some critical languages, because of area study requirements or other specific circumstances, may be offered under the regular instructional method. The method of instruction for most critical language courses follows the self-study format established by the National Association of Self-Instructional Language Programs (NASILP). In brief, this method offers a combination of native-speaking tutors for drill sessions, appropriate texts and tapes in the target language, and a final examination by an external evaluator. Students who wish to take a critical language under the self-instructional format must meet the following requirements or obtain consent of the Department Head of Modern and Classical Languages (1) a cumulative Grade Point Average of 3.0, (2) at least one year of successful study (a grade of B or better) of a language other than English at the college level taught in the regular instructional method, (3) sophomore standing, (4) a letter from the student explaining why he/she wishes to study the language, (5) a letter of recommendation from the student’s advisor or from a member of the Department of Modern and Classical Languages.

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.

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.

* Note: Please see any of these subject areas listed alphabetically throughout this course directory: American Sign Languages, Arabic, Chinese, Hindi, Japanese, Korean, Modern Greek, Polish, and, Vietnamese.

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.

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

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.

222. Diagnostic Cytology

Second semester. Three credits. To enroll in the course, a student must have earned a “C” or better in CYTO 200. Open only to Cytotechnology majors; others by consent.

This course provides students with a comprehensive knowledge of normal cytologic findings in the female genital tract and the skills necessary to accurately identify the cellular components.

243. Cytology of the Female Genital Tract

First semester. Six credits. Prerequisite: To enroll in the course, a student must have earned a “B-” or better in CYTO 222. 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: To enroll in the course, a student must have earned a “B-” or better in CYTO 243. 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. 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: To enroll in this course, a student must have earned a “B-” or better in CYTO 245. 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: To enroll in the course, a student must have earned a “B-” or better in CYTO 246. 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: To enroll in the course, a student must have earned a “B-” or better in CYTO 248 and 249. 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. 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. Prerequisite: To enroll in the course, the student must have earned a “B-” or better in CYTO 248 and 249. Open only to Cytotechnology majors.

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

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

252. 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 and 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 one 2-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, aseptic 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 223. 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.

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

DNA and RNA diagnostic technologies used in clinical settings; clinical applications in prenatal diagnosis; cancer management, transplantation, paternity testing, 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.

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

242. Chromosome Imaging
First semester and Summer Session I. Two credits. Two hours of lecture and 1 hour of discussion. Prerequisites: DGS 216. Open only to DGS majors; others with the consent of the instructor. Fall offering open only to DGS students with a Spring Clinical.

Theory and techniques of bright field microscopy, black and white film processing and printing, and computerized imaging for karyotype production.

246. Contemporary Issues in Human Genetics
Both semesters. Three credits. Prerequisite: DGS 223. Open only to students enrolled in the Diagnostic Genetic Sciences Program; others with consent of the instructor.

Advanced karyotyping 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: In order to enroll in this course, a student must have earned a “C” or better in DGS 234 and 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: In order to enroll in this course, a student must have earned a “C” or better in DGS 234 and 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. Prerequisite: In order to enroll in this course, a student must have earned a “C” or better in AH 241W, DGS 234 and 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: In order to enroll in this course, a student must have earned a “C” or better in DGS 234 and 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: In order to enroll in this course, a student must have earned a “C” or better in DGS 234 and 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: In order to enroll in this course, a student must have earned a “C” or better in DGS 234 and 235. Open only to students enrolled in the Molecular Diagnostic Sciences Certificate Program; others with consent of the instructor.

Practicum experience in DNA sequencing.

278. DNA Sequencing
Both semesters. Two credits. Prerequisite: In order to enroll in this course, a student must have earned a “C” or better in DGS 234 and 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 this course, the student must have earned a “C” or better in DGS 222, 223 and 224. Open only to Diagnostic Genetic Sciences majors.

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.

Culture, harvest, banding and analysis of peripheral blood samples.

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.

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 AH 241W, DGS 222 and 223. Open
Dietetics (DIET)

Program Director: Robin Abourizk
Dietetics Program Office: Room 314, Koons Hall

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

The following courses are open only to students enrolled in the Dietetics Program. Others must obtain the permission of the Director of the Dietetics Program.

204. Food Service Systems
Second semester. Three credits. Hours by arrangement. Prerequisite: Student must earn a “C” or better in DIET 208. Open only to Dietetics majors; others by consent of Dietetics Program Director.

208. Introduction to Nutritional Care I
First semester. Four credits. Hours by arrangement. Prerequisite: Open only to Dietetics majors; others by consent of Dietetics Program Director. Supervised practice is required. Nutritional care for people throughout the lifecycle. Nutrition care processes, nutritional assessment, nutrition care plans.

209. Introduction to Nutritional Care II
Second semester. Three credits. Hours by arrangement. Prerequisite: Student must earn a “C” or better in DIET 208. Open only to Dietetics majors; others by consent of Dietetics Program Director. Supervised practice is required.

Continuation of DIET 208. Planning, implementation, counseling techniques, and evaluation of client-centered nutritional care.

210. Community Nutrition
Second semester. Three credits. Hours by arrangement. Prerequisite: Student must earn a “C” or better in DIET 208. Open only to Dietetics majors; others by consent of Dietetics Program Director. Supervised practice is required.

Assessment of community structure, agencies and resources. Plan, implement, and evaluate nutritional care and nutritional education in the community setting.

210W. Community Nutrition
Prerequisite: ENGL 105 or 110 or 111. Open only to Dietetics majors; others by consent of Dietetics Program Director.

210S. Community Nutrition (W,C)
Second semester. Four credits. Hours by arrangement. Prerequisite: ENGL 105 or 110 or 111. Open only to Dietetics majors; others by consent of Dietetics Program Director. Clinical experiences and hands-on computer experiences are required.

235. Applied Dietsetics
First semester. Eight credits. Hours by arrangement. Prerequisite: Student must earn a “C” or better in DIET 204, 209; and 210 or 210W or 210S. Open only to Dietetics majors; others by consent of Director of Dietetics. Supervised practice is required.

Advanced planning, implementing, counseling and evaluating nutritional care in health care environments. Introduction to professional issues in dietetics.

238. Advanced Nutrition for the Clinical Practitioner
First semester. Three credits. Hours by arrangement. Prerequisite: Student must earn a “C” or better in DIET 209; and 210 or 210W or 210S. Open only to Dietetics majors; others by consent of Director of Dietetics.

Relationship of nutrients to each other and to body function.

244. Practicum in Foodservice Management
Second semester. Four credits. 160-hour practicum. Prerequisite: Student must earn a “C” or better in DIET 235. Open only to Dietetics majors; others by consent of the Director of Dietetics.

Application and synthesis of performance requirements in the food service system.

247. Seminar in Dietetics
Second semester. Three credits. Hours by arrangement. Prerequisite: Student must earn a “C” or better in DIET 235. Open only to Dietetics majors; others by consent of the Director of Dietetics.

Special problems and issues in dietetics. The management role in patient care, nutrition education, and the integration of nutrition and food service units.

248. Applied Clinical Dietsetics
Second semester. Six credits. 25-hour practicum. Prerequisite: Student must earn a “C” or better in DIET 235. Open only to Dietetics majors; others by consent of the Director of Dietetics.

Application and synthesis of performance requirements in clinical dietetics. Practicum.

250. Dietetic Practice
Second semester. Four credits. 160-hour self-planned supervised practice. Prerequisite: Student must earn a “C” or better in DIET 235. Open only to Dietetics majors; others by consent of the Director of Dietetics.

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

298. Special Topics
Either semester. Credits and hours by arrangement. Open only to Dietetics majors; others by consent of the Director of 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 to Dietetics majors; others by consent of the Director of Dietetics. 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. Saterow

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.

† Students taking this course will be assigned a final grade of S (satisfactory) or U (unsatisfactory).
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130. History of Drama I
First semester. Three credits. Not open for credit to stu-
dents 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 prepa-
ration: DRAM 130. Not open for credit to students who
have passed DRAM 181. McDermott, Molette
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. Concur-
rent enrollment in DRAM 149-150 required for all act-
ing 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 pe-
riods. Basic techniques, styles, and composition of jazz
dance. Emphasis placed on technique.

154. Theatre Jazz Dance II
Either semester. Three credits. Three 2-hour studio pe-
riods. Continuation of Dramatic Arts 153.

163-164. Introduction to Directing
Both semesters. Three credits each semester. Prerequi-
site: DRAM 143. Stern
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.
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.
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 arrange-
ment. 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 prepara-
tion: DRAM 107 (Stagecraft), McCaw
Basic techniques of constructing two dimensional and
three dimensional scenery.

201. Rigging
Second semester. Three credits. Recommended prepara-
tion: 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. Two 3-hour laboratory periods. Rec-
commended preparation: DRAM 205. McCaw
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. Recom-
manded 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 prepara-
tion: 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. Prerequi-
site: 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 prepara-
tion: DRAM 108 or consent of instructor. Crow
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 con-
sent 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 examina-
tion 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 130, 131 or consent of instructor. May be re-
peated for credit with change in course content.
An in-depth examination of a major period or
periods of theatre history and dramatic literature. Topics will vary.

235W. Period Studies in Theatre

238. Theatre Jazz Dance III
Second semester. Three credits. Three 2-hour studio periods. Prerequisite: DRAM 154 and consent of instructor. May be repeated for credit with a change in course content to a maximum of 9 credits. Sabatine

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. Sabatine

Stage movement and dances from Greek to Renaissance.

240. Theatre Dance II
Second semester. Three credits. Prerequisite: DRAM 239. Sabatine

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. 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. Sabatine

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. Prerequisite: DRAM 110. 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. Prerequisite: DRAM 110. 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.

268. 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-realisists.

† Students taking this course will be assigned a final grade of S (satisfactory) or U (unsatisfactory).

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

Laboratory practice in advanced production techniques or paper sculpture for the puppet theatre.

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. Additional project required for graduate credit. Roccoberton

A study of the major trends in drama, design styles and production of the puppet theatre in the western world today.

289. 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.

298. 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.