Pharmacy (PHRM)

Courses for the Doctor of Pharmacy (Pharm.D.)

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

The following courses are open only to students enrolled in the professional program of the School of Pharmacy.

195. Special Topics Lecture
Either semester. Credits and hours as determined by the Senate Curricula and Courses Committee. May be repeated for credit with a change in topic.

200. Evaluation Skills
First semester. Three credits. Three class periods.
Bahr, White
Development of skills needed to critically evaluate and assess data published in pharmacy literature. This course will include an introduction to computer-based software programs, fundamentals of biostatistics, drug literature evaluation, literature search programs and fundamentals of epidemiology.

201. Pharmaceutical Care I
First and second semester. One credit total. Hours by arrangement. James
Provision of a historical perspective of pharmacy practice, development of a theoretical foundation for the practice of pharmaceutical care and experiential opportunities for the student to begin to develop skills in providing pharmaceutical care.

202. Health Care Organization
First semester. One credit. One class period. Prerequisite: ECON 111. Speranza
A study of the United States health care system, with emphasis given to its historical development, its activities, and the major organizational forms and financing mechanisms supporting it and consideration of pharmacy’s role within the current and future United States health care system.

203. Social And Behavioral Aspects Of Pharmacy
First semester. Two credits. Two class periods. Prerequisite: SOCI 107 and COMM 105. Facchinetti
Social development of pharmacists in the twentieth Century. The need for newer roles. Competence to provide progressive cognitive services. Social and organizational support necessary to provide pharmacy care. Behavioral aspects of patients pertaining to the provision of pharmaceutical care.

205. Principles of Pharmacoeconomics
First semester. Two credits. One class period. Prerequisite: ECON 111. McCarthy
A study of the economic forces within the health care environment affecting the practice of pharmacy focusing on the various types of pharmacoeconomic methodologies, including an assessment of their strengths and weaknesses, and their validity and applicability in clinical practice.

206. Interpersonal Skills Development In Pharmacy Practice
Second semester. Two credits. One class period and one two-hour laboratory. Prerequisite: COMM 105; PHRM 202, 203, 204, 205. Facchinetti
Principles of interpersonal communications: effective questioning, empathic listening, reflective responding, assertiveness, and other socio-behavioral aspects of patient care. Skill development in patient counseling and interprofessional communications.

207. Pharmaceutical Care II
First and second semester. One credit total. Hours by arrangement. McCarthy

208. Pharmacy Law and Ethics
Second semester. Three credits. Three class periods. Prerequisite: PHRM 206. Speranza
A study of federal and state laws and ethical principles governing pharmacy practice. Case-study practice scenarios allow students to make pharmaceutical care decisions based upon legal and/or ethical reasoning.

208W. Pharmacy Law and Ethics
Prerequisite: PHRM 206; ENGL 105 or 110 or 111 or 250.

209. Pharmaceutical Care III
First and second semester. One credit total. Hours by arrangement. Prerequisite: PHRM 207. Jeffery
Continuation of historical perspective of pharmacy practice, development of a theoretical foundation for the practice of pharmaceutical care and experiential opportunities for the student to begin to develop skills in providing pharmaceutical care.

210. Non-Prescription Medication
Second semester. Three credits. Three class periods.
Dang
Self-medication based on a foundation of pharmaceutical technology, pharmacology and therapeutics. Emphasis will be placed on the role of the pharmacist in enhancing the rational selection and use of non-prescription (OTC) medications by consumers.

211. Introduction to Clinical Practice
Second semester. Two credits. Hours by arrangement. Prerequisite: PHRM 255, concurrent with PHRM 256. Campbell
Development of skills necessary in professional practice of pharmacy. Emphasis on patient assessment skills necessary for providing pharmaceutical care and approaches in conducting medication regimen review and pharmacological consultation.

212. Pharmacy Practice Laboratory
Second semester. Three credits. Two-class-hour lecture and three-hour laboratory period. Prerequisite: PHRM 255. Corequisite: PHRM 256. James
Laboratory course focusing on the basic skills necessary to provide pharmaceutical care with emphasis on dispensing as well as the skills and motivation to expand pharmacist services including wellness screenings, patient education, collaborative practice, and disease management.

213. Community Pharmacy Management
First semester. Two credits. One class period. Speranza
A study of the concepts and theories, with case study application, underlying the successful management of a community pharmacy practice.

214. Advanced Compounding
First semester. Two credits. One class period and one three-hour laboratory. Prerequisite: PHRM 247.
Advanced techniques and knowledge in prescription compounding will be applied to the preparation of extemporaneously prepared dosage forms that meet the needs of individual patients.

219. General Principles and Organ System Overview
First semester. Three credits. Three class periods. Prerequisite: Must have satisfied all science and math requirements of the first two years. Aneskievich
Basic principles of physiology, pharmacology and receptor site theory and overview of cell biology and all the organ systems.

220. Nervous System
Second semester. Five credits. Five class periods. Prerequisite: PHRM 219. Giatasos
Functions of the autonomic, somatic and central nervous systems; pharmacological effects and mechanism of action of drugs and biotechnologically-derived products used to treat diseases of the autonomic nervous system, sensory system disorders and neurological and psychiatric diseases, and structural features imparting biological activity and the design of drugs used to treat diseases of the autonomic nervous system, sensory system disorders, and neurological psychiatric diseases.

221. Cardiovascular/Renal/Respiratory Systems
First semester. Four credits. Four class periods. Prerequisite: PHRM 220. Langner
A study of the physiology, pharmacology, and structure-activity relationships of drugs affecting the cardiovascular, renal, and respiratory systems.

211W. Cardiovascular/Renal/Respiratory Systems
Prerequisite: PHRM 220; ENGL 105 or 110 or 111 or 250.

222. Endocrine/Gastrointestinal Systems
Second semester. Three credits. Three class periods. Prerequisite: PHRM 221. Manautou
A study of the physiology, pharmacology, and structure-activity relationships of drugs affecting the gastrointestinal and endocrine systems.

223. Pharmacology Discussion / Lab
First semester. One credit. Three hours of laboratory/conference. Prerequisite: PHRM 222. Aneskievich
Continuing development of problem solving based skills. Topics and issues will be related to pharmacology didactic concepts and theory acquired through the first two professional years.

224. Chemotherapy
First semester. Two credits. Two class periods. Prerequisite: PHRM 222, 234, 254; PVS 297. Hubbard
Development of an understanding of the clinical indications, pharmacology, adverse drug events and structure activity relationships of drugs used in the treatment of infectious diseases.

225. Toxicology
First semester. Two credits. Two class periods. Prerequisite: PHRM 222, 234, 254; PVS 297. Grant
Development of an understanding of basic principles of toxicology which determine effects of therapeutic, occupational, or environmental chemicals on human health. Rationale for and nature of procedures required during preclinical safety assessment of therapeutic agents will be discussed.

226. Immunology
Second semester. Three credits. Three class periods. Prerequisite: PHRM 222, 234, 254; PVS 297. Hubbard
Development of an understanding of principles of immunology focusing on mechanisms underlying disease processes and the role of immunotherapeutics and biopharmaceuticals in altering outcome of immunologic disease.

First semester. Three credits. Three class periods. Prerequisite: Must have satisfied all science and math requirements of the first two years. Pavlopoulos
Development of the fundamental medicinal and natural products chemistry knowledge, as well as the critical thinking and problem solving skills to apply this knowledge which will be required in the provision of pharmaceutical care and will serve as the foun-
234. Pharmaceutical Bio-Organic Chemistry II
First semester. Three credits. Three class periods. Prerequisite: PHRM 233. Bowier
A continuation of PHRM 233.

234W. Pharmaceutical Bio-Organic Chemistry II
Prerequisite: PHRM 233; ENGL 105 or 110 or 111 or 250.

235. Pharmaceutical Bio-Organic Chemistry Laboratory
Second semester. One credit. One laboratory session and one pre-laboratory session. Must be taken concurrently with PHRM 234. Pavlopoulos
A study of organic compounds, having pharmaceutical significance with ten laboratory exercises which include physical properties and chemical reactivities of drug molecules, their chromatographic analysis, the study of enzymes, and biotechnological techniques and their isolation from natural products.

242. Solution and Solid Dosage Forms
First semester. Four credits. Four class periods. Prerequisite: Must have satisfied all science requirements of first two years. Kalonia
An investigation of the principles underlying the formulation, dissolution, stability, and release of drug products for optimum delivery. Solution dosage forms, parenteral formulations, tablets and capsules are considered in detail.

242W. Solution and Solid Dosage Forms
Prerequisite: Must have satisfied all science requirements of first two years; ENGL 105 or 110 or 111 or 250.

244. Dosage Forms Preparation Laboratory
First semester. One credit. One discussion period and one three-hour laboratory. Prerequisite: Must have satisfied all science requirements of first two years. To be taken concurrently with PHRM 242. Pikal
Extemporaneous preparation of sterile and non-sterile dosage forms, with particular attention to solutions, solids and dispersed systems.

245C. Pharmacokinetics
First semester. Three credits. Three class periods. Prerequisite: Must have satisfied all science requirements of first two years, PHRM 220, 234, Sweeney
A study of the basic principles of Pharmacokinetics and their application to the rational design of both dosage forms and dosing regimens, optimizing the latter to further the likelihood of safe effective drug therapy in a variety of clinical situations.

246. Dispersed Systems
Second semester. Three credits. Three class periods. Prerequisite: PHRM 242. Burgess
Investigation of the principles and factors affecting the performance of dosage forms classified as dispersed systems: susppositories, aerosols, emulsions, suspensions, transdermals, and ointments.

247. Dosage Forms Preparation Laboratory II
Second semester. One credit. One class period and one three-hour laboratory. Prerequisite: Must be taken concurrently with PHRM 246. Bogner
Extemporaneous preparation of sterile and non-sterile dosage forms, with particular attention to solutions, solids and dispersed systems.

253. Therapeutics I
First semester. Three credits. One two-hour class period and one two-hour conference. Prerequisite: PHRM 220 and concurrent with PHRM 221. Caley
A study of the clinical features of diseases of the central nervous system and the provision of pharmaceutical care to psychiatric, neurologic, and pain syndrome patients. Drug related problems concerned with the treatment of these patients is emphasized.

254. Therapeutics II
Second semester. Four credits. Three lecture hours and three conference hours. Prerequisite: PHRM 253; open to Pharmacy students only. Wang
A study of the etiology, clinical manifestations, and treatment regimens of common acute and chronic cardiovascular, critical care, respiratory, renal, and women's health diseases with emphasis on solving drug-related problems and the application of pharmacokinetic principles of selected drugs in these clinical situations.

254W. Therapeutics II
Prerequisite: PHRM 253; ENGL 105 or 110 or 111 or 250.

255. Therapeutics III
First semester. Three credits. Two class periods. One two-hour class period and one two-hour conference. Chapron
Development of skills necessary to make meaningful therapeutic contributions to the investigation and management of patients with various renal, electrolyte, acid-base, endocrine and metabolic disorders and further develop the student's ability to apply problem-solving strategies in these clinical situations.

256. Therapeutics IV
Second semester. Four credits. Three lecture hours and three conference hours. Prerequisite: PHRM 255; open to Pharmacy students only. Aeschlimann
Development of skills necessary to make meaningful therapeutic contributions to the pharmacotherapeutic management of patients with infectious diseases and malignancies and the application of problem-solving strategies in these clinical situations.

257. Clinical Pharmacokinetics
First semester. One credit. Prerequisite: PHRM 245, 254; open to Pharmacy students only. Sweeney
Development of an understanding of drug dosing regimen design with application to these concepts to relevant drugs. Emphasis will be placed on recognition of special dosing situations due to potentially altered pharmacokinetics and drugs exhibiting unique pharmacokinetics.

262. Professional Experience in Community Pharmacy *
Either semester. Four credits. Prerequisite: PHRM 210, PHRM 211, PHRM 212, PHRM 256. Aeschlimann
The student will apply pharmacy knowledge and skills to the provision of pharmacy services and pharmaceutical care in a community pharmacy. Emphasis is on further development of skills in patient assessment and patient education in optimizing response to pharmacotherapy. Introduction to the administrative aspects of the provision of pharmaceutical care in the community pharmacy is provided.

263. Professional Experience in Institutional Pharmacy *
Either semester. Four credits. Prerequisite: PHRM 210, PHRM 211, PHRM 212, PHRM 256. McCarthy
The student will apply pharmacy knowledge and skills to the provision of pharmacy services and pharmaceutical care in an institutional setting. Topics include pharmaceutical procurement and distribution, quality control, formulary system, provision of drug information, inpatient and outpatient provision of pharmaceutical care, and administrative aspects of institutional pharmacy.

264. Professional Experience in Ambulatory Care Pharmacy *
Either semester. Four credits. Prerequisite: PHRM 210, PHRM 211, PHRM 212, PHRM 256. Jeffery
The student will apply knowledge of disease therapeutics and communication skills to the provision of pharmaceutical care in the ambulatory setting. Emphasis is on optimizing medication-related outcomes in patients through medication assessment, multidisciplinary treatment planning, efficacy and safety assessment, and patient education.

265. Professional Experience in General Medicine *
Either semester. Four credits. Prerequisite: PHRM 210, PHRM 211, PHRM 212, PHRM 256. Folstad
The student will apply knowledge of therapeutics of general medical disorders to the provision of pharmaceutical care to general medicine inpatients. Emphasis is on rational selection and use of medications in an effective, safe, and cost-conscious manner. Optimization of medication-related outcomes is stressed and includes medication assessment, multidisciplinary treatment planning, efficacy and safety monitoring, and patient education.

266. Professional Experience in Cardiology *
Either semester. Four credits. Prerequisite: PHRM 210, PHRM 211, PHRM 212, PHRM 256. White
The student will apply knowledge of therapeutics of cardiovascular disorders to the provision of pharmaceutical care in cardiology patients. Emphasis is on optimization of medication-related outcomes in critically-ill cardiac patients through medication assessment, multidisciplinary treatment planning, efficacy and safety monitoring, and patient education.

267. Professional Experience in Infectious Diseases *
Either semester. Four credits. Prerequisite: PHRM 210, PHRM 211, PHRM 212, PHRM 256. Aeschlimann
The student will apply knowledge of pharmacotherapy of infectious disease to the provision of pharmaceutical care to infectious disease inpatients. Emphasis is on optimization of medication-related outcomes in critically-ill infectious patients through medication assessment, multidisciplinary treatment planning, efficacy and safety monitoring, and patient education.

268. Professional Experience in Oncology *
Either semester. Four credits. Prerequisite: PHRM 210, PHRM 211, PHRM 212, PHRM 256. Pham
The student will apply knowledge of therapeutics of adult neoplastic disorders to the provision of pharmaceutical care to oncology patients. Emphasis is on rational drug selection of curative or palliative medications in an effective, safe, and cost-conscious manner. Optimization of medication-related outcomes is stressed and includes medication assessment, multidisciplinary treatment planning, efficacy and safety monitoring, and patient education.
269. **Professional Experience in Psychiatry**
- Either semester. Four credits. Prerequisite: PHRM 210, PHRM 211, PHRM 212, PHRM 256. *Carley*
  The student will apply knowledge of the therapeutics of psychiatric disorders and communication skills to the provision of pharmaceutical care to psychiatric inpatients. Emphasis is on the optimization of medication-related outcomes in psychiatric patients through past and current medication assessment, multidisciplinary treatment planning, efficacy and safety monitoring, and patient education.

270. **Professional Experience in Pediatrics**
- Either semester. Four credits. Prerequisite: PHRM 210, PHRM 211, PHRM 212, PHRM 256. *McCarthys*
  The student will apply knowledge of the therapeutics of pediatric disorders to the provision of pharmaceutical care to non-intensive care pediatric inpatients. Emphasis is on the optimization of medication-related outcomes in pediatric patients through medication assessment, multidisciplinary treatment planning, efficacy and safety monitoring, and patient education.

271. **Professional Experience in Geriatrics**
- Either semester. Four credits. Prerequisite: PHRM 210, PHRM 211, PHRM 212, PHRM 256. *Chapron, Jeffery*
  The student will apply knowledge of therapeutics of chronic and acute disorders in the elderly to the provision of pharmaceutical care in a skilled nursing facility. Emphasis is on rational selection of medications in an effective, safe, and cost-conscious manner. Optimization of medication-related outcomes in geriatric patients is stressed and includes medication assessment, multidisciplinary treatment planning, efficacy and safety monitoring, and patient education.

272. **Professional Experience in Community Practice II**
- Either semester. Four credits. Prerequisite: PHRM 210, PHRM 211, PHRM 212, PHRM 256. *White*
  A continuation of PHRM 262. The student will expand the application of drug therapy knowledge and communication skills to the provision of pharmaceutical care in a community pharmacy. Emphasis is on continued development of patient assessment and patient education skills in optimizing response to medications.

273. **Professional Experience in Critical Care**
- Either semester. Four credits. Prerequisite: PHRM 210, PHRM 211, PHRM 212, PHRM 256. *White*
  The student will apply knowledge of pharmacotherapy of major medical disorders and of post-surgical drug therapy to the provision of pharmaceutical care to critical care patients in medical, surgical, and specialized intensive care units. Emphasis is on optimization of medication-related outcomes in seriously-ill patients through medication assessment, multidisciplinary treatment planning, and efficacy and safety monitoring.

274. **Professional Experience in Dermatology**
- Either semester. Four credits. Prerequisite: PHRM 210, PHRM 211, PHRM 212, PHRM 256. *McCarthys*
  The student will apply knowledge of pharmacotherapy of common dermatological diseases to the provision of pharmaceutical care to patients with these diseases. Emphasis is on optimization of medication-related outcomes in patients with common dermatological disorders through past and current medication assessment, efficacy and safety monitoring, and patient education.

275. **Professional Experience in Drug Control**
- Either semester. Four credits. Prerequisite: PHRM 210, PHRM 211, PHRM 212, PHRM 256. *McCarthys*
  The student will apply knowledge of pharmacy and state and Federal pharmacy laws to the drug control activities of the Drug Control Division of the Department of Consumer Protection of the State of Connecticut. Emphasis is on active participation in daily activities of drug control officers in enforcing state and Federal drug control laws.

276. **Professional Experience in Emergency Medicine**
- Either semester. Four credits. Prerequisite: PHRM 210, PHRM 211, PHRM 212, PHRM 256. *McCarthys*
  The student will apply knowledge of pharmacotherapy of medical, surgical, toxicologic, and psychiatric emergencies to the provision of pharmaceutical care for adults and children treated in the emergency department. Emphasis is on optimization of medication-related outcomes in patients in need of emergency treatment, including medication assessment, efficacy and safety monitoring, and patient education.

277. **Professional Experience in Home Health Care**
- Either semester. Four credits. Prerequisite: PHRM 210, PHRM 211, PHRM 212, PHRM 256. *Jeffery*
  The student will apply knowledge of pharmacy practice and skills in patient interaction to the provision of pharmaceutical care to patients in their homes. Emphasis is on optimization of medication-related outcomes in patients with common medical disorders served by home health care pharmacists, including medication assessment, efficacy and safety monitoring, and patient education.

278. **Professional Experience in Institutional Pharmacy II**
- Either semester. Four credits. Prerequisite: PHRM 210, PHRM 211, PHRM 212, PHRM 256. *McCarthys*
  A continuation of PHRM 263. The student will expand application of pharmacy knowledge and skills to the provision of pharmacy services in an institutional setting. Emphasis is on problem-solving project activity related to the provision of pharmaceutical care by the Department of Pharmacy.

279. **Professional Experience in Industry**
- Either semester. Four credits. Prerequisite: PHRM 210, PHRM 211, PHRM 212, PHRM 256. *Chapron*
  The student will apply knowledge of pharmacotherapy of OB-GYN disorders to the provision of pharmaceutical care to patients with these disorders. Emphasis is on optimization of medication-related outcomes in patients with OB-GYN disorders through past and current medication assessment, multidisciplinary treatment planning, efficacy and safety monitoring, and patient education.

280. **Professional Experience in Managed Care**
- Either semester. Four credits. Prerequisite: PHRM 210, PHRM 211, PHRM 212, PHRM 256. *Jeffery*
  The student will apply pharmacy knowledge and communication skills to the practice of managed care pharmacy. Emphasis is on the development of strategies that optimize pharmacotherapy of major medical diseases, surgical procedures, and psychiatric disorders within the economic constraints of a managed care health care delivery system.

281. **Professional Experience in Nuclear Pharmacy**
- Either semester. Four credits. Prerequisite: PHRM 210, PHRM 211, PHRM 212, PHRM 256. *McCarthys*
  The student will apply pharmaceutical science knowledge and communication skills to the provision of pharmaceutical care in nuclear pharmacy. Emphasis is on optimization of therapeutic outcomes related to diagnostic and therapeutic use of radioisotopes, including medication assessment, multidisciplinary treatment planning, efficacy and safety monitoring, and patient education.

282. **Professional Experience in Nutrition**
- Either semester. Four credits. Prerequisite: PHRM 210, PHRM 211, PHRM 212, PHRM 256. *McCarthys*
  The student will apply knowledge of therapeutics of nutritional disorders to the provision of pharmaceutical care to patients with these disorders. Emphasis is on optimization of medication-related outcomes in nutrition disorder patients through current and past medication assessment, multidisciplinary treatment planning, efficacy and safety monitoring, and patient education.

283. **Professional Experience in Obstetrics/Gynecology**
- Either semester. Four credits. Prerequisite: PHRM 210, PHRM 211, PHRM 212, PHRM 256. *McCarthys*
  The student will apply knowledge of pharmacotherapy of OB-GYN disorders to the provision of pharmaceutical care to patients with these disorders. Emphasis is on optimization of medication-related outcomes in patients with OB-GYN disorders through past and current medication assessment, multidisciplinary treatment planning, efficacy and safety monitoring, and patient education.

284. **Professional Experience in a Skilled Nursing Facility**
- Either semester. Four credits. Prerequisite: PHRM 210, PHRM 211, PHRM 212, PHRM 256. *Chapron*
  The student will apply knowledge of pharmacotherapy of medical diseases and psychiatric disorders and communication skills to patients in a skilled care nursing facility. Emphasis is on optimization of medication-related outcomes in skilled care nursing facility patients through medication assessment, multidisciplinary treatment planning, efficacy and safety monitoring, and patient education.

285. **Professional Experience in Surgery**
- Either semester. Four credits. Prerequisite: PHRM 210, PHRM 211, PHRM 212, PHRM 256. *McCarthys*
  The student will apply knowledge of pharmacotherapy of pre-surgical, surgical, and post-surgical use of drugs. Emphasis is on the optimization of medication-related outcomes in the surgical patient, including medication assessment, multidisciplinary treatment planning, efficacy and safety monitoring, and patient education.

286. **Professional Experience in General Medicine II**
- Either semester. Four credits. Prerequisite: PHRM 265. *Folstad*
  A continuation of PHRM 265. The student will expand, in depth and in breadth, the application of pharmacotherapy principles to the provision of pharmaceutical care to general medicine inpatients. Emphasis is on continued development of the process of rational drug selection that encompassed the use of medications in an effective, appropriate, safe, and cost effective manner.
287. Professional Experience in Ambulatory Care *
Either semester. Four credits. Prerequisite: PHRM 264.
May be taken concurrently with PHRM 264. Jeffrey.
A continuation of PHRM 264. The student will expand, in depth and in breadth, the application of pharmacotherapy to the provision of pharmaceutical care to patients requiring anticoagulation therapy. Emphasis is on continued development of the process of rational drug selection that encompassed the use of medications in an effective, appropriate, safe, and cost effective manner.

288. Professional Experience in Pharmacist-Directed Anticoagulation Service *
Either semester. Four credits. Prerequisites: PHRM 210, PHRM 211, PHRM 212, PHRM 256. Chapron.
The student will apply knowledge of pharmacotherapy of acute and chronic thrombotic disorders to the provision of pharmaceutical care to patients requiring anticoagulation therapy. Emphasis is on the optimization of medication-related outcome in anticoagulated patients through past and current medication assessment, multidisciplinary treatment planning, efficacy and safety monitoring, and patient education.

289. Professional Experience in Gastroenterology *
Either semester. Four credits. Prerequisites: PHRM 210, PHRM 211, PHRM 212, PHRM 256. Chapron.
The student will apply knowledge of pharmacotherapy of acute and chronic gastroenterologic disorders to the provision of pharmaceutical care to patients requiring such therapy. Emphasis is on the optimization of medication-related outcome in gastroenterologic patients through past and current medication assessment, multidisciplinary treatment planning, efficacy and safety monitoring, and patient education.

290. Professional Experience in Hospice Care *
Either semester. Four credits. Prerequisites: PHRM 210, PHRM 211, PHRM 212, PHRM 256. Pham.
The student will apply knowledge of pharmacotherapy of the final stage of terminal disorders to the provision of pharmaceutical care to hospice patients requiring palliative therapy. Emphasis is on the optimization of medication-related outcome in hospice patients through past and current medication assessment, multidisciplinary treatment planning, efficacy and safety monitoring, and family education.

291. Professional Experience in Sub-acute Care and Chronic Disease and Rehabilitate Medicine *
Either semester. Four credits. Prerequisites: PHRM 210, 211, 212, 256. Chapron.
The student will apply knowledge of pharmacotherapy of chronic and subacute disorders to the provision of pharmaceutical care to patients undergoing physical rehabilitation. Emphasis is on the optimization of medication-related outcome in rehabilitation patients through past and current medication assessment, multidisciplinary treatment planning, efficacy and safety monitoring, and patient education.

298. Special Topics in Clinical Rotations
Either semester. Credits by arrangement. This course may be repeated for credit.

299. Undergraduate Experiential Research Rotations
Second semester. Credits by arrangement. Recommended preparation: Cumulative GPA of 2.8 or higher.
Elective Courses Pharmacy (PHAR): See course descriptions in PHAR section: 201, 297W, 298, 299

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200. Philosophical Issues in Contemporary Life
Either semester. Three credits. Prerequisite: At least one of PHIL 101, 102, 103, 104, 105, 106. May be repeated with a change in topic for a maximum of six credits.
Philosophical dimensions of problems in contem-porary life. Topics vary by semester.

205. Aesthetics
Either semester. Three credits. Prerequisite: At least one of PHIL 101, 102, 103, 104, 105, 106. Open to sophomores or higher.
The fundamentals of aesthetics, including an analysis of aesthetic experience and judgment, and a study of aesthetic types, such as the beautiful, tragic, comic and sublime. Recent systematic and experimental findings in relation to major theories of the aesthetic experience.

205W. Aesthetics
Prerequisite: At least one of PHIL 101, 102, 103, 104, 105, 106. ENGL 105 or 110 or 111 or 250. Open to sophomores or higher.

210. Metaphysics and Epistemology
Either semester. Three credits. Prerequisite: At least one of PHIL 101, 102, 103, 104, 105, 106. Open to sophomores or higher.
Topics may include time, personal identity, free-will, the mind-body problem, skepticism, induction, perception, a priori knowledge.

210W. Metaphysics and Epistemology
Prerequisite: At least one of PHIL 101, 102, 103, 104, 105, 106. ENGL 105 or 110 or 111 or 250. Open to sophomores or higher.

211Q. Symbolic Logic I
Either semester. Three credits. Prerequisite: At least one of Ling 101, POLS 106, PHIL 101, 102, 103, 104, 105, 106; MATH 101 or passed Q readiness test or passed a Q course. Open to sophomores or higher.
Lehmann, Wheeler.
Systematic analysis of deductive validity; formal languages which mirror the logical structure of portions of English; semantic and syntactic methods of verifying relations of logical consequence for these languages.

211V. Symbolic Logic I (QC)
Prerequisite: At least one of Ling 101, POLS 106, PHIL 101, 102, 103, 104, 105, 106. Recommended preparation: MATH 101 or equivalent. Open to sophomores or higher.
Emphasis on computer-related material.

212. Philosophy of Science
Either semester. Three credits. Prerequisite: At least one of PHIL 101, 102, 103, 104, 105, 106. Open to sophomores or higher.
Issues concerning the nature and foundations of scientific knowledge, including, for example, issues about scientific objectivity and progress.

212W. Philosophy of Science
Prerequisite: At least one of PHIL 101, 102, 103, 104, 105, 106. ENGL 105 or 110 or 111 or 250. Open to sophomores or higher.

213. Philosophy of Social Science
Either semester. Three credits. Prerequisite: At least one of PHIL 101, 102, 103, 104, 105, 106. Open to sophomores or higher.
Nature and extent of social phenomena; nature and consequence of group membership; methods of investigation of social phenomena; problems of interpretation. Related doctrines of classic and contemporary theorists such as Durkheim, Weber, Simmel, Wittgenstein.
214Q. Symbolic Logic II
Second semester. Three credits. Prerequisite: PHIL 211, Lehmann
Logical concepts developed in PHIL 211 applied to the study of philosophical issues in the foundations of mathematics.

215. Ethics
Either semester. Three credits. Prerequisite: At least one of PHIL 101, 102, 103, 104, 105, 106. Open to sophomores or higher.
Judgments of good and evil, right and justice, the moral ‘ought’ and freedom; what do such judgments mean? Is there any evidence for them, and can they be true?

215W. Ethics
Prerequisite: At least one of PHIL 101, 102, 103, 104, 105, 106; ENGL 105 or 110 or 111 or 250. Open to sophomores or higher.

216. Environmental Ethics
Second semester. Three credits. Prerequisite: At least one of PHIL 101, 102, 103, 104, 105, 106, 107. Bontly, Lehmann
Inquiry into obligations to, or concerning, the environment, particularly the moral standing of animals, species, ecosystems, and natural objects.

217. Social and Political Philosophy
Either semester. Three credits. Prerequisite: At least one of PHIL 101, 102, 103, 104, 105, 106. Open to sophomores or higher.
Conceptual, ontological, and normative issues in political life and thought; political obligation; collective responsibility; justice; liberty; equality; community; the nature of rights; the nature of law; the justification of punishment; related doctrines of classic and contemporary theorists such as Plato, Rousseau, John Rawls.

217W. Social and Political Philosophy
Prerequisite: At least one of PHIL 101, 102, 103, 104, 105, 106; ENGL 105 or 110 or 111 or 250. Open to sophomores or higher.

218. Feminist Theory
Either semester. Three credits. Prerequisite: At least one of PHIL 101, 102, 103, 104, 105, 106 or WS 103, 104, or 124, Meyers
Philosophical issues in feminist theory. Topics may include the nature of gender difference, the injustice of male domination and its relation to other forms of domination, the social and political theory of women’s equality in the home, in the workplace, and in politics.

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

221W. Ancient Philosophy
Prerequisite: At least one of PHIL 101, 102, 103, 104, 105, 106; ENGL 105 or 110 or 111 or 250. Open to sophomores or higher.

222. Seventeenth and Eighteenth-Century Philosophy
Either semester. Three credits. Prerequisite: At least one of PHIL 101, 102, 103, 104, 105, 106. Open to sophomores or higher. Trover
Central philosophical issues as discussed by philosophers such as Descartes, Locke, Berkeley, Hume and Kant.

222W. Seventeenth and Eighteenth-Century Philosophy
Prerequisite: At least one of PHIL 101, 102, 103, 104, 105, 106; ENGL 105 or 110 or 111 or 250. Open to sophomores or higher.

224. Nineteenth-Century Philosophy
Either semester. Three credits. Prerequisite: At least one of PHIL 101, 102, 103, 104, 105, 106. Open to sophomores or higher.
Readings from philosophers such as Kant, Hegel, Marx and Engels, Bentham, Mill Schopenhauer, Nietzsche, and Kierkegaard; topics such as the debate between individualism and collectivism in the nineteenth century.

224W. Nineteenth-Century Philosophy
Prerequisite: At least one of PHIL 101, 102, 103, 104, 105, 106; ENGL 105 or 110 or 111 or 250. Open to sophomores or higher.

225. Analysis and Ordinary Language
Either semester. Three credits. Prerequisite: At least one of PHIL 210, 221, 222, 227; ENGL 105 or 110 or 111 or 250.
The reaction, after Russell, against formal theories and the belief in an ideal language, and the turn to familiar common-sense “cases” and everyday language in judging philosophical claims. Russell, Moore, Wittgenstein, Kyle and Strawson.

226. Philosophy of Law
Either semester. Three credits. Prerequisite: At least one of PHIL 101, 102, 103, 104, 105, 106, which may be taken concurrently.
The nature of law; law’s relation to morality; law’s relation to social facts; the obligation to obey the law; interpreting texts; spheres of law; international law; the justification of state punishment; the good of law; related doctrines of classic and contemporary theorists such as Herbert Hart and Ronald Dworkin.

228. American Philosophy
Either semester. Three credits. Prerequisite: At least one of PHIL 101, 102, 103, 104, 105, 106.
Topics may include the nature of gender difference, the injustice of male domination and its relation to other forms of domination, the social and political theory of women’s equality in the home, in the workplace, and in politics.

230. Contemporary Marxism and Its Foundation
Either semester. Three credits. Prerequisite: At least one of PHIL 101, 102, 103, 104, 105, 106, which may be taken concurrently.
Marx’s criticisms of capitalism; the distinctive functional explanations Marx offered for the relations of production and the superstructure; application of such explanations to aspects of American culture.

230W. Contemporary Marxism and Its Foundation
Prerequisite: At least one of PHIL 101, 102, 103, 104, 105, 106, which may be taken concurrently; ENGL 105 or 110 or 111 or 250.

231. Philosophy of Religion
Either semester. Three credits. Prerequisite: At least one of PHIL 101, 102, 103, 104, 105, 106. Open to sophomores or higher.
Various religious absolutes, their meaning and validity, existentialism and religion, the post-modern religious quest.

234. Phenomenology
Second semester. Three credits. Prerequisite: At least one of PHIL 101, 102, 103, 104, 105, 106, Elder
Husserl’s theory of meaning; its promise of silencing skepticism and setting philosophy on a new footing; the challenge to it posed by applying it to talk about other minds.

241. Language: Meaning and Truth
Either semester. Three credits. Prerequisite: PHIL 102 or 211, and at least one of PHIL 210, 221, 222, 227.
An analysis of the concepts used in thinking about language.

243W. Philosophy of History
Either semester. Three credits. Prerequisite: At least one of PHIL 101, 102, 103, 104, 105, 106; ENGL 105 or 110 or 111 or 250.
Philosophical problems concerning the nature of historical explanation, the foundations of historical knowledge, and the nature of historical change.

245. Philosophy and Economics
(Also offered as ECON 206.) Either semester. Three credits. Prerequisite: ECON 102, 112, or 113.
An examination of the normative assumptions and implications of modern economics (for example, the connections between Classical Utilitarianism and Welfare Economics). Attention to methodological controversies in contemporary economic theory.

250. Philosophy of Mind
Either semester. Three credits. Prerequisite: At least one 200-level, three-credit philosophy course.
Contemporary issues in the philosophy of mind. Topics may include the nature of the mental; the relation of the mental to the physical; specific phenomena such as emotions, beliefs, or sensations, and relevant scientific developments.

251. Medieval Philosophy
Either semester. Three credits. Prerequisite: At least one of PHIL 101, 102, 103, 104, 105, 106, and at least one of PHIL 101, 102, 103, 104, 105, 106.
Readings from the principal philosophers between the fourth and fourteenth centuries.

253. Oriental Philosophy and Religion
Either semester. Three credits. Prerequisite: At least one of PHIL 101, 102, 103, 104, 105, 106, Lauster
The historical, religious, and philosophical development of Hinduism, Buddhism, Tantrism, and Taoism.

254. Classical Chinese Philosophy and Culture
Either semester. Three credits. Prerequisite: At least one of PHIL 101, 102, 103, 104, 105, 106.
Classical Chinese philosophy, including such works as The Analects of Confucius and the works of Chuang Tzu, and their influence on Chinese culture.

259. Foreign Study
Either or both semesters. Credits and hours by arrangement up to a maximum of six credits. Consent of Department Head required, preferably prior to the student’s departure.

296W. Senior Thesis in Philosophy
Either semester. Three credits. Hours by arrangement. Prerequisite: ENGL 105 or 110 or 111 or 250. Open only with consent of instructor and Department Head. Independent study authorization form required. Prerequisite: Twelve credits in Philosophy at the 200’s level or above, three of which may be taken concurrently.

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

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

299. Independent Study
Either or both semesters. Credits and hours by arrangement. Advanced and individual work. Open only with consent of instructor. May be repeated for credit with a change in topic.
210. **Fundamentals of Assessment**
Either semester. Five credits. Hours by arrangement. Clinical field experiences will be required. Open only to Pre-Physical Therapy majors; others with consent of Physical Therapy Program Director. Prerequisite: PT 213, 215, 217, 219 and 240.

This course provides a foundation for the physical therapy assessment process, introducing the student to more general observational and interview skills to gather, document and analyze evaluation data. Students build skill in specific evaluation procedures which are fundamental to the practice of physical therapy. Students explore the scientific evidence which supports or questions the measuring characteristics of selected evaluation procedures. Students begin to use information from assessments in decisions for diagnosis, program planning and referrals.

212. **Fundamentals of Treatment: Acute Care**
Either semester. Six credits. Hours by arrangement. Clinical Field experiences will be required. Open only to Pre-Physical Therapy majors; others with consent of Physical Therapy Program Director. Prerequisite: PT 213, 215, 217, 210 and 240.


213. **Human Anatomy**
Summer. Three credits. Three hours of lecture. Pre-requisite: To enroll in the course the student must have earned a “C” or better in BNB 265. Open only to Pre-Physical Therapy majors; others with consent of Physical Therapy Program Director.

Discussion of the conceptual and structured bases of osteology, myology, neurology, human development and basic kinesiology and biomechanics. Selected anatomical and physiological dysfunctions will also be analyzed.

215. **Human Anatomy Laboratory**
Summer. Three credits. Laboratory and discussion. Prerequisite: To enroll in the course the student must have earned a “C” or better in BNB 265. Open only to Pre-Physical Therapy majors; others with consent of Physical Therapy Program Director.

Laboratory and discussion utilizing bones, models, audiovisuals and projected human specimens to provide in-depth study of the skeletal, articular, muscular, cardiovascular, respiratory and nervous systems of the entire human body.

217. **Human Physiology**
Summer. Three credits. Prerequisite: To enroll in the course the student must have earned a “C” or better in PT 213 and 215. Open only to Pre-Physical Therapy majors; others with consent of Physical Therapy Program Director.

Discussion of the biochemical, nutritional, cellular and physiological principles necessary for the analysis of the normal and abnormal function and for the rehabilitation of the human musculoskeletal, cardiovascular and respiratory systems. The effects of exercise and of selected pathologies upon these systems will also be analyzed.

220. **Tissue Dysfunction**
Summer. Hours by arrangement. Prerequisite: To enroll in the course the student must have earned a “C” or better in PT 213 and 215. Open only to Pre-Physical Therapy majors; others with consent of Physical Therapy Program Director.

After a general introduction to cellular mechanisms by which an organism becomes dysfunctional, pathological conditions common to the musculoskeletal, gastrointestinal, genitourinary, endocrine, integumentary, central and peripheral nervous systems are overviewed. Focus is on knowledge of pathology and disease management as a basis for program planning in physical therapy. Discussion groups may be scheduled.

221. **Pharmacology for Physical Therapy**
Either semester. Two credits. Hours by arrangement. Open only to Pre-Physical Therapy majors; others with consent of Physical Therapy Program Director. Prerequisites: PT 217 and PT 220.

The body’s response to single and multiple medications, radiation and chemical treatments are considered as they relate to safe, comprehensive and effective outcomes of physical therapy care.

222. **Musculoskeletal Dysfunction**
Either semester. Four credits. Hours by arrangement. Open only to Pre-Physical Therapy majors; others with consent of Physical Therapy Program Director. Prerequisites: PT 210, PT 240; and PT 221 which may be taken concurrently.

Pathology related to the musculoskeletal system is overviewed. Focus is on knowledge of pathology and disease management as a basis for assessment, diagnosis, program planning, treatment and referrals in physical therapy. Interaction with physicians and other health professionals gives students an understanding of the role physical therapy plays in a complex multiprofessional health care system.

224. **Neuromuscular Dysfunction**
Either semester. Three credits. Hours by arrangement. Open only to Pre-Physical Therapy and Physical Therapy majors; others with consent of Physical Therapy Program Director. Prerequisites: PT 210, PT 221 and PT 260.

Focus is on pathology related especially to the neuromuscular systems. Knowledge of pathology and disease management is presented for assessment, diagnosis, program planning, treatment and referrals in physical therapy. Interaction with physicians and other health professionals as well as consumers gives the students the basis for understanding the role physical therapy plays in a complex multiprofessional health care system.

226. **Field Work in Socialization and Leisure Time Activity with Persons with Disabilities**
Either semester. Two credits. Hours by arrangement. Field work and independent study. Open only to Pre-Physical Therapy majors and sophomore Pre-Allied Health majors in the College of Liberal Arts & Sciences; others with consent of instructor.

Investigation of special topics related to, but not ordinarily covered in the undergraduate offerings. These courses will be announced in advance for each semester.

227. **Field Work in Normal Motor Development**
Either semester. Three credits. Hours by arrangement. Open only to Physical Therapy majors and sophomore Pre-Allied Health majors in the College of Liberal Arts & Sciences; others with consent of instructor.

This course provides an opportunity for observation of normal motor skill development through participation in the educational programming, daily care, and social and emotional support offered to infants, toddlers, and preschool age children. Students are required to spend six hours per week participating in programming and care of the children. Field work and independent study are used to develop expertise in a selected area of motor development and students are required to present in-service training in their chosen area.

240. **Clinical Kinesiology**
Either semester. Three credits. Hours by arrangement. Prerequisite: PHYS 122, PT 213 and 215 which may be taken concurrently. Open only to Pre-Physical Therapy majors; others with consent of Physical Therapy Program Director.

Students will analyze the impact of force systems on the human body during functional motion, thus preparing the student to apply knowledge of normal anatomical structure and function to therapeutic intervention.

250. **Clinical Neurology and Movement**
Either semester. Four credits. Hours by arrangement. Prerequisite: PT 213 and 215. Open only to Pre-Physical Therapy majors and sophomore Pre-Allied Health majors; others by consent of instructor.

Preparation of physical therapists to be consumers and initiators of research in clinical settings. Topics include accessing and critiquing information, formulating research questions and hypotheses, designing research projects, conducting research ethically, analyzing data, and disseminating research. Students write a research proposal relevant to physical therapy practice.

250W. **Research for Physical Therapists**
Summer. Three credits. Hours by arrangement. Prerequisite: ENGL 105 or 110 or 111 or 250 and a course in statistics. Open only to students in the Pre-Physical Therapy majors; others by consent of instructor.

Preparation of physical therapists to be consumers and initiators of research in clinical settings. Topics include accessing and critiquing information, formulating research questions and hypotheses, designing research projects, conducting research ethically, analyzing data, and disseminating research. Students write a research proposal relevant to physical therapy practice.
Physics (PHYS)

Head of Department: Professor William C. Stwalley
Department Office: Room 101, Physics Building
For major requirements, see the College of Liberal Arts and Sciences section of this Catalog.

101Q. Elements of Physics
Either semester. Four credits. Three class periods and one 2-hour laboratory period. Recommended preparation: MATH 101 or the equivalent. Not open for credit to students who have passed PHYS 121, 131, 141 or 151.

Basic concepts and applications of physics for the non-science major. Scientific principles and quantitative relationships involving mechanics, energy, heat and temperature, waves, electricity and magnetism, and the theory of the atom are covered. A laboratory provides hands-on experience with the principles of physics.

103Q. Physics of the Environment
Either semester. Three credits. Recommended preparation: MATH 101 or the equivalent. Not applicable to any requirement that specifies a course in "general physics."

Concepts of physics applied to current problems of the physical environment: energy, transportation, pollution. No previous knowledge of physics is assumed.

104Q. Physics of the Environment with Laboratory
Either semester. Four credits. Three class periods and one 2-hour laboratory period. Recommended preparation: MATH 101 or the equivalent. No previous knowledge of physics is assumed. Not open for credit to students who have passed PHYS 103Q.

Concepts of physics applied to the physical environment, particularly to current problems related to energy, transportation, and pollution. These relationships will be further explored in the laboratory section.

105. Inquiry-Based Physics
Second semester. Four credits. One class period and three 2-hour laboratory periods. B ore
Selected topics from physics, with an emphasis on a depth of understanding. Provides background for teaching physical science as a process of inquiry, and develops scientific literacy. Particularly for pre-service elementary school teachers.

107Q. Physics of Music
First semester. Four credits. Three class periods and one 2-hour laboratory period. Recommended preparation: MATH 101 or the equivalent. PHYS 101Q and 107Q may not both be combined to satisfy the Group 8 requirement.

Basic principles of physics and scientific reasoning will be taught in the context of the production and perception of music, emphasizing the historic and scientific interplay between physics and music. Basic quantitative laboratories pertaining to sound, music, and waves. No previous knowledge of physics or music is assumed.

121Q-122Q. General Physics
Either semester. Four credits each semester. Three class periods and one 3-hour laboratory period. Prerequisite: MATH 102 or 109 or 112 or passing score on the calculus readiness test or equivalent. PHYS 121 not open for credit to students who have passed PHYS 131, 141 or 151. PHYS 122 not open for credit to students who have passed PHYS 132, 142 or 152. PHYS 121 required for PHYS 122.

Basic facts and principles of physics. The laboratory offers fundamental training in precise measurements.

123Q. General Physics Problems
Either semester. Three credits. Prerequisite: PHYS 122 and MATH 114 or 116, both of which may be taken concurrently. Not open for credit to students who have passed PHYS 141 or 151.

Problems, emphasizing applications of calculus, dealing with topics in general physics. Intended for those students who have taken or are taking PHYS 122 and who desire to have a calculus-based physics sequence equivalent to PHYS 131-132.

125Q. General Physics Problems for Engineers
Either semester. Four credits. Three class periods and one 1-hour recitation period. Prerequisite: PHYS 122 and MATH 114 or 116, both of which may be taken concurrently. Not open for credit to students who have passed PHYS 123, 141 or 151.

Problems, emphasizing applications of calculus, dealing with topics in general physics. Intended for those students who have taken or are taking PHYS 122 and who desire to have a calculus-based physics sequence equivalent to PHYS 141-142 or 151-152.

131Q-132Q. General Physics with Calculus
Either semester. Four credits each semester. Three class periods and one 3-hour laboratory period. Recommended preparation for PHYS 132: MATH 113 or 115. Prerequisite for PHYS 132: PHYS 131. Recommended preparation for PHYS 132: MATH 114 or 116. PHYS 131 is not open for credit to students who have passed PHYS 141 or 151. PHYS 132 not open for credit to students who have passed PHYS 142 or 152. PHYS 131 may be taken for not more than 2 credits, with the permission of the instructor, by students who have received credits for PHYS 121. PHYS 132 may be taken for not more than 2 credits, with the permission of the instructor, by students who have received credit for PHYS 122.

Quantitative study of the basic facts and principles of physics. The laboratory offers fundamental training in physical measurements. This course is recommended for students planning to apply for admission to medical, dental or veterinary schools. It is also recommended for science majors for whom a one year introductory physics course is adequate.

140Q. Introduction to Modern Physics
First semester. Four credits. Three class periods, one recitation period, and one 3-hour laboratory period. Recommended preparation: MATH 101 or the equivalent and MATH 109, which may be taken concurrently, or passed the Calculus Readiness Test.

Quantitative exploration of the structure of matter, including gas laws, electric and magnetic forces, the electron, x-rays, waves and light, relativity, radioactivity, and spectra. This course is recommended for prospective Physics majors.

141Q. Fundamentals of Physics I
Second semester. Four credits. Three class periods and one 3-hour laboratory period. Recommended preparation: MATH 113 or 115 or 120, or any of which may be taken concurrently. MATH 120 is preferred for Physics majors. Not open for credit to students who have passed PHYS 131 or 151. May be taken for not more than three credits, with the permission of the instructor, by students who have received credit for PHYS 121.

Fundamental principles of mechanics, statistical physics, and thermal physics. Basic concepts of calculus are used. This course is recommended for prospective Physics majors.

142Q. Fundamentals of Physics II
First semester. Four credits. Three class periods and one 3-hour laboratory period. Recommended preparation: PHYS 141, and MATH 114 or 116 or 121, any of which may be taken concurrently. MATH 121 is preferred for Physics majors. Not open for credit to students who have passed PHYS 132 or 152. May be taken for not more than three credits, with the permission of the instructor, by students who have received credit for PHYS 122.

Fundamental principles of electromagnetism, optics and wave propagation. Basic concepts of calculus are used. This course is recommended for prospective Physics majors.

151Q. Physics for Engineers I
Either semester. Four credits. Three class periods and one 3-hour laboratory period. Recommended preparation: PHYS 101 or secondary school physics; and CE 211 or 213, as well as either MATH 210 or 220, which may be taken concurrently. Not open for credit to students who have passed PHYS 131 or 141. PHYS 151 may be taken for not more than 2 credits, with the permission of the instructor, by students who have received credit for PHYS 121.

Basic facts and principles of physics. Elementary concepts of calculus are used. Classical dynamics, rigid-body motion, harmonic motion, wave motion, acoustics, relativistic dynamics, thermodynamics.

152Q. Physics for Engineers II
Either semester. Four credits. Three class periods and one 3-hour laboratory period. Prerequisite: PHYS 151.

Not open for credit to students who have passed PHYS 132 or 142. PHYS 152 may be taken for not more than 2 credits, with the permission of the instructor, by students who have received credit for PHYS 122.

Electric and magnetic fields, electromagnetic waves, quantum effects, introduction to atomic physics.

155Q. Introductory Astronomy
Either semester. Four credits. Three class periods and one 2-hour laboratory period. Recommended preparation: MATH 101 or equivalent.

A basic introductory astronomy course including principles of celestial coordinate systems and telescope design; applications of fundamental physical laws to the sun, planets, stars and galaxies; evolution of stars, galaxies and the universe; recent space probe results, modern cosmology, astrobiology. Basic quantitative laboratory techniques relevant to astronomy.

191. Directed Study in General Physics
Either or both semesters. One credit. One class period. To be taken concurrently with any of the following: PHYS 121, 122, 131, 132, 141, 142, 151, or 152. Open only with consent of instructor. With a change in content this course may be repeated for credit.

A special study course for students who desire extra work and credit in certain 101-level physics courses.

209Q. Intermediate Physics
First semester. Three credits. Prerequisite: PHYS 132 or 142 or 152 or, with consent of instructor, PHYS 122.

Classical mechanics, electricity, and magnetism.

210Q. Intermediate Physics II
Second semester. Three credits. Prerequisite: PHYS 132 or 142 or 152 or, with consent of instructor, PHYS 122.

Kinetic theory, introduction to quantum mechanics.

220V. Computational Physics
Second semester. Three credits. Two class periods and one 2-hour laboratory period. Prerequisites: PHYS 123 or 125 or 132 or 142 or 152 and MATH 211, any of which may be taken concur-
recently; or instructor consent. Open to sophomores or higher.

A basic introduction to numerical and mathematical methods required for the solution of physics problems using currently available scientific software for computation and graphics.

230Q. The Development of Quantum Physics
Second semester. Three credits. Prerequisite: PHYS 132 or 162, or 132 or 125 or 152 or 209; MATH 210 or 220, which may be taken concurrently. Open to sophomores or higher.

The inadequacies of classical physical concepts in the submicroscopic domain. The revision of physical principles that led to special relativity and modern quantum theory. Application to topics chosen from atomic and molecular physics, solid state physics, nuclear physics and elementary particle physics.

242Q. Mechanics I
First semester. Three credits. Prerequisite: PHYS 142; or, with consent of instructor, PHYS 123 or 125 or 132 or 152 or 209; MATH 210 or 220, which may be taken concurrently. Open to sophomores or higher.

Newton’s Laws of motion applied to mass points, systems of particles, and rigid bodies.

246Q. Mechanics II
Second semester. Three credits. Prerequisite: PHYS 211 or 212 and PHYS 242 or CE 212. Open to sophomores or higher.

Further applications of Newton’s Laws; continuous media; Lagrange’s and Hamilton’s formulation of dynamics.

255Q. Electricity and Magnetism I
First semester. Three credits. Prerequisite: PHYS 142; or, with consent of instructor, PHYS 123 or 125 or 132 or 152 or 209; MATH 210 and 211, or 220 and 221.

Properties of electric and magnetic fields; direct and alternating current circuits.

256Q. Electronics
Second semester. Three credits. Two class periods and one 3-hour laboratory period. Recommended preparation: MATH 101 or the equivalent as well as PHYS 132 or 142 or 152.

The principles of devices and their applications to instrumentation in science and engineering. Rectification, filtering, regulation, input and output impedance, basic transistor circuits, operational amplifiers, preamplifiers for photodiodes and other transducers, logic gates, and digital circuits.

270Q. Electricity and Magnetism II
Second semester. Three credits. Prerequisite: PHYS 255.

Mathematical theory of the electromagnetic field; electric and magnetic properties of matter.

282Z-259Z. Laboratory in Electricity, Magnetism, and Mechanics (Q, W, C)
Both semesters. Three credits each semester. One class period, one 3-hour laboratory period, and additional assignments on the theoretical interpretation of experiments. One hour lecture per week. Time by arrangement. A written presentation of methods and results is required for each experiment. Prerequisite: First semester, PHYS 121 or 131 or 141 or 151; Second semester, PHYS 122 or 132 or 142 or 152. Both semesters, Prerequisite: ENGL 105 or 110 or 111 or 250. Open to sophomores or higher.

Experiments with mechanical phenomena. Experiments with electric and magnetic phenomena, including their interaction with matter. The handling of experimental data. The use of computers in experimental physics.

261Q-262Q. Introductory Quantum Mechanics
Both semesters. Three credits each semester. Prerequisite: PHYS 230; MATH 210 and 211, or 220 and 221.

Elementary principles of quantum mechanics; applications to electrons, atoms, molecules, nuclei, elementary particles, and solids.

271Q. Statistical and Thermal Physics
First semester. Three credits. Prerequisite: PHYS 123 or 125 or 132 or 142 or 152; MATH 210 and 211, or 220 and 221.

The laws of thermodynamics and their microscopic statistical basis; entropy, temperature, Boltzmann factor, chemical potential, Gibbs factor, and the distribution functions.

273Q. Introduction to Solid State Physics
First semester. Three credits. Prerequisite: PHYS 123 or 125 or 132 or 142 or 152.

Crystal lattices, lattice waves, thermal and electronic properties, imperfections in solids.

274Q. Nuclei and Particles
Second semester. Three credits. Prerequisite: PHYS 261 or equivalent.

Properties of nuclei and particles, conserved quantities, isospin, quark model, Fermi gas model, electroweak interaction, high energy scattering.

275Q. Principles of Lasers
Second semester. Three credits. Prerequisite: PHYS 257 and 261 or instructor consent. Recommended preparation: PHYS 281.

The physics of lasers, including optical pumping and stimulated emission, laser rate equations, optical resonators, Gaussian beam propagation, Q-switching, mode-locking and nonlinear optics. Applications to gas, solid-state and tunable laser systems.

276Q. Astrophysics and Modern Cosmology
Second semester. Three credits. Prerequisite: PHYS 209 or 242, 210 or 255, and 230, or instructor consent. Mallett.

Basic principles of contemporary astrophysics; applications to stars, galaxies, and modern cosmology.

281Q. Optics
First semester. Four credits. Three class periods and one 3-hour laboratory period. Recommended preparation: PHYS 255; Math 101 or equivalent.

An introduction to geometrical and physical optics. Thick lenses, stops, aberrations, interference, diffraction, polarization.

285Z. Experimental Physics Design Laboratory (Q, W, C)
Either semester. Three credits. Two 3-hour laboratory periods and additional reading assignments. A written description of the proposed method must be submitted and approved before each experiment, and a subsequent written critical evaluation of each experiment is required. Prerequisite: PHYS 230, 242 or 246, and 257; PHYS 261, which may be taken concurrently; and PHYS 258 or 259 or ECE 262 or MMAT 236; ENGL 105 or 110 or 111 or 250.

Experiments in modern and classical physics are independently designed, performed, and evaluated. Experiments are chosen from the areas of atomic, solid state and thermal physics, as well as from acoustics and optics. Computers are utilized for control of the experimental process, data acquisition and analysis.

291. Seminar in Current Topics
Either or both semesters. One credit. One class period. To be taken concurrently with any of the following: PHYS 242, 246, 255, 257, 261, 262, 271 or 281.

Open only with consent of instructor. With a change in content this course may be repeated for credit only once.

Lectures on topics relevant to current research.
252. **Physiological Model Systems**  
Second semester, alternate years. Three credits. Prerequisite: PNB 250, 274/275, or instructor consent. Recommended preparation: undergraduate class in basic comparative animal physiology. Advanced, in-depth examination of animal comparative physiology.

260. **Microtechnique**  
First semester. Four credits. One class period and two 3-hour laboratory periods. Offered in alternate years. Open only with consent of instructor.

Preparation of cells and tissues for microscopic examination, using histological stains, immunohistochemistry, and photomicrography.

262. **Mammalian Endocrinology**  
Second semester. Two credits. Prerequisite: One 200-level course in PNB or instructor consent. 

Functions of hormones in mammalian physiology emphasizing humans.

263W. **Investigations in Neurobiology**  
First semester. Three credits. One 1-hour discussion, one 4-hour laboratory period. Prerequisite: PNB 250 or PNB 274-275; ENGL 105 or 110 or 111 or 250. 

Moiseff

Experimental investigations in neurobiology. Emphasis on designing and carrying out independent research projects, and on communicating the results.

264-265. **Human Physiology and Anatomy**  
Both semesters. Four credits each semester. Three class periods and one 3-hour laboratory. Prerequisite: CHEM 1220 or 127Q. Recommended preparation: BIOL 107, PHYS 101 or 122. Open to sophomores or higher. Not open to students who have passed PNB 274-275. These courses must be taken in sequence to obtain credit, and may not be counted toward the Biological Sciences or Physiology and Neurobiology majors. Chapple, Kimball, Moiseff, Nishiyama, Rubio

Fundamentals of human anatomy and physiology for students in medical technology, physical therapy, nursing, and education (Sport Science).

274-275. **Enhanced Human Physiology and Anatomy**  
Both semesters. Four credits each semester. Three class periods and one 3-hour laboratory. Prerequisite: BIOL 107, CHEM 127Q. Recommended preparation: PHYS 121, 131, or 141. Not open to students who have passed PNB 264-265. Must be taken in sequence to obtain credit. Open to sophomores or higher. Chapple, Kimball, Moiseff, Nishiyama, Rubio

Fundamentals of human physiology and anatomy enhanced through inquiry-based laboratories.

280. **Molecular Neuroanatomy**  
First semester. Three credits. Prerequisite: PNB 251 or instructor consent. Recommended preparation: MCB 203 or 204.

Introduction to molecular neurobiology and the anatomy of the brain, and integration of the molecular systems with anatomical structure and function.

292W. **Senior Research Thesis in Physiology and Neurobiology**  
Either semester. Three credits. Hours by arrangement. Prerequisite: Three credits of PNB 299, which may be taken concurrently: ENGL 105 or 110 or 111 or 250. Open only with consent of instructor and departmental honors committee. Not limited to honors students. Special research or independent investigation for advanced undergraduates. Involves research and writing a thesis.

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

297. **Undergraduate Seminar**  
Either or both semesters. Credits and hours by arrangement. May be repeated for credit with a change in topic.

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

299. **Independent Study**  
Either or both semesters. Credits and hours by arrangement. Open only with consent of instructor and the department honors committee. May be repeated for credit with change in topic. Designed for the advanced undergraduate student who desires to pursue a special problem as an introduction to independent investigation.

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**Plant Science (PLSC)**

*Head of Department: Professor Mary E. Musgrave*  
*Department Office: Room 119, W.B. Young Building*

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

**Agronomy**

124. **Turfgrass Management**  
First semester. Three credits. Two class periods and one 2-hour laboratory. Not open to students who have passed PLSC 289. 

Gillard

An overview of turfgrass adaptation, selection, and management. Topics include turfgrass growth, physiology, soil interactions, weeds and diseases, morphology and identification, establishment, and maintenance. Cultural system practices for lawns, golf courses, athletic fields, and other turf areas.

150. **Agricultural Technology and Society**  
Second semester, alternate years (odd). Three credits. Development of agricultural systems and technologies and their influence on societies. Topics include plant and animal domestication, food and industrial crops and centers of production, environmental issues, and agricultural ethics.

205. **Soil Morphology, Genesis, and Taxonomy**  
First semester, alternate years (even). Four credits. Two class periods and one 4-hour laboratory session. 

Prerequisite: PLSC 250, GEOL 102 or GEOL 101. Not open for credit to students that have passed PLSC 207 or 208, but not both, will be allowed to take an appropriately modified version of the course for two credits.

Students will be expected to master the nomenclature and techniques required to describe and characterize soils as natural bodies occurring on geomorphic surfaces. Theories of soil genesis and major systems of soil taxonomy will be rigorously examined, both in theory and in practice. Field trips are required.

219. **Principles of Turfgrass Irrigation Systems**  
First semester. Three credits. Two class periods and one 2-hour laboratory. 

Rackliffe

Turfgrass irrigation systems, principles of hydraulics, irrigation components, design, installation and repair. Students will design irrigation systems for various turf areas. Field trips and fieldwork will be required.

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**Soils, Environmental Quality, and Land Use**

Second semester, alternate years (even). Three credits. Two class periods plus required field trips. 

Prerequisite: PLSC 250. Not open for credit to students that have passed PLSC 209.

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**Professional Development for Turfgrass Industries**  
Second semester. Two credits. Two hour class periods. Taught jointly with SAPL 023. Open only for credit to graduate students. Rackliffe

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**223. Turfgrass Pests and Control**  
First semester. Three credits. Two class periods and one 2-hour laboratory. Taught jointly with SAPL 023. Not open to graduate students. Rackliffe

Turfgrass weed, insect, disease and vertebrate identification and control. Emphasis on biological controls and IPM. Field trips required.

224. **Turfgrass Physiology and Ecology**  
Second semester. Three credits. Three class periods. 

Prerequisite: PLSC 124 or 289. 

Guillard

Turfgrass physiology related to growth and development. Response to temperature, light, water, traffic, and wind. Turfgrass community dynamics, competition, and environmental effects of turfgrass culture.

224W. **Turfgrass Physiology and Ecology**  
Prerequisite: PLSC 124 or 289; ENGL 105 or 110 or 111 or 250.

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**250. Soils**  
Second semester. Three credits. Two class periods and one 2-hour laboratory period. 

Prerequisite: CHEM 122, 127 or 129. Open to sophomores or higher. 

Luce

Introduction to the physical, chemical and biological properties of soils: the relationship between soils and the growth of higher plants.

253. **Soils, Environmental Quality, and Land Use**  
Second semester, alternate years (even). Three credits. Three class periods plus required field trips. 

Prerequisite: PLSC 250. Not open for credit to students that have passed PLSC 209.

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**254. Forage Crops**  
First semester, alternate years (even). Three credits. Two class periods and one 2-hour laboratory period.

Production, utilization, and storage of species used as forages and their relationship to the ruminant animal.

257. **Ecology and Control of Weeds**  
First semester. Three credits. Two class periods and one 2-hour laboratory. 


258. **Soil Fertility**  
First semester. Three credits. Two class periods and one 2-hour laboratory period. 

Prerequisite: PLSC 250. Offered in odd-numbered years. 

Schultes

Factors governing nutrient uptake by plants, fate of nutrients applied to soils, principles and practices...
in the manufacture and use of fertilizers for crop production, laboratory and greenhouse studies of soil and plant response to applied nutrients.

259C. Soil Chemistry
(Also offered as ENVE 259C.) First semester, alternate years, even. Three credits. Two class periods and one 2-hour laboratory period. Prerequisites: CHEM 128 and 141. PLSC 250 is recommended. Revelation: Schuhlass
Basic concepts of the physical chemistry of soil constituents. Topics include soil solution, soil atmosphere, soil organic matter, soil mineralogy, mineral surface characteristics and chemical weathering process.

283. Golf Course Management
Second semester. Three credits. Taught jointly with SAPL 083. Not open for credit to graduate students. Rackliffe
Cultural management techniques including soil aeration, topdressing, mowing, thatch removal, grass or species selection, fertilization, irrigation and management of personnel, pests, equipment and inventory. Field trips required.

284. Golf Course Design
First semester. Two credits. Taught jointly with SAPL 084. Not open for credit to graduate students. Guillard, Minniti
Introduction to golf course design theory, planning, and layout. Putting green and tee construction methods. Turfgrass species and cultivar selection for the golf course. Guest presentations by designers and golf course superintendents. Field trips required.

Horticulture

101. Fundamentals of Horticulture
Second semester. Three credits. Three class periods. Salsedo

203. Plant Diseases
First semester. Three credits. Two class periods and one 2-hour laboratory. Prerequisite: BIOL 108 or 110. von Bodman
The causes, development and management of diseases of economic plants. Lectures cover general principles and laboratories review specific examples of plant diseases of horticultural and agronomic crops.

204. Integrated Pest Management
First semester. Three credits. Gauthier
Principles of integrated pest management covering insect, disease, and weed problems in agronomic crops, vegetables, fruits, turfgrass, ornamentals, and greenhouse production. Environmental impacts and pest control strategies will be covered.

212. Vegetable Crops and Their Environment
Second semester. Four credits. Three class periods and one 2-hour laboratory period. Bible
The responses of vegetable crops to mineral nutrients, soil pH, plant population, temperature, photoperiod, pest organisms and to the modification of these factors by technology. Radish, lettuce, tomato, cucumber, sweet corn, basil, cauliflower and watercress are grown by students in the laboratory.

213. Physiology of Economic Plants
Second semester. Three credits. Two class periods and one 2-hour laboratory period. Prerequisite: BIOL 110 and CHEM 122 or 127. Open to sophomores or higher. Bible
Water uptake, water potential, transpiration, stomatal movement, ion uptake, nutrient deficiencies, respiration, photosynthesis, phytohormones, phytochrome, circadian leaf movement, flowering, dormancy, cold injury and allelochemicals.

225. Greenhouse Technology and Operations
First semester. Four credits. Three class periods and one 2-hour laboratory period. Field trips required. Elliott
Introduction to greenhouse systems with emphasis on structures, environmental control, root media, irrigation and fertilization, and pest control, in relation to requirements for plant growth and crop production. Laboratories provide experience in greenhouse operations and crop production.

226. Greenhouse Crop Production I
Second semester. Three credits. Two class periods and one 2-hour laboratory period. Field trips required. Prerequisite: PLSC 225. Taught jointly with SAPL 026. Not open for credit to graduate students. Elliott
Environmental and cultural requirements and scheduling of major greenhouse crops, exclusive of edible produce. Emphasis on cut flowers and flowering potted plants and bedding and garden plants produced for spring and early summer markets. Laboratories provide experience in crop production.

230. Floral Art
Second semester. Two credits. One class period and one 2-hour studio period. Taught jointly with SAPL 030. Open to sophomores or higher.
The study of flower arrangement as an art form with emphasis on historical background, artistic principles, color harmony and care of perishable media. Individual expression is encouraged in the creation of floral composition.

231. Herbaceous Ornamental Plants
Second semester. Three credits. Taught jointly with SAPL 031. Open to sophomores or higher.
Identification, nomenclature, bloom and culture of over 160 herbaceous perennials, biennials, annuals and bulbous plants. Live plants and visual presentation are used to highlight plant characteristics and morphology. Lectures include discussions of organic growing, composting, plant morphology, trough and container gardens, and underground storage structure. Field trips to retail and wholesale businesses are a part of this class.

235. Advanced Floral Design
Second semester. Two credits. Taught concurrently with SAPL 035. Not open for credit to graduate students. One class period and one 2-hour lab. Prerequisite: PLSC 230. Pastormerlo
In-depth study of post-harvest requirements for specialized floral crops. Exposure to novel floral materials and abstract, tribute, high-style, and wedding designs. Retail price structuring, wire services, and mass-production concepts.

238. Plant Propagation
Second semester. Three credits. Two class periods and one 2-hour laboratory period. Bridgen, Elliott
Fundamental principles of reproducing plants by seeds, cuttings, grafting, layering, divisions, and tissue culture. Techniques of propagating plants to establish and maintain clones.

240. Nursery Management
First semester, alternate years (odd). Three credits. Two class periods and one 2-hour laboratory period. Corbett
Principles of field and container production of nursery stock. Emphasis on production practices for woody nursery stock from propagation to sale.

240W. Nursery Management
Prerequisite: ENG 105 or 110 or 111 or 250.

243. Plant Biotechnology
Second semester. Three credits. Prerequisites: One of PLSC 213, BIOL 110, BIOL 201, BIOL 204. Li
Principles of recombinant DNA and plant gene transfer technologies. Applications of plant biotechnology in agriculture, horticulture, forestry, human/animal health care, and pharmaceutical industry. Social and environmental impacts of plant biotechnology.

244. Garden Center Management
First semester. Three credits. Taught concurrently with SAPL 071. Not open for credit to graduate students. Ashley
Fundamentals related to horticultural specialty businesses with particular emphasis on the retail and contracting areas. Specialty and mass merchandising firms are considered and compared.

245. Landscape Plant Maintenance
Second semester. Three credits. One three-hour class period. Taught jointly with SAPL 045. Not open for credit to graduate students.
Provides practical information on the planting and maintenance of trees and shrubs in the landscape. Includes learning how to plan landscape projects, install plant material and maintain the established landscape through proper pruning, mulching, irrigation, fertilization and other horticultural practices.

246. Biotechnology - Science, Application, Impact, Perception
Second semester. Three credits. von Bodman
Scientific, legal, and ethical aspects of Biotechnology application in agriculture, health medicine, forensics, and the environment. Designed for students with diverse departmental affiliations.

260. Woody Landscape Plants: Deciduous
First semester. Three credits. Two class periods and one 2-hour laboratory. Auer
Appropriate landscape use, ornamental features and taxonomy of deciduous ornamental trees, shrubs, vines and ground covers. Laboratories present field identification features and require the examination of plants in the landscape.

261. Woody Landscape Plants: Evergreen
Second semester. Three credits. Two class periods and one 2-hour laboratory. Auer
Appropriate landscape use, ornamental feature and taxonomy of coniferous or broadleaf evergreen ornamental trees, shrubs, vines and ground covers. Laboratories present field identification features and require the examination of plants in the landscape.

285. Plant Gene Transfer Techniques
Second semester. Three credits. Li
Techniques of plant gene delivery and transgenic plant production. Verification and analysis of transgenic plants.

286. Pesticide Safety and Management
Second semester. Two credits. Taught jointly with SAPL 086. Not open to graduate students. Gauthier
Pesticide application equipment, pesticide safety and toxicity, equipment calibration, pesticide poisoning, first aid and crop worker protection standards. Managing pesticides to increase safety for applicators and the environment, and increasing effectiveness using principles of Integrated Pest Management.

288. Insect Pest Management
Second semester. Three credits. Two class periods and one 2-hour laboratory. Legrand
Biological and management of insects with an emphasis on pests of ornamental plants and turf. Identification of key pests and their damage symptoms, monitoring insect populations and management strategies and tactics.
Propogation of plants

Laboratory techniques covered include rapid micropropagation of plants of economic interest.

Advanced Landscape Design
Second semester. Four credits. Three 3-hour studios. Prerequisite: PLSC 266 and 281. Field trips are required. Minutti
A comprehensive course which covers the range of projects which the design professional might encounter in practice. Students will be expected to provide recommendations for case studies varying in subject and scale, depending on the particular expertise of the instructor.

Planting Studies in Landscape Architecture
First semester. Three credits. Three 2-hour studios. Open to landscape architecture majors only. Alexopoulos
The role and use of plants in the landscape architectural design process. Technical, functional, and design aspects of plantings are included. Not open to students who have passed PLSC 278. Field trips are required.

Professional Practice
Second semester. Three credits. Prerequisite: PLSC 256 and PLSC 262. Westa
The course will cover many of the business and professional aspects of Landscape Architecture including: various modes of practice, resumes and portfolios, licensure and ethics, developing and administering contracts, and preparing for the professional registration exam.

Landscape Design
First semester. Two credits. Two class periods. Open only with consent of instructor. Course may be repeated for credit.

Landscape Design Communication
Second semester. Three credits. Three 2-hour studios. Open only with consent of instructor. Open to sophomores or higher. Alexopoulos
The presentation of landscape designs in plan form are covered through studio drawing assignments. The color rendering of plans, the making of cross-sections, elevations and models are studied in a studio environment.

Intermediate Landscape Design I
First semester. Four credits. One class period and two 3-hour studios. Prerequisite: PLSC 255, 262 and 275. PLSC 275 may be taken concurrently. Field trips are required. Minutti
The development of a design process utilizing small-scale design projects. A comprehensive investigation of site analysis methods is also covered.

Intermediate Landscape Design II
Second semester. Four credits. Three 3-hour studios. Prerequisite: PLSC 265. Field trips are required. Schwab
Landscape design studio. Application of the design of landscapes: planning theory, land use planning, visual assessment, urban design, transportation, public participation.

Plant Micropropagation
First semester, odd-numbered years. Three credits. One class period and two 2-hour laboratory periods. Prerequisite: CHEM 122 or 127 and consent of instructor. Bridgen
The use of aseptic techniques for the micropropagation of plants of economic interest. Laboratory techniques covered include rapid propagation of plants in vitro, meristem culture for the elimination of diseases, somaclonal variation, somatic embryogenesis and media preparation.

Landscape Architecture

Design of Small Spaces
Second semester. Two credits. One class period and one 2-hour studio. Prerequisites: PLSC 255 and PLSC 275. Not open to Landscape Architecture majors.

Computer Applications in Landscape Architecture
First semester. Three credits. Prerequisites: PLSC 256 and 262. Weston
This course will provide basic knowledge of a wide variety of computer applications related to Landscape Architecture. A central theme of this course will be the selection and use of the appropriate applications and integrating data between applications.

Landscape Contracts
Second semester. Three credits. Weston
A study of the various contract documents, their legality, and their relationship to landscape construction and maintenance. Practice in writing contract documents, contract cost estimation and bidding procedures will be provided.

Landscape Design Drawing
First semester. Three credits. Three 2-hour studios. Open only with consent of instructor. Open to sophomores or higher. Schwab
An introductory drawing course aiming to introduce the landscape design student to the communication of ideas through sketches and presentation drawings. One-point and two-point perspective and isometric drawing techniques are taught. Various drawing media are used in a studio environment.

Landscape Design Communication
Second semester. Three credits. Three 2-hour studios. Open only with consent of instructor. Open to sophomores or higher. Alexopoulos

Landscape Design
First semester. Two credits. Two class periods. Open only with consent of instructor. Open to sophomores or higher. Minutti

Landscape Design
Second semester. Three credits. Three 2-hour studios. Prerequisite: PLSC 260, 261, and 266. Open to landscape architecture majors only. Alexopoulos

Landscape Design
First semester. Two credits. Two class periods. Open only with consent of instructor. Open to sophomores or higher. Minutti

Landscape Design
Second semester. Three credits. Prerequisite: PLSC 256 and PLSC 262. Westa

Landscape Design
First semester. Three credits. Three 2-hour studios. Prerequisite: PLSC 265. Field trips are required. Schwab

Landscape Design
First semester. Two credits. Two class periods. Prerequisite: PLSC 256. Alexopoulos

Landscape Design
First semester, odd-numbered years. Three credits. One class period and two 2-hour laboratory periods. Prerequisite: CHEM 122 or 127 and consent of instructor. Bridgen

Landscape Architecture

Professional Practice
Second semester. Three credits. Prerequisite: PLSC 256 and PLSC 262. Westa

Community Planning and Design
First semester. Four credits. Three 3-hour studios. Prerequisite: PLSC 266. Open to landscape architecture majors only. Field trips are required. Weston

The Development of Landscapes
First semester. Three credits. Prerequisite: PLSC 275. Alexopoulos

Planting Design
First semester. Four credits. Three 3-hour studios. Prerequisite: PLSC 260, 261, and 266. Alexopoulos

Landscape Site Engineering
Second semester. Three credits. One class period and two 2-hour studios. Prerequisite: PLSC 256. Alexopoulos
Fundamental site engineering concepts and methods are investigated. Basic grading and drainage of landform are emphasized with the aim to develop essential skills. Earthwork computation, drainage systems, sedimentation and erosion control, and roadway design are also covered.
For major requirements, see the College of Liberal Arts and Sciences section of this Catalog.

106. Introduction to Political Theory
Either semester. Three credits.
Major themes of political theory such as justice, obligation, and equality, and their relevance to contemporary political concerns.

121. Introduction to Comparative Politics
Either semester. Three credits.
A survey of institutions, politics, and ideologies in democratic and non-democratic states.

121W. Introduction to Comparative Politics
Prerequisite: ENGL 105 or 110 or 111 or 250.

132. Introduction to International Relations
Either semester. Three credits.
The nature and problems of international politics.

132W. Introduction to International Relations
Prerequisite: ENGL 105 or 110 or 111 or 250.

143. Introduction to Nonwestern Politics
Either semester. Three credits.
A survey of ideologies, development strategies, and the political processes in nonwestern cultures.

173. Introduction to American Political Processes
Either semester. Three credits.
Analysis of the organization and operation of the American political system.

173W. Introduction to American Political Processes
Prerequisite: ENGL 105 or 110 or 111 or 250.

201. Classical and Medieval Political Theory
First semester. Three credits.
An examination of Greek, Roman and early Judeo-Christian political ideas and institutions, and their relevance to the present.

202. Modern Political Theory
Second semester. Three credits.
Major political doctrines of the contemporary period, and their influence upon political movement and institutions as they are reflected in the democratic and nondemocratic forms of government.

203W. Women in Political Development
(Also offered as WS 203W.) Second semester. Three credits. Prerequisite: ENGL 105 or 110 or 111 or 250.
Analysis of the role of women in the process of political development in Africa, Asia and Latin America. The importance of gender to the understanding of development and modernization will be explored and the ways in which change in traditional societies has affected the position of women, economically, socially and politically will be examined.

204. Women and Politics
(Also offered as WS 204). Either semester. Three credits.
An introduction to feminist thought, the study of women as political actors, the feminist movement and several public policy issues affecting women.

204W. Women and Politics
Prerequisite: ENGL 105 or 110 or 111 or 250.

205. The Theory of Human Rights
Either semester. Three credits. Prerequisites: HIST 201.
Various theories of human rights, both historical and contemporary. Conceptual arguments both in favor and critical of the theory and practice of human rights will be considered, with literature taken primarily from philosophy and political theory.

206W. Western Marxist Tradition
Either semester. Three credits. Prerequisite: ENGL 105 or 110 or 111 or 250.
Exploration of the social and political theories of Marx and Engels, and of later interpretations and modifications of their ideas.

207. American Political Thought and Ideology
Second semester. Three credits.
American political thought from the colonial to the contemporary period. Political thought discussed as the ideological expression of the larger sociopolitical situation.

208. Politics, Propaganda, and Cinema
Second semester. Three credits.
Lectures and films from several nations serve to illustrate techniques and effects of propaganda, analyzing the pervasive impact that propaganda has on our lives. The course concentrates on the World War II era.

210. Contemporary International Politics
Either semester. Three credits.
Problems in international relations with emphasis on changing characteristics of international politics.

211. Comparative Politics of North America.
Various theories of human rights, both historical and contemporary. Conceptual arguments both in favor and critical of the theory and practice of human rights will be considered, with literature taken primarily from philosophy and political theory.

218. Inter-American Relations
Second semester. Three credits. Prerequisite: ENGL 105 or 110 or 111 or 250.
The foreign relations of the United States from the first World War to the present.

219. The Politics of American Foreign Policy
Either semester. Three credits.
Instruction, forces and processes in the making of American foreign policy. Emphasis will be on contemporary issues.

220. Simulation and Gaming in Foreign Policy
Second semester. Three credits.
A comparative study of foreign policy making. Use of computer-assisted simulation provides realistic experience in foreign policy decision making and international negotiation.

221. National and International Security
Either semester. Three credits.
Key American national security issues as integral parts of the larger problem of global security.

222. Foreign Policies of the Russian Federation and the Former USSR
Second semester, alternate years. Three credits.
The Soviet Union’s role in world affairs as background for studying the international consequences of the breakup of the USSR; the foreign policies of the former soviet republics among themselves, and of Russia and selected other republics.

223. Comparative Politics of North America.
Comparisons and differences in the political systems of the NAFTA countries, Canada, Mexico and the United States. Issues include political culture and value systems; electoral politics, approaches to federalism and regionalism; public opinion and support for NAFTA and its expansion; migration, political integration, the treatment of indigenous peoples, ethnic and gender representation; and decentralization and the role of municipal government in the provinces/states.

224. American Diplomacy in the Middle East
Either semester. Three credits.
The strategic, political, and economic interests that have shaped U.S. policy in the Middle East. U.S. responses to regional crises, peace efforts, arms transfers, covert operations and military intervention.

225. International Organizations and Law
Second semester. Three credits.
The role of general, regional and functional intergovernmental organizations and international law in modern diplomacy, with special attention to questions of war, peaceful settlement of disputes, and social and economic development.

226. International Relations of the Middle East
Either semester. Three credits.
The foreign policies and security problems of Middle Eastern States; sources of regional conflict and competition − oil, water, borders, religion, ideology, alliances, geopolitics, refugees, and superpower intervention.

227W. International Politics in East Asia
First semester. Three credits. Prerequisite: ENGL 105 or 110 or 111 or 250.
Comparison and analysis of the foreign policies of the states of East Asia, with special emphasis on the impact of the former Soviet Union (Russia), People’s Republic of China, Japan, and the United States.

228W. East Asian Governments and Politics
First semester. Three credits. Prerequisite: ENGL 105 or 110 or 111 or 250.
The processes of political modernization in Japan and other East Asian areas.

229. Chinese Government and Politics
Second semester. Three credits.
Chinese political processes, with emphasis on ideology and problems of development.

230W. Politics in Eastern Europe
Second semester. Three credits. Prerequisite: ENGL 105 or 110 or 111 or 250.
The politics of the East European states in a comparative and analytical framework, stressing ideology, political culture, participation, and elite behavior.

231. Political Institutions and Behavior in Western Europe
Either semester. Three credits. Open to sophomores or higher.
Comparative analysis of the governments and politics of Western Europe.
231W. Political Institutions and Behavior in Western Europe
Prerequisite: ENGL 105 or 110 or 111 or 250. Open to sophomores or higher.

232. Comparative Political Economy
Either semester. Three credits.

Introduction to overlapping themes in economics and political science including the substantive and empirical relationship between these two in advanced industrial democracies.

233. Comparative Political Parties and Electoral Systems
Either semester. Three credits.

A focus on political party and electoral systems around the world, including advanced industrial nations, transitional nations, and less developed nations. Issues such as the relationship between electoral and party systems, democratic reform, voting behavior, and organization of political parties are examined.

233W. Comparative Political Parties and Electoral Systems
Prerequisite: ENGL 105 or 110 or 111 or 250.

235. Latin American Politics
First semester. Three credits.

Theories and institutions of Latin American politics, with emphasis on issues of stability and change.

236. Political Leadership in the Third World
Second semester, alternate years. Three credits. Prerequisite: ENGL 105 or 110 or 111 or 250.

The objectives and effectiveness of national leaders, with case studies from Asia, Africa, and Latin America.

237. Politics of Russia and the Former Soviet Union
First semester. Three credits.

The social and political structure of the former Soviet Union, the causes and outcome of efforts to reform it, and the development of democratic politics in Russia and other former Soviet republics.

237W. Politics of Russia and the Former Soviet Union
Prerequisite: ENGL 105 or 110 or 111 or 250.

239. Politics in Africa
First semester, alternate years. Three credits. Prerequisite: ENGL 105 or 110 or 111 or 250.

The political systems in contemporary Africa; the background of the slave trade, imperialism, colonialism, and the present concerns of nationalism, independence, economic development and military rule. Emphasis on sub-Saharan Africa.

241. American Political Parties
Either semester. Three credits. Prerequisite: POLS 173. Open to sophomores or higher.

An analysis of the aims, organization, and growth of parties in the United States.

241W. American Political Parties
Prerequisite: POLS 173; ENGL 105 or 110 or 111 or 250. Open to sophomores or higher.

242. Political Opinion and Electoral Behavior
Either semester. Three credits.

Analysis of public opinion and its potential to affect government policies. Emphasis on explaining elections and the basis for voters’ decisions.

243. African-American Politics
Second semester. Three credits. Prerequisite: ENGL 105 or 110 or 111 or 250.

244. Politics of South Africa
First semester. Three credits.

Internal development of the South African state and the external response to apartheid policies, with special attention to both white and African politics, U.S. policy, and other selected topics.

245. Black Leadership and Civil Rights
Either semester. Three credits.

Black leadership, emphasizing the principles, goals, and strategies used by African-American men and women to secure basic citizenship rights during the civil rights era.

246. Comparative State Politics
Second semester. Three credits.

A comparison of the political parties of the 50 states. The development and the relationship of the local and state parties in the federal system.

246W. Comparative State Politics
Prerequisite: ENGL 105 or 110 or 111 or 250.

247. Black-Feminist Politics
(Also offered as WS 247.) Either semester. Three credits.

An introduction to major philosophical and theoretical debates at the core of black feminist thought, emphasizing the ways in which interlocking systems of oppression uphold and sustain each other.

248. African-American Politics
Either semester. Three credits.

Political behavior, theory, and ideology of African-Americans, with emphasis on contemporary U.S. politics.

249. Latino Political Behavior
(Also offered as PRLS 270.) Either semester. Three credits. Fantoja

Latin politics in the United States. Political histories of four different Latino populations: Mexican, Puerto Rican, Cuban, and Central American. Different forms of political expressions, ranging from electoral behavior to political art.

250. Law and Popular Culture
Either semester. Three credits.

Exploration of themes in the study of law and courts by contrasting scholarly work against representations of such themes in movies, television, and other media of popular culture.

251. Law and Society
(Formerly offered as POLS 254.) Either semester. Three credits. When students intend to take several courses in the Judicial Process field (250’s series), it is recommended that 251 be taken first.

Leading schools of legal thought, fundamental principles and concepts of law, the basic framework of legal institutions, and judicial procedure. Particular attention is devoted to the general features of American law as it affects the citizen, and primary emphasis is placed on the function of law as a medium for attaining a balance of social interests in a politically organized society.

252. Constitutional Law
Either semester. Three credits.

The role of the Supreme Court in expounding and developing the United States Constitution. Topics include judicial review, separation of powers, federalism, and due process.

253. Judiciary in the Political Process
Second semester. Three credits. Prerequisite: POLS 173.

The Supreme Court in the Political Process.

254. Politics of Crime and Justice
Either semester. Three credits.

Criminal justice in the United States, with emphasis on the links between law, politics, and administration.

256. Constitutional Rights and Liberties
Either semester. Three credits.

The role of the Supreme Court in interpreting the Bill of Rights. Topics include freedoms of speech and religion, criminal due process, and equal protection.

257. World Cultures and U.S. Law
Second semester. Three credits.

Legal, cultural and political implications for the United States of global migration and the nature of citizenship, immigration and naturalization.

258. Comparative Perspectives on Human Rights
First semester. Three credits.

Cultural difference and human rights in areas of legal equality, women’s rights, political violence, criminal justice, religious pluralism, global security, and race relations.

259. Maritime Law
Either semester. Three credits. R. Cole

International and domestic legal concepts concerning jurisdiction in a maritime setting.

260. Public Administration
Either semester. Three credits.

The politics of public administration. Role of administrative agencies and officials in American national, state, and local governments.

261. Politics, Society, and Education Policy
Either semester. Three credits.

Analysis of interactions among educational policy, politics, and other social forces. Insights and concerns from politics and other social sciences disciplines applied to different levels and types of schooling.

263W. Urban Politics
(Also offered as URBN 263W.) Either semester. Three credits. Prerequisite: ENGL 105 or 110 or 111 or 250.

Not open for credit to students who have passed URBN 263.

Political systems and problems confronting urban governments.

264. Politics of Budgeting
Either semester. Three credits.

Examination of the decision-making processes and role of the budget in public bureaucracies and policy implementation. Contemporary controversies in budgeting are used to illustrate and apply basic principles.

264W. Politics of Budgeting
Second semester. Three credits. Prerequisite: ENGL 105 or 110 or 111 or 250.

265. Financial Management for Public and Nonprofit Organizations
Either semester. Three credits.

Management of financial resources in public service organizations. Topics include variance analysis, cost analysis, public sector and nonprofit accounting, financial statement analysis, and forecasting.

266. Capital Financing and Budgeting
Either semester. Three credits.

An examination of the municipal bond market, capital budgeting techniques, and related public policy issues.
132. General Psychology I
Either semester. Three credits. Two class periods and one 1-hour discussion. Ordinarily this course should be taken in the fall semester.
Basic principles that underlie mental processes and behavior; research methodology, biopsychology, sensation, perception, learning, memory, and language.

133. General Psychology II
Either semester. Three credits. Prerequisite: PSYC 132. Not open for credit to students who have passed PSYC 135. May not be taken concurrently with PSYC 135.

Psychology as a social science. Research methodology, developmental, personality, clinical, abnormal and social psychology.

135. General Psychology II (Enhanced)
Either semester. Four credits. Three lecture periods and one 1-hour discussion. Prerequisite: PSYC 132. Not open for credit to students who have passed PSYC 133. May not be taken concurrently with PSYC 133.

Psychology as a social science. Research methodology, developmental, personality, clinical, abnormal and social psychology. Applications of theory, writing, and demonstrations during discussion periods.

200Q. Principles of Research in Psychology
Either semester. Four credits. Three 1-hour lectures and one 2-hour laboratory/discussion. Prerequisite: PSYC 132 and PSYC 135 or 133 and STAT 100 or 110 (or Statistics Q 100 level). Open to sophomores or higher.
Design and analysis of psychological research. Experimental and quasi-experimental designs, laboratory and correlational techniques, research ethics.

205. Introduction to Behavioral Genetics
First semester. Three credits. Prerequisite: PSYC 132 or BIOL 102, 103, 107, or 108. Masson
Methods, concepts and findings of behavioral genetics in animals and humans.

205W. Introduction to Behavioral Genetics
Prerequisite: PSYC 132 or BIOL 102, 103, 107, or 108; ENGL 105 or 110 or 111 or 250.

206. Psychology of Consciousness
First semester. Three credits. Prerequisite: PSYC 132. Chaffin
The role of consciousness in human cognition is examined by comparing the conscious and unconscious operation of mental faculties including perception, memory, learning, and thought.

210W. Laboratory in Cognition
Semester by arrangement. Three credits. One 3-hour laboratory period and additional hours by arrangement. Prerequisite: PSYC 202Q, and PSYC 220 or 256, which may be taken concurrently; ENGL 105 or 110 or 111 or 250. Rueck
Selected experiments from the following topics: memory processes, categorization, language comprehension and problem solving.
211W. Psycholinguistics Laboratory
Either semester. Three credits. Prerequisite: PSYC 202Q; ENGL 105 or 110 or 115 or 250. Recommended preparation: PSYC 221 or PSYC 256 orLING 202. May be taken concurrently. Tabor
Introduction to the experimental study of language understanding and use. Topics selected from among speech perception, word recognition, sentence processing, language production, and corpus phenomena.

215W. Laboratory in Sensation and Perception
Semester by arrangement. Three credits. Two 3-hour laboratory periods. Prerequisite: PSYC 202Q, and PSYC 254, which may be taken concurrently; ENGL 105 or 110 or 115 or 250. Carell0, Growney
Techniques for the study of sensory capacities and perceptual processes.

220. Learning
Either semester. Three credits. Prerequisite: PSYC 132 and PSYC 135 or 133. Open to sophomores or higher.
Learning and memory principles found in animal research and their relationship to human behavior. Human and other species' specific types of unique learning abilities.

221. The Psychology of Language
First semester. Three credits. Prerequisite: PSYC 132 and PSYC 135 or 133. Shankweiler
Those aspects of language that make it a uniquely efficient vehicle for communication and thought.

232W. Laboratory in Developmental Psychology
Second semester. Four credits. Prerequisite: PSYC 236 and PSYC 202Q; ENGL 105 or 110 or 115 or 250. Naigles
The techniques necessary for performing psychological research on young children; advanced topics.

236. Developmental Psychology
Either semester. Three credits. Prerequisite: PSYC 132 and PSYC 135 or 133. Dickerson
Historical and contemporary theories of development. Includes Piaget, Vygotsky, Freud, Erikson, social-learning theory, ethological theory, and information-processing theory.

239. Current Topics in Developmental Psychology
Either semester. Three credits. Prerequisite: PSYC 236 or instructor consent. With change of topic, may be repeated for credit. Selected topics (e.g., infant development, peer relations, cognitive development, and developmental psychology) that may vary with each offering.

241. Current Topics in Social Psychology
Semester by arrangement. Three credits. Prerequisite: PSYC 240 and consent of instructor. With a change in content, this course may be repeated for credit. Selected topics (e.g., social influence, person perception, pro-social behavior) vary with each offering.

241W. Current Topics in Social Psychology
Prerequisite: PSYC 240 and consent of instructor; ENGL 105 or 110 or 115 or 250.

242. Laboratory in Social Psychology
Semester by arrangement. Three credits. Two class periods and one 2-hour laboratory/period. Prerequisite: PSYC 202Q or STAT 110; PSYC 240; and consent of instructor.
Methods and techniques of research in social psychology. Supervised research investigations.

242W. Laboratory in Social Psychology
Prerequisite: PSYC 202Q or STAT 110; PSYC 240; and consent of instructor; ENGL 105 or 110 or 111 or 250.

243. The Study of Personality
Either semester. Three credits. Prerequisite: PSYC 132 and PSYC 135 or 133. Open to sophomores or higher.
Kirsch
Theories, methods, and research in both clinical and experimental approaches to personality.

244. Laboratory in Personality
First semester. Three credits. One 2-hour laboratory period. Class experimentation and some practice in research writing. Prerequisite: PSYC 202Q or STAT 110. PSYC 243 and consent of instructor.
Experimental design and methodology in personality research, followed by a class project written individually by each student.

245. Abnormal Psychology
Either semester. Three credits. Prerequisite: PSYC 132 and PSYC 135 or 133. Open to sophomores or higher.
Nature of abnormal behavior, theories and data regarding symptoms, etiology, treatment and prevention of mental disorders.

245W. Abnormal Psychology
Prerequisite: PSYC 132 and PSYC 135 or 133; ENGL 105 or 110 or 111 or 250.

246. Psychology of Women
Either semester. Three credits. Prerequisite: Three credits of 200-level psychology. Crawford
Gender roles, socialization, women and work, women's relationships, violence against women, and other topics. Theory and research.

246W. Psychology of Women
Prerequisite: Three credits of 200-level psychology; ENGL 105 or 110 or 111 or 250.

248. Environmental Psychology
Either semester. Three credits. Prerequisite: PSYC 240.
Reciprocal relationships between built and natural environments and human behavior.

249. Emotional/Behavioral Disorders of Childhood
Either semester. Three credits. Prerequisite: PSYC 236.
Theory, research, treatment, and prevention in developmental psychopathology from infancy through adolescence.

249W. Emotional/Behavioral Disorders of Childhood
Prerequisite: PSYC 236; ENGL 105 or 110 or 111 or 250.

250. Current Topics in Clinical Psychology
Either semester. Three credits. Prerequisite: PSYC 242 or 245 or instructor consent. May be repeated for credit with a change of topic.

251. Health Psychology
Either semester. Three credits. Prerequisite: PSYC 132 and PSYC 133 or 135.
The interface between psychology and health is examined using a biopsychosocial model. Topics include stress and coping, health promotion, attention to chronic illness, and the psychology of health behaviors.

253. Animal Behavior
Either semester. Three credits. Prerequisite: BIOL 100 or 102 or 107, and PSYC 132. Maxson, Miller
Principles of animal behavior derived from a review of descriptive and analytic studies in laboratory and field. Sometimes offered in multimedia format.

253W. Animal Behavior
Prerequisite: BIOL 100 or 102 or 107, and PSYC 132; ENGL 105 or 110 or 111 or 250.

254. Sensation and Perception
Either semester. Three credits. Prerequisite: PSYC 132 and PSYC 135 or 133.
Sensory and perceptual processes in vision, hearing, touch, taste, and smell.

255. Motivation and Emotion (Also offered as COMM 255.)
Either semester. Three credits. Prerequisite: PSYC 132 and PSYC 135 or 133.
Different views of mental representation and processes involved in memory, language comprehension, perception, attention, and problem solving. Historical development of models in cognitive psychology.

257. Physiological Psychology
Either semester. Three credits. Prerequisite: BIOL 100 or 102 or 107 or PNB 264-265, and PSYC 132. Open to sophomores or higher. Richardson, Rhee
Physiological processes related to motivation, emotion, sensory processes, motor skills, learning, and psychiatric conditions.

257W. Physiological Psychology
Prerequisite: BIOL 100 or 102 or 107 or PNB 264-265, and PSYC 132; ENGL 105 or 110 or 111 or 250.

259. Drugs and Behavior
Second semester. Three credits. Prerequisite: PSYC 132 or BIOL 107. Open to sophomores or higher. Salamone, Chrobak
An overview of drug effects on chemical transmission in the nervous system, with an emphasis on the behavioral/psychological effects of drugs.

260. Computer Modelling of Cognitive Processes
Semester by arrangement. Three credits. Prerequisite: PSYC 254 or 256. Dickerson
Symbolic and connectionist approaches to modeling vision, problem solving, planning, deduction, language understanding, learning, and memory.
263. Laboratory in Animal Behavior and Learning
Semester by arrangement. Three credits. One 3-hour laboratory period and additional hours by arrangement. Prerequisite: PSYC 202Q, 253, and consent of instructor. Salamone.
A laboratory course to supplement PSYC 253.

263W. Laboratory in Animal Behavior and Learning
Prerequisite: PSYC 202Q, 253, and consent of instructor; ENGL 105 or 110 or 111 or 250.

267. Laboratory in Physiological Psychology
Semester by arrangement. Three credits. One 3-hour laboratory period and additional hours by arrangement. Prerequisite: PSYC 202Q, and PSYC 257, which may be taken concurrently.
Techniques employed in experimental investigation of the anatomical and physiological bases of behavior.

267W. Laboratory in Physiological Psychology
Prerequisite: PSYC 202Q, and PSYC 257, which may be taken concurrently; ENGL 105 or 110 or 111 or 250.

268. Industrial/Organizational Psychology
Either semester. Three credits. Prerequisite: PSYC 132 and PSYC 135 or 133. Open to sophomores or higher. Barnes-Farrell, Henning, Magley, Mellor.
Applications of psychology in the workplace: Measurement, personnel decisions, performance appraisal, training, motivation, worker attitudes, leadership, ergonomics and job design, workplace health and safety.

269. Introduction to Clinical Psychology
Either semester. Three credits. Prerequisite: 245 or 245W.
History of clinical psychology as a profession; graduate training and ethical responsibilities; assessment and treatment of psychological disorders; and clinical sub-specialties.

270. Black Psychology
First semester. Three credits. Prerequisite: PSYC 132 and PSYC 135 or 133. Williams
Empirical and theoretical literature on psychological experiences of African Americans. Impact of race, culture, and ethnicity on psychological development.

270W. Black Psychology
Prerequisite: PSYC 132 and PSYC 135 or 133; ENGL 105 or 110 or 111 or 250.

272. Psychology of Aging
Either semester. Three credits. Prerequisite: PSYC 132 and PSYC 135 or 133. Psychological theories and research on adult development and aging. Focus on self development from adolescence through young adulthood, midlife and later life.

278. Human Factors Design
Either semester. Three credits. Prerequisite: PSYC 132 and PSYC 135 or 133. Recommended preparation: PSYC 268. Henning
Human factors/ergonomics design applied to human-machine and sociotechnical systems. Independent work in conjunction with class project.

280. Current Topics in Industrial/Organizational Psychology
Either semester. Three credits. Prerequisite: PSYC 268 or 278 or instructor consent. May be repeated for credit with a change of topic.

281. Psychological Tests and Measurements
Second semester. Three credits. Prerequisite: PSYC 202Q or STAT 110.
Individual differences, measurement theory, issues of validity, reliability, and sampling. Intelligence, achievement, personnel, vocational, and personality testing.

282. Social-Organizational Psychology
Either semester. Three credits. Prerequisite: PSYC 268 or 240. Barnes-Farrell, Magley
Social psychological phenomena in the workplace. Social perceptions, personality, stress, work-related attitudes, motivation, team decision-making and effectiveness, leadership and influence, organizational culture.

282W. Social-Organizational Psychology
Either semester. Three credits. Prerequisite: PSYC 268 or 240; ENGL 105 or 110 or 111 or 250. Barnes-Farrell, Magley

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

291. The History and Systems of Psychology
Either semester. Three credits. Prerequisite: PSYC 132 and PSYC 135 or 133.
Philosophical and scientific origins and major schools, including structuralism, functionalism, behaviorism, gestalt, and psychoanalysis.

291W. The History and Systems of Psychology
Prerequisite: PSYC 132 and PSYC 135 or 133; ENGL 105 or 110 or 111 or 250.

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

294. Field Experience
Either semester. Credits, not to exceed six per semester, and hours by arrangement. Prerequisite: PSYC 132 and PSYC 135 or 133. Open only with consent of instructor. With a change in content, this course may be repeated for credit. Students taking this course will be assigned a final grade of S (satisfactory) or U (unsatisfactory).
Supervised field work in clinical, community, or organizational settings.

295. Seminar in Psychology
Semester by arrangement. Three credits. Prerequisite: PSYC 132 and PSYC 135 or 133 and consent of instructor. With a change in content, may be repeated for credit.
Recent developments in psychology. Topics vary with each offering.

296W. Senior Thesis in Psychology
Either semester. Three credits. Hours by arrangement. Prerequisite: Three credits of PSYC 297 or PSYC 299; ENGL 105 or 110 or 111 or 250. Open only to Honors students with consent of instructor and Department Head.

297. Undergraduate Research
Either semester. Credits, not to exceed six per semester, and hours by arrangement. Open only with consent of instructor. Recommended preparation: PSYC 202Q. With a change in content, this course may be repeated for credit.
Participant activities related to research.

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

299. Independent Study
Either semester. Credits and hours by arrangement. Prerequisite: PSYC 202Q. Open only with consent of instructor. With a change in content this course may be repeated for credit.
Students are expected to develop their own plan for a research project, conduct the research, and write-up this research, consulting periodically with a faculty member.

Puerto Rican & Latino Studies (PRLS)

Director: Institute for Puerto Rican & Latino Studies
Professor Blanca Silvestrini
Office: Room 413, Beach Hall, 4th floor

210. Contemporary Issues in Latino Studies
Either semester. Three credits.
Topics in socio-demographic patterns, cultural identity claims, community organization, migration and citizenship issues of Latino groups in post-WWII United States. Emphasis on comparative analysis and on policy implications.

211. Puerto Rican/Latino Studies Research
Either semester. Three credits.
Students design, execute and write original, library or archival-based research on Latino/a experience using documents, films, literary works, surveys, photographic and newspaper materials.

212. Field Internship in Latino Studies
Either semester. One to three credits; may be repeated for up to six credits.
Work in cultural community-oriented setting(s).

220. History of Latinos/as in the United States
(Also offered as HIST 278.) Either semester. Three credits.
Silvestrini
Settlement and growth of Hispanic-origin populations in the United States today, from Spanish and Mexican settlement of western United States to the growth of Latino communities. Student oral history project.

221. Latinos/as and Human Rights
(Also offered as HIST 284.) Either semester. Three credits.
Silvestrini
Latino/a issues related to human, civil and cultural rights, and gender differences.

230. Latina Narrative
(Also offered as WS 258.) Either semester. Three credits.
Silvestrini
Feminist topics in contemporary Latina literature and cultural studies.

231. Fictions of Latino Masculinity
(Also offered as WS 259.) Either semester. Three credits.
Gonzalez
Feminist topics in contemporary Latina literature and cultural studies with an emphasis on masculinity and male authors.

232. Latino/a Literature
(Also offered as ENGL 261.) Either semester. Three credits.
Gonzalez
Extensive readings in Latina/o literature from the late nineteenth century to the present.
230. Studies in Latin American Literature
(Also offered as ENGL 262.) Either semester. Three credits. Prerequisite: ENGL 105 or 110 or 111 or 250 or instructor consent. May be repeated for credit with a change of topic. Gonzalez.
Advanced study of a theme, form, author, or movement in contemporary Latin American literature.

241. Latin American Minorities in the United States
(Also offered as ANTH 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.

250. Latino Health and Health Care
(Also offered as HDFS 267.) Either semester. Three credits.
Overview of health and health care issues among Latinos in the United States. Particular attention is paid to cultural sociological factors associated with health and well being (e.g. migration, acculturation, SES).

251. Latino Sexuality and Gender
Second semester. Three credits.
Introduction to issues of gender/sexuality among United States Latinos. Attention to variations in length of United States residence (acculturation), class, race and ethnicity.

260. Media and Special Audiences
(Also offered as COMM 232.) Either semester. Three credits. Recommended preparation: COMM 100 or 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.

264. Latinos and Media
(Also offered as WS 260 and COMM 233.) Second semester. Three credits. Rios
The role of ethnicity and race in women’s lives. Special attention to communication research on ethnic and racial minority women.

270. Latino Political Behavior
(Also offered as POLS 249.) Either semester. Three credits. Pantoja
Latino politics in the United States. Political histories of four different Latino populations: Mexican, Puerto Rican, Cuban, and Central American. Different forms of political expressions, ranging from electoral behavior to political art.

271. Immigration and Transborder Politics
Either semester. Three credits. Pantoja
U.S. immigration policy, trans-border politics, and the impact diasporas and ethnic lobbies have on U.S. foreign policy, with the emphasis on Latino diasporas.

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

298. Special Topics in Puerto Rican and Latino Studies
Either or both semesters. Three credits. With a change in topic, may be repeated for credit. Special topics in Puerto Rican and Latino Studies.

299. Independent Study in Puerto Rican and Latino Studies
Either semester. Credits and hours by arrangement. With a change in content, this course may be repeated for credit. Consent of the instructor.

Russian (RUSS)

Head of Department: David Herzberger
Department Office: Room 228, J.H. Arjona Building
Consult the Departmental Handbook for courses offered in the appropriate semesters and further description of these courses.

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

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

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

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

Science (SCI)

110. Humans and the Changing Global Environment
Either semester. Three credits. An introduction to the basic scientific principles that govern the interaction between human beings and their environment. Emphasis is placed on understanding the ways in which environmental processes affect humanity and the ways in which human activities affect the environment.

150. Unifying Concepts in Biology, Chemistry and Physics
First semester. Four credits. Three lecture periods and one 2-hour laboratory. Prerequisite: Must have passed Q-readiness test or MATH 101. Knox, Markowitz, Shaw, Terry
A laboratory course introducing unifying concepts from biology, chemistry, and physics and their application to daily life. Includes examination of the scientific process and current scientific ideas.

193. Foreign Study
Either or both semesters. Credits and hours by arrangement. May be repeated for credit. Consent of the program director normally before the student’s departure to study abroad. How credits are used to be determined by the College Dean and/or Advisor.
Special topics taken in a foreign study program.

206. Introduction to the History of Science
(Also offered as HIST 206.) First semester. Three credits. Open to sophomores or higher. This course may be used only once to meet the distribution requirement. Rise and development of scientific inquiry; case studies designed to illustrate problems and methods in the study of the history of science.

240. The Nature of Scientific Thought
Second semester. Three credits. Open to sophomores or higher.
An inquiry into the underlying assumptions and aims of scientific knowledge. Emphasis is placed on philosophical issues generated by current theories in the physical and biological sciences.

241. Seminar in the Nature of Scientific Thought
Second semester. One credit. One class period. Prerequisite: SCI 240 must be taken concurrently. Open to sophomores or higher.
Discussions based on the content of SCI 240.

Sociology (SOCI)

Head of Department: Professor John Manning
Department Office: Room 115, Manchester Hall
For major requirements, see the College of Liberal Arts and Sciences section of this Catalog.

107. Introduction to Sociology
Either semester. Three credits. Modern society and its social organization, institutions, communities, groups, and social roles: the socialization of individuals, family, gender, race and ethnicity, religion, social class, crime and deviance, population, cities, political economy, and social change.

107W. Introduction to Sociology
Prerequisite: ENGL 105 or 110 or 111 or 250.

115. Social Problems
Either semester. Three credits.
Major social problems, their sources in the organization of society, public policies for their alleviation, and questions of ethics and social justice: alcohol and drug abuse, physical and mental illness, sexual variabilities, poverty and inequality, ethnic and racial prejudice and discrimination, women and gender, the changing family, violence, crime, and delinquency, the environment, urban problems, and population planning and growth.

115W. Social Problems
Prerequisite: ENGL 105 or 110 or 111 or 250.

125. Race, Class, and Gender
Either semester. Three credits.
Race, class, and gender, as they structure identities, opportunities, and social outcomes.

125W. Race, Class, and Gender
Prerequisite: ENGL 105 or 110 or 111 or 250.

205. Methods of Social Research
Either semester. Three credits. Prerequisite: SOCI 107. Ratcliff, Wallace, Weakliem, Wright
Quantitative and qualitative methods used in sociological research: designs for gathering data, problems of measurement, and techniques of data analysis. Lectures and laboratory work. Majors in sociology should take this required course in their junior year.

207V. Quantitative Methods in Social Research
Either semester. Three credits. Prerequisite: SOCI 205 or instructor consent; and STAT 100 or 110. Bernstein, Wallace, Weakliem
Practical work in the design and execution of research, hypothesis testing, data analysis, and interpretation.

208C. Computing in the Social Sciences
Either semester. Three credits. One 2-hour lecture and one 2-hour laboratory per week. Prerequisite: Q course
and SOCI 205 or equivalent.

Introduction to applied computing skills using a statistical package.

**209. Applying Sociology to Social Issues**
Either semester. Three credits. Prerequisite: SOCI 107 and 205 or instructor consent. Ratcliff

Applying sociology and its methods to ask research questions, gather information, and evaluate social programs.

**210. Criminology**
Either semester. Three credits. Open to sophomores or higher.

Theories and research on crime, criminal law, and the criminal justice system.

**216W. Criminology**
Prerequisite: ENGL 105 or 110 or 111 or 250. Open to sophomores or higher.

**217. Deviant Behavior**
Either semester. Three credits. McNeal, Sanders

Behaviors labeled by society as deviant, such as crime, prostitution, suicide, alcoholism, drug abuse, and mental illness.

**217W. Deviant Behavior**
Prerequisite: ENGL 105 or 110 or 111 or 250.

**218. Juvenile Delinquency**
Second semester. Three credits. Younts

An overview of sociological theory and research on juvenile delinquency.

**218W. Juvenile Delinquency**
Prerequisite: ENGL 105 or 110 or 111 or 250.

**219. Drugs and Society**
Either semester. Three credits. Sanders

Drug taking as a social problem, the “war on drugs,” drug education, treatment and prevention approaches, the illegal drug market.

**219W. Drugs and Society**
Prerequisite: ENGL 105 or 110 or 111 or 250.

**221. Sociological Perspectives on Asian American Women**
(Also offered as AASI 221.) Either semester. Three credits. Parkayastha

An overview of social structures and inter-group relations focusing on the experience of Asian American women.

**221W. Sociological Perspectives on Asian American Women**
(Also offered as AASI 221W.) Prerequisite: ENGL 105 or 110 or 111 or 250.

**222. Asian Indian Women: Activism and Social Change in India and the United States**
(Also offered as AASI 222.) First semester. Three credits. Prerequisite: SOCI 107, 115 or 125. Parkayastha

How gender, class and ethnicity/race structure everyday lives of Asian Indian women in both India and the United States.

**226. Modern Africa**
Either semester. Three credits. Guglet

Cultural patterns, social structure, and political conflict in Subsaharan Africa.

**226W. Modern Africa**
Prerequisite: ENGL 105 or 110 or 111 or 250.

**227. Revolutionary Social Movements Around the World**
Either semester. Three credits. One 3-hour class per week. Open to sophomores or higher. DeFronzo

Lectures and documentary films on the Russian, Chinese, Vietnamese, Cuban and Nicaraguan revolutions and movements in South Africa and the Middle East.

**227W. Revolutionary Social Movements Around the World**
Prerequisite: ENGL 105 or 110 in SOCI 205. Open to sophomores or higher.

**230. Society and the Individual**
Either semester. Three credits. Prerequisite: SOCI 107. Dashefsky, Eisenhandler, Wright

Modern social systems and the behavior, psychological organization, and development of individuals.

**230W. Society and the Individual**
Prerequisite: SOCI 107, ENGL 105 or 110 or 111 or 250.

**235. African Americans and Social Protest**
Either semester. Three credits. Cazenave

Social and economic-justice movements from the beginning of the Civil Rights movement to the present.

**236. White Racism**
Either semester. Three credits. Cazanave

The origin, nature, and consequences of white racism as a central and enduring social principle around which the United States and other modern societies are structured and evolve.

**240. Ethnicity and Race**
Either semester. Three credits. Villemoz

Ethnic groups, their interrelations, assimilation, and pluralism. Culture, and identity that arise from differences in race, religion, nationality, region, and language.

**240W. Ethnicity and Race**
Prerequisite: ENGL 105 or 110 or 111 or 250.

**241. Women and Health**
(Also offered as WS 241.) Either semester. Three credits. Ratcliff

Social factors shaping women’s health, health care, and their roles as health-care providers.

**242. American Jewry**
(Also offered as JUDS 242.) Either semester. Three credits. Dashefsky

Historical, demographic, organizational, and sociopsychological perspectives.

**242W. American Jewry**
Prerequisite: ENGL 105 or 110 or 111 or 250.

**243. Prejudice and Discrimination**
Either semester. Three credits. Dashefsky, McNeal, Taylor

Sources and consequences of racial and ethnic prejudice and discrimination.

**243W. Prejudice and Discrimination**
Prerequisite: ENGL 105 or 110 or 111 or 250.

**244. Sociology of Mental Illness**
Either semester. Three credits. Broadhead

Madness in human societies; its history, incipience, epidemiology, etiology, institutionalization, and other issues.

**244W. Sociology of Mental Illness**
Prerequisite: ENGL 105 or 110 or 111 or 250.

**245. Sociology of Sexualities**
Either semester. Three credits. Open to sophomores or higher. Not open for credit to students who have taken SOCI 246 or 246W. Bernstein

Explores the social organization, construction, and politics of sexualities; particular focus on lesbian, gay, bisexual, transgender, and queer experiences and the intersection of sexualities, gender, race, and class.

**245W. Sociology of Sexualities**
Prerequisite: ENGL 105 or 110 or 111 or 250. Open to sophomores or higher.

**247. Sociology of Health**
Either semester. Three credits. Ratcliff

Social factors related to health, illness, and healthcare systems.

**247W. Sociology of Health**
Prerequisite: ENGL 105 or 110 or 111 or 250.

**248. Aging in American Society**
(Also offered as HDFS 248.) Either semester. Three credits. This course may be used only once to meet the distribution requirements. Eisenhandler

Social gerontology: the role and status of older people in a changing society.

**248W. Aging in American Society**
(Also offered as HDFS 248W.) Prerequisite: ENGL 105 or 110 or 111 or 250.

**249. Sociological Perspectives on Poverty**
Either semester. Three credits. Cazenave, Villemoz

Poverty in the U.S. and abroad, its roots, and strategies to deal with it.

**249W. Sociological Perspectives on Poverty**
Prerequisite: ENGL 105 or 110 or 111 or 250.

**250. Sociology of the Family**
Either semester. Three credits. Open to sophomores or higher.

The American family, its changing forms and values, and the social conditions influencing it: mate selection, marital adjustment, the responsibilities and opportunities of parenthood, and resolving family crises.

**250W. Sociology of the Family**
Prerequisite: ENGL 105 or 110 or 111 or 250. Open to sophomores or higher.

**252. Sociology of Gender**
Either semester. Three credits. Naples

Explores processes contributing to social construction of gender; examines the theories used to explain the system of inequality in the United States with particular attention to the intersection of gender, race, ethnicity, sexuality, and class; and evaluates how men and women are differentially constituted in the family, in education, work, politics, and language.

**252W. Sociology of Gender**
Prerequisite: ENGL 105 or 110 or 111 or 250.

**253. Sociology of Religion**
Either semester. Three credits. Eisenhandler

Religion in social context: differences of church, denomination, sect, and cult; religious culture, organization, and ideology.

**253W. Sociology of Religion**
Prerequisite: ENGL 105 or 110 or 111 or 250.

**255. Population**
Either semester. Three credits. Size, growth, composition and distribution of population; social factors in population change.

**255W. Population**
Prerequisite: ENGL 105 or 110 or 111 or 250.

**258. The Developing World**
Either semester. Three credits. Social and economic conditions in Asia, Africa, and Latin America and attempts to improve them.

**258W. The Developing World**
Prerequisite: ENGL 105 or 110 or 111 or 250.

**259. Energy, Environment, and Society**
Either semester. Three credits.

Sociological perspectives on energy production, distribution and consumption, environmental, and social organization.
259W. Energy, Environment, and Society
Prerequisite: ENGL 105 or 110 or 111 or 250.

260. Social Organization
Either semester. Three credits. Prerequisite: SOCI 107. Villemez; Wallace
Social organization and structure in modern society. Sociology majors should take this required course in their junior year.

260W. Social Organization
Prerequisite: SOCI 107; ENGL 105 or 110 or 111 or 250.

265. Complex Organizations
Either semester. Three credits. Villemez, Wallace
Theories and research on complex organizations in society; relationship between organizations and their environments; varieties of organizational forms, structures, and processes.

265W. Complex Organizations
Prerequisite: ENGL 105 or 110 or 111 or 250.

266. Topics in the Sociology of Culture
Either semester. Three credits. May be repeated for credit with a change in topic.
A variable topics course focusing on issues in the sociology of culture. Specific topics may include: production of culture and the culture industry, popular culture, the sociology of the arts, cultural representation of deviance and social problems, women and culture, film and the developing world, material culture, and cultural constructions of social inequality.

267. Public Opinion and Mass Communication
Either semester. Three credits. Tuchman
Contemporary public opinion and ideology, the process and effects of mass communication, and the measurement of public opinion.

267W. Public Opinion and Mass Communication
Prerequisite: ENGL 105 or 110 or 111 or 250.

268. Class, Power, and Inequality
Either semester. Three credits. Bernstein, Glasberg, Villemez; Wallace
Inequality and its consequences in contemporary societies.

268W. Class, Power, and Inequality
Prerequisite: ENGL 105 or 110 or 111 or 250.

269. Political Sociology
Either semester. Three credits. Glasberg
Social analysis of power, democracy and voting, society and the state, and political economy.

269W. Political Sociology
Prerequisite: ENGL 105 or 110 or 111 or 250.

270. Social Theory
Either semester. Three credits. Prerequisite: SOCI 107. Tuchman
Sociological theory for advanced undergraduates.

270W. Social Theory
Prerequisite: SOCI 107; ENGL 105 or 110 or 111 or 250.

274. Work and Occupations
Either semester. Three credits. Villemez, Wallace
Occupations, jobs, careers, and the professions, and their effects on the division of labor, on the workplace, and on individuals in the labor force.

280. Urban Sociology
(Also offered as URBN 280.) Either semester. Three credits. Open to sophomores or higher. Abrahamson
Social and physical organization of cities and suburbs.

280W. Urban Sociology
(Also offered as URBN 280W.) Open to sophomores or higher. Prerequisite: ENGL 105 or 110 or 111 or 250.

281. Urban Problems
(Also offered as URBN 281.) Either semester. Three credits.
Social problems of American cities and suburbs, with emphasis on policy issues.

281W. Urban Problems
(Also offered as URBN 281W.) Prerequisite: ENGL 105 or 110 or 111 or 250.

282. Urbanization
Either semester. Three credits.
The rapid urbanization of the world’s population: its causes, characteristics and consequences.

282W. Urbanization
Prerequisite: ENGL 105 or 110 or 111 or 250.

283. City Life
Either semester. Three credits.
Ways of life in large cities and suburbs and the culture of modernism.

283W. City Life
Prerequisite: ENGL 105 or 110 or 111 or 250.

284. Communities
Second semester. Three credits. Three class periods.
Prerequisite: One introductory level sociology course or instructor consent. Eisenhandler
Sociological analysis of processes and structures of various kinds of communities.

Either semester. Three credits. Open to seniors in the social sciences; to others only with consent of instructor.
Social welfare needs and programs; introduction to social work as a professional service.

288. Sociology of Education
Either semester. Three credits. McNeal
Education and society: primary schools through universities as agencies for social selection and socialization.

288W. Sociology of Education
Prerequisite: ENGL 105 or 110 or 111 or 250.

289. Social Movements and Social Change
Either semester. Three credits. Bernstein
Revolutionary, reform, reactionary, religious, communal, and escapist movements.

290. Social Movements and Social Change
Prerequisite: ENGL 105 or 110 or 111 or 250.

293. Foreign Study
Either or both semesters. Credits and hours by arrangement.
May not be used to meet the undergraduate foreign language requirement or as a prerequisite for other Spanish courses.

294. Senior Thesis in Sociology
Either semester. Three credits. Prerequisite: Fifteen credits in sociology and consent of instructor and Department Head; ENGL 105 or 110 or 111 or 250.

296. Field Experience
Either semester. Variable (1-9) credits, by arrangement. Class and field work by arrangement with instructor and field agency. May be repeated for credit, not to exceed 9 credits total for 296 and 296W. Prerequisite: SOCI 107. Ratcliffe, Wright
Internship in a social-welfare agency or institution.

296W. Field Experience
Prerequisite SOCI 107; ENGL 105 or 110 or 111 or 250. Three credits may be taken for W credit.

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

298. Special Topics
Either semester. Credits and hours by arrangement. With a change in content, may be repeated for credit. A lecture course. Topics vary by semester.

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

Spanish (SPAN)

Head of Department: David Herzberger
Department Office: Room 228, J.H. Arjona Building
Consult the Modern and Classical Languages Departmental listing in this Catalog for requirements for Majors in Spanish.

Consult the Departmental Handbook for courses offered in the appropriate semesters and further description of these courses.

181-182. Elementary Spanish I and II
Both semesters. Four credits each semester. Four class periods and additional laboratory practice. Not open for credit to students who have had three or more years of Spanish in high school. Students who wish to continue in Spanish but feel ill prepared should contact the head of the Modern and Classical Languages Department.

Development of ability to communicate in Spanish, orally and in writing, to satisfy basic survival needs within a cultural setting.

183-184. Intermediate Spanish I and II
Both semesters. Four credits each semester. Four class periods and additional laboratory practice. Prerequisite: SPAN 182 or two years of Spanish in high school.

Further development of understanding, speaking, reading, and writing skills within a cultural setting. Readings to enhance cultural awareness of the Spanish-speaking world.

185-186. Spanish for Reading Knowledge
Both semesters. Three credits each semester. Open only to seniors and graduate students. Not open for credit to undergraduates who have had SPAN 181-182.

May not be used to meet the undergraduate foreign language requirement or as a prerequisite for other Spanish courses.

Basic Spanish grammar and intensive practice in reading expository prose in a variety of subjects, for use as a research tool and in preparation for the Ph.D. reading examination.

187. Major Works of Hispanic Literature in Translation
Either semester. Three credits. Knowledge of Spanish is not required. A study of major works selected from the best of Spanish and Spanish-American literature.

190. Language, Culture, and Health in Spanish-Speaking Societies
Four credits. Semester and hours by arrangement. Prerequisite: Two years of high school Spanish or equivalent and consent of instructor. Open to graduate and undergraduate students in the health professions as well as practicing health professionals. May be repeated once for credit with a change in topic. May not be used to meet the undergraduate foreign language requirement.

Content-based language instruction with a focus on the cultural construct and context of “health” in Spanish-speaking environments. Development of Spanish language skills through intensive work with authentic materials drawn from technical literature, fiction, print media, video, radio, and other sources.
193. **Foreign Study**
   Either or both semesters. Credits and hours by arrangement. May be repeated for credit. Consent of Department Head required, normally before the student’s departure.

   Special topics taken in a foreign study program.

200. **Spanish Civilization to the Modern Period**
   Either semester. Three credits. Recommended preparation: SPAN 278 or instructor consent.

   An interdisciplinary course analyzing the politics, social structures, and cultural life of Spain from its beginnings to the start of the nineteenth century.

201. **Ibero-American Civilization and Culture**
   Either semester. Three credits. Recommended preparation: SPAN 278 or instructor consent.

   History of the major social, intellectual, and artistic trends of Spanish-speaking America.

202. **Studies in Spanish-American Literature**

   Readings and discussions of specific aspects of Spanish-American literature. May be repeated for credit once with a change of topic. Consult department for particulars each year.

204. **Language and Culture of U.S. Hispanics**
   Either semester. Three credits. Prerequisite: SPAN 184.

   Comparison of linguistic, historical and cultural backgrounds of various Hispanic groups in the U.S. through fiction, non-fiction, films, music, and guest speakers.

205. **Contemporary Spanish America**
   Either semester. Three credits. Recommended preparation: SPAN 278 or instructor consent.

   An interdisciplinary course concerned with present-day cultural, political and social structures of Spanish America. Revolutionary and counter-revolutionary ideas in contemporary society and the struggle for social, political and economic stability.

206. **Contemporary Spain**
   Either semester. Three credits. Recommended preparation: SPAN 278 or instructor consent.

   An interdisciplinary course analyzing the politics, social structures and cultural life in Spain today. Spain in relation to Western Europe and the community of nations.

207. **Women’s Studies in Spanish**
   Either semester. Three credits. Recommended preparation: SPAN 278 or instructor consent.


208. **Issues in Hispanic Thought**
   Either semester. Three credits. Recommended preparation: SPAN 278 or instructor consent. With a change in topic, may be repeated for credit.

   Selection for study of a major world issue debated in the Iberian Peninsula or in Ibero-America by great thinkers. A history of the issue, taking into account international cultural contexts.

209. **Latin American Film**
   Either semester. Three credits. One 3-hour class period. Recommended preparation: SPAN 278 or instructor consent.

   Offers insights into Latin American cinema and video production. Provides tools for analyzing film and its expression of socio-political and aesthetic debates in the continent.

210. **Spanish for Social Workers**
   Either semester. Two credits. Two class periods. Open only to graduate students in the School of Social Work. Offered at the Hartford Campus.

   Development of conversational skills within the cultural perspective of Hispanics in the U.S. Emphasis on intake interviewing techniques using vocabulary and structures relevant to human services contexts.

214. **Topics in Hispanic Cultures**
   Either semester. Three credits. Recommended preparation: five semesters of college Spanish. May be repeated for credit with a change in topic.

   Selected topics. Cross-disciplinary approach to the study of Peninsular and Hispanic American cultures: the colonial heritage in Latin America; intellectual traditions and national identities; cultural production under military regimes; and experience of exiles; among possible topics.

219. **Spanish Film**
   Either semester. Three credits. One 3-hour class period. Recommended preparation: SPAN 278 or instructor consent.

   Class explores the way film has expressed debates over Spanish identity and history, including the role of film under Franco, in the new democratic Spain, and as part of a postmodern Europe.

220. **Introduction to Literary Study**
   Either semester. Three credits. Recommended preparation: SPAN 278 or instructor consent.

   Introduction to literary analysis through a variety of critical approaches: readings in poetry, drama, and prose fiction with explanation of terms useful to the study of literature.

223. **Old Spanish Language and Literature**
   Either semester. Three credits. Prerequisite: SPAN 281.

   Linguistic and literary analysis of Medieval and Renaissance Spanish texts.

224. **Studies in Spanish Golden Age Literature**
   Either semester. Three credits. Recommended preparation: SPAN 200. May be repeated for credit once with a change in topic. Consult department for particulars each year.

   Readings and discussions of specific aspects of Golden Age literature.

225. **Studies in Spanish Literature of the Eighteenth and Nineteenth Centuries**
   Either semester. Three credits. Recommended preparation: SPAN 200. May be repeated for credit once with a change in topic. Consult department for particulars each year.

   Readings and discussions of specific aspects of the literature of the period.

226. **Studies in Spanish Literature of the Twentieth Century**
   Either semester. Three credits. Recommended preparation: SPAN 200. May be repeated for credit once with a change in topic. Consult department for particulars each year.

   Readings and discussions of specific aspects of the literature of the period.

250. **Film in Spain and Latin America**
   Either semester. Three credits.

   Film language and genre in Spanish and Latin American cinema. Taught in English.

254. **Special Topics in Latin American National Cinemas**
   Either semester. Three credits. May be repeated for credit with a change of topic. *Los, Schney*

   Selected Latin American national cinema. Focus on identity, aesthetics, and history.

270. **Business Spanish**
   Either semester. Three credits. Prerequisite: SPAN 184 or instructor consent.

   Introduction to commercial terminology in Spanish. Designed to meet the needs of students desiring to use Spanish as a tool for industry or commerce.

278. **Intermediate Spanish Composition**
   Either semester. Three credits. Prerequisite: SPAN 184 or three or more years of Spanish in high school.

   This course provides a thorough review of grammar and methodical practice in composition leading to command of practical idioms and vocabulary.

279. **Spanish Conversation: Cultural Topics**
   Either semester. Three credits. Recommended preparation: SPAN 278 or instructor consent.

   In-depth development of speaking skills through cultural readings, group discussions and oral presentations on selected topics concerning the Spanish-speaking world.

280. **Composition and Reading for Speakers of Spanish**
   Either semester. Three credits. Prerequisite: Consent of instructor.

   Grammar, written composition, and readings for speakers of Spanish with little or no formal training. Emphasis is on Puerto Rican literature.

281. **Great Works of Spanish Literature from its Origins to the Golden Age**
   Either semester. Three credits. Recommended preparation: SPAN 278 or instructor consent.

   The study of selected poems, plays, fables and novels reflecting the development of Spanish society from feudalism to world empire.

282. **Literature of Crisis in Modern Spain**
   Either semester. Three credits. Recommended preparation: SPAN 278 or instructor consent.

   The study of selected poems, plays, short fiction, and novels reflecting the clash between tradition and progress in nineteenth- and twentieth-century Spain.

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

290. **Spanish Phonetics**
   Either semester. Three credits. Recommended preparation: SPAN 278.

   A study of the sounds of the language and drills to improve pronunciation. Recommended for all majors and for those who expect to teach Spanish.

291. **Advanced Spanish Composition**
   Either semester. Three credits. Recommended preparation: SPAN 278.

   Treatment of the finer points of Spanish grammar. Exercises in translation and free composition. Stylistic analysis of texts chosen from Spanish authors, newspapers and magazines.

292. **Selected Topics in Hispanic Literature**
   Either semester. Three credits. May be repeated for credit once with a change of topic. Consult department for particulars each year.

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

   Special topics taken in a foreign study program.
294. Literature of Puerto Rico and the Spanish Caribbean
Either semester. Three credits. Recommended preparation: SPAN 278 or instructor consent.
Readings and discussions of major authors and works of the Spanish Caribbean with special emphasis on Puerto Rico.

295. Spanish-American Literature: The Formative Years
Either semester. Three credits. Recommended preparation: SPAN 278 or instructor consent.
The emergence of the New World in the chronicles of the conquest and colonization of Spanish America. Selected texts from “barroco de Indias” (Sor Juana Inés de la Cruz), and from the period of political independence. The coming of age of Spanish-American literature with the pioneer texts of José Martí and the first “Modernismo.”

296. Great Works of Modern Spanish-American Literature
Either semester. Three credits. Recommended preparation: SPAN 278 or instructor consent.
Study of the most significant texts of “Modernismo” with focus on Rubén Darío. The “avant-garde” in Spanish America. The narrative of the “boom” and its impact on present-day literature.

297. Spanish-American Fiction
Lectures, readings and reports on the development of the Spanish-American novel and short story.

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

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

Study Abroad in Spain. The University of Connecticut sponsors an academic program at the University of Granada, Spain, which is open to those who have successfully completed a fifth semester Spanish course or the equivalent. Courses include Spanish language and linguistics, literature, culture, history, economics, political science and art history.

Study Abroad in Latin America. Students who have taken at least two years of college-level Spanish are eligible for University of Connecticut sponsored programs in Argentina, Chile, the Dominican Republic, and Mexico. Courses are offered in liberal arts and social sciences.

Statistics (STAT)
Head of Department: Professor D. Dey
Department Office: Room 323, College of Liberal Arts and Sciences Building

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

Credit restrictions: 100 level statistics courses are not open for credit to students who have passed two 200 level statistics course or who are taking such a course concurrently. Students can receive no more than four credits from Statistics 100 and 110.

100V. Introduction to Statistics I (Q, C)
Either semester. Four credits. Recommended Preparation: Math 101 or the equivalent. Three class periods and one discussion period. See credit restrictions above.
A standard approach to statistical analysis primarily for students of business and economics; elementary probability, sampling distributions, normal theory estimation and hypothesis testing, regression and correlation, exploratory data analysis. Learning to do statistical analysis on a personal computer is an integral part of the course.

110V. Elementary Concepts of Statistics (Q, C)
Either semester. Four credits. Recommended Preparation: Math 101 or the equivalent. Three class periods and one discussion period. See credit restrictions above.
Standard and nonparametric approaches to statistical analysis; exploratory data analysis, elementary probability, sampling distributions, estimation and hypothesis testing, one- and two-sample procedures, regression and correlation. Learning to do statistical analysis on a personal computer is an integral part of the course.

201Q. Introduction to Statistics II
Either semester. Three credits. Prerequisite: STAT 100 or 110. Open to sophomores or higher.
Analysis of variance, multiple regression, chi-square tests, and non-parametric procedures.

220Q-221Q. Statistical Methods (Calculus Level)
Either semester. Three credits each semester. Prerequisite: MATH 114 or 116 or 121.
Basic probability distributions, point and interval estimation, tests of hypotheses, correlation and regression, analysis of variance, experimental design, non-parametric procedures.

224Q. Probability Models for Engineers
Either semester. Three credits. Prerequisite: MATH 210Q or 220Q. Students may not receive credit for both STAT 224 and STAT 220 or from STAT 224 and STAT 230.
Probability set functions, random variables, expectations, moment generating functions, discrete and continuous random variables, joint and conditional distributions, multinomial distribution, bivariate normal distribution, functions of random variables, central limit theorems, computer simulation of probability models.

230Q-231Q. Introduction to Mathematical Statistics
Both semesters. Three credits each semester. Prerequisite: MATH 210 or 220. Students may not receive credit for both STAT 230 and 315, or both STAT 231 and 316.

235Q. Elementary Stochastic Processes
(Also offered as MATH 232Q.) Either semester. Three credits. Prerequisite: STAT 220 or 224 or MATH 231. Not open for credit to students who have passed MATH 232Q.
Conditional distributions, discrete and continuous time Markov chains, limit theorems for Markov chains, random walks, Poisson processes, compound and marked Poisson processes, and Brownian motion. Selected applications from actuarial science, biology, engineering, or finance.

242Q. Analysis of Experiments
Either semester. Three credits. Prerequisite: STAT 201 or 220 or instructor consent. Credit may not be received for both STAT 242 and 342.
Straight-line regression, multiple regression, regression diagnostics, transformations, dummy variables, one-way and two-way analysis of variance, analysis of covariance, stepwise regression.

243Q. Design of Experiments
Second semester. Three credits. Prerequisite: STAT 201 or 220 or instructor consent. Credit may not be received for both STAT 243 and 343.
Methods of designing experiments utilizing regression analysis and the analysis of variance.

252Q. Sampling Theory
Either semester. Three credits. Prerequisite: STAT 231 or instructor consent.
Sampling and nonsampling error, bias, sampling design, simple random sampling, sampling with unequal probabilities, stratified sampling, optimum allocation, proportional allocation, ratio estimators, regression estimators, super population approaches, inferences in finite populations.

253Q. Nonparametric Methods
First semester. Three credits. Prerequisite: STAT 231 or instructor consent.
Basic ideas, the empirical distribution function and its applications, uses of order statistics, one- and c-sample problems, rank correlation, efficiency.

261V. Statistical Computing
Second semester. Four credits. Prerequisite: STAT 220 or STAT 230. Recommended preparation: An applied statistics course. Open only with consent of instructor.
Introduction to computing for statistical problems; obtaining features of distributions, fitting models and implementing inference (obtaining confidence intervals and running hypothesis tests); simulation-based approaches and basic numerical methods. One hour per week devoted to computing and programming skills.

271V. Statistical Quality Control and Reliability
Either semester. Three credits. Prerequisite: STAT 231.
Development of control charts, acceptance sampling and process capability indices, reliability modeling, regression models for reliability data, and proportional hazards models for survival data.

272. Introduction to Biostatistics
Either semester. Three credits. Prerequisite: STAT 220 or instructor consent.
Rates and proportions, sensitivity, specificity, two-way tables, odds ratios, relative risk, ordered and non-ordered classifications, trends, case-control studies, elements of regression including logistic and Poisson, additivity and interaction, combination of studies and meta-analysis.

279Q. Introduction to Biostatistics
Either semester. Three credits. Prerequisite: STAT 220 or an applied statistics course along with either STAT 230 or MATH 231 or instructor consent.

280V. Applied Time Series
Either semester. Three credits. Prerequisite: STAT 231 or instructor consent.

284Q. Probability and Statistics Problems
Either semester. One or two credits. Hours by arrangement. Prerequisite: MATH 231 and STAT 230. Not open for credit to students who have passed MATH 284Q.
Designed to help students prepare for the second actuarial examination.

286Q. Introduction to Operations Research
(Also offered as MATH 286Q and STAT 356.) Either semester. Three credits. Prerequisite: MATH 231 or STAT 220 or 230. Not open for credit to students who have passed MATH 286 or STAT 356.
Introduction to the use of mathematical and statistical techniques to solve a wide variety of organizational problems. Topics include linear programming, network analysis, queuing theory, decision analysis.

294. Field Study Internship
Either semester. Credits and hours by arrangement. Prerequisites: Completion of Freshman - Sophomore General CLAS requirements. Completion with a grade of “C” or better of STAT 220 or STAT 230 and STAT 242 or STAT 243. Students taking this course will be assigned a final grade of S (satisfactory) or U (unsatisfactory).
Supervised field work relevant to some area of Statistics with a regional industry, government agency, or non-profit organization. Evaluated by the field supervisor and by the instructor (based on a detailed written report submitted by the student).

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

296. Undergraduate Research
Either semester. Three credits. Hours by arrangement. Open only with consent of instructor.
Supervised research in probability or statistics. A final written report and oral presentation are required.

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

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

Urban and Community Studies (URBN)

Director: Urban and Community Studies Program (for the TriCampus): Robert Fisher
Office: Room 220, Undergraduate Building, West Hartford
Coordinator: Urban and Community Studies Program (for Storrs): Peter L. Halvorson
Office: Room 430, College of Liberal Arts and Sciences Building

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

130. The City in the Western Tradition
(Also offered as GEOG 130.) Either semester. Three credits.
A broad discussion of the role and structure of the city in the western tradition from ancient Mesopotamia to contemporary America. Special emphasis will be placed on the mechanisms by which cities and ideas about them have been diffused from one place to another and on the changing forces that have shaped the western city.

230. Introduction to Urban Studies
Second semester. Three credits. Open to sophomores or higher.
Introduction to the analysis of urban development with particular stress on those problems pertinent to the American central city.

231. Internship in Urban Studies: Field Study
Either semester. Credits, not to exceed three, by arrangement. Hours by arrangement with hosting agency. To be elected concurrently with URBN 232.
Prerequisite: Consent of instructor. Students taking this course will be assigned a final grade of S (satisfactory) or U (unsatisfactory).
A fieldwork internship program under the direction and supervision of a member of the Urban Studies faculty. Students will be placed in agencies or industries where their academic training will be applied. One 8-hour work day per week (or its equivalent) for the host agency during the course of the semester will be necessary for three academic credits.

232. Internship in Urban Studies: Seminar
Either semester. Credits, not to exceed three, by arrangement. To be elected concurrently with URBN 231.
Prerequisite: Consent of instructor.
Description, analysis, and evaluation of the fieldwork portion (URBN 231) of the internship. Written reports are required.

233. Urban Geography
(Formerly offered as URBN 212.) (Also offered as GEOG 253.) Either semester. Three credits.
Analysis of the growth, distribution, and functional patterns within and among Western cities. Particular attention is placed on applying urban geographical concepts to city planning problems.

241. The History of Urban America
(Also offered as HIST 241.) Second semester. Three credits.
The development of urban America with emphasis on social, political, physical, and environmental change in the industrial city.

241W. The History of Urban America
(Also offered as HIST 241W.) Prerequisite: ENGL 105 or 110 or 111 or 250.

248. Urban Anthropology
First semester. Three credits.
A general course on urbanization, emphasizing contrasts between “developed” and “developing” countries.

259. Urban and Regional Economics
(Also offered as ECON 259.) Second semester. Three credits.
Prerequisite: ECON 218 or 218Q. Recommended preparation: ECON 111, 102 or 113 and One of: MATH 166Q, 113Q, 115Q, 118Q, or 120Q.
Economic problems of cities and regions: urban markets for land, labor, and housing; location decisions of businesses and households; metropolitan transportation problems; urban/suburban fiscal relations; urban and regional environmental quality; and the economics of crime.

263W. Urban Politics
(Also offered as POLS 263W.) Either semester. Three credits. Prerequisite: ENGL 105 or 110 or 111 or 250.
Political systems and problems confronting urban governments.

280. Urban Sociology
(Also offered as SOCI 280.) Either semester. Three credits.
Open to sophomores or higher.
Social and physical organization of cities and suburbs.

280W. Urban Sociology
(Also offered as SOCI 280W.) Prerequisite: ENGL 105 or 110 or 111 or 250. Open to sophomores or higher.

281. Urban Problems
(Also offered as SOCI 281.) Either semester. Three credits.
Social problems of American cities and suburbs with emphasis on policy issues.

281W. Urban Problems
(Also offered as SOCI 281W.) Prerequisite: ENGL 105 or 110 or 111 or 250.

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

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

299. Independent Study
Either or both semesters. Credits and hours by arrangement. Prerequisite: Consent of instructor. May be repeated for credit.

Vietnamese (VIET)

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.

Women’s Studies (WS)

Director: Women’s Studies Program: Martia McComiskey
Office: Room 426 Beach Hall
For major requirements, see the College of Liberal Arts and Sciences section of this Catalog.

103. Introduction to Women’s Studies in the Social Sciences
First semester. Three credits.
An introduction to research on women and gender in a variety of social science fields. Considers interpersonal relationships, socioeconomic status, power and authority as women experience them and explores the myths and realities of difference between women and men, and of differences among women of different race, class or ethnic backgrounds in the U.S.

104. Feminisms and the Arts
Either semester. Three credits. D. Alleva
Interdisciplinary exploration of the work of women artists in drama, the visual arts, music, literature, and/or film. Key issues of feminist criticism in the arts are discussed.

105. Gender in Everyday Life
Either semester. Three credits.
Explores how the biological fact of sex is transformed into a system of gender stratification in our everyday lives. Examines the social position of women in the family, work, and politics while maintaining sensitivity to the diversity of women’s experiences across class, racial-ethnic groups, cultures, and regions. Experience in introductory research methods to analyze the social construction and structural organization of gender.

124. Gender in Global Perspective
Either semester. Three credits.
Exploration of the construction and reproduction of gender inequality in global perspective. Study of the social position and relations of women and men (political, economic, cultural and familial) in selected nonwestern societies. Diversity of women’s and men’s experiences across class, racial-ethnic groups, sexualities, cultures, and regions.
women's roles as health-care providers.

203W. Women in Political Development
(Also offered as POLS 203W.) Second semester. Three credits. Prerequisite: ENGL 105 or 110 or 111 or 250. Crevy
Analysis of the role of women in the process of development in Africa, Asia and Latin America. The importance of gender to the understanding of development and modernization will be explored and the ways in which change in traditional societies has affected the position of women economically, socially, and politically will be examined.

204. Women and Politics
(Also offered as POLS 204.) Either semester. Three credits.
An introduction to feminist thought, the study of women as political actors, the feminist movement and several public policy issues affecting women.

208. Gender and Sexuality in Modern Europe
(Also offered as HIST 208.) Either semester. Three credits. Shafer
The construction of gender difference and ideas about sexuality in western Europe since 1789. Masculinity and femininity; sexuality, identity and the state; European power and personhood in global context.

210. History of Women and Gender in Early America
(Also offered as HIST 210.) Either semester. Three credits. Not open to students who have taken HIST 202 or WS 202 before fall 1998. Compares the evolving gender systems of native American groups, transplanted Africans, and immigrant Europeans up to the early Nineteenth Century. Topics include women's work, marriage and divorce, witch-hunting, masculinity, and women's Revolutionary War roles.

215. History of Women and Gender in the United States, 1790-Present
(Also offered as HIST 215.) Either semester. Three credits. Not open to students who have taken HIST 202 or WS 202. Porter-Benson
Women and gender in family, work, education, politics, and religion. Impact of age, race, ethnicity, region, class, and affectional preference on women's lives. Changing definitions of womanhood and manhood.

217. Women and Film
Either semester. Three credits.
Feminist analysis of Hollywood film. Investigates women's roles as filmmaker, writer, editor, and actress as well as messages communicated to female viewers.

231. Anthropological Perspectives on Women
(Also offered as ANTH 231.) First semester. Three credits. Open to sophomores or higher.
Major conceptual and historical problems in the anthropological study of gender. Women's roles in different historical and contemporary settings, the emergence of new concepts of family, kinship, power, and cultural ideology.

241. Women and Health
(Also offered as SOCI 241.) Either semester. Three credits. Ratcliffe
Social factors shaping women's health, health care, and their roles as health-care providers.

247. Black Feminist Politics
(Also offered as POLS 247.) Either semester. Three credits.
An introduction to major philosophical and theoretical debates at the core of black feminist thought, emphasizing the ways in which interlocking systems of oppression uphold and sustain each other.

250. Feminisms
Three credits. Prerequisite: WS 103, 104, or 124. Current feminist theories and related social and political issues.

251. Women and Body Art
Either semesters. Three credits.
Women's use of body art to express aspects of gender identity and interpretation of body art from a variety of cultures. "Body art" encompasses cosmetics, painting, hair styling, tattoo, scarification, clothing, ornaments, plastic surgery and exercise.

252. Genders and Sexualities
First semester. Three credits. Overview of lesbian, gay, bisexual, and transgender issues.

258. Latina Narrative
(Also offered as PRLS 230.) Either semester. Three credits. Prerequisite: ENGL 105 or 110 or 111 or 250 or instructor consent. Gonzalez
Feminist topics in contemporary Latina literature and cultural studies.

259. Fictions of Latino Masculinity
(Also offered as PRLS 231.) Either semester. Three credits. Prerequisite: ENGL 105 or 110 or 111 or 250 or instructor consent. Gonzalez
Topics in Latina literature and cultural studies with an emphasis on masculinity and male authors.

260. Latinas and Media
(Also offered as PRLS 264 and COMM 233.) Second semester. Three credits. Rios
The role of ethnicity and race in women's lives. Special attention to communication research on ethnic and racial minority women.

261. Women's Studies Internship Program
Either semester. Three to nine credits. Hours by arrangement. Prerequisite: One Women's Studies course. To be taken concurrently with WS 262. Open only with consent of Women's Studies Internship Coordinator. Transfer students who wish to major in Women's Studies are not required to take Women's Studies Internship Program. A field placement 9-18 hours per week in an organization related to the student's major field of study. Such work is overseen by the field work supervisor and the Women's Studies Internship Coordinator.

262. Women's Studies Internship Seminar
Either semester. Three credits. Open only with consent of Women's Studies Internship Coordinator. McComiskey
A weekly seminar on women and work in which students integrate their field experience with readings, class discussion and guest lecturers.

263. Women and Violence
Either semester. Three credits.
A discussion of the various forms of violence against women in our society, including rape, battering, incest and pornography; treats the social, political and personal meaning of violence.

264. Gender in the Workplace
First semester. Three credits.
An examination of the role of gender in shaping the American workplace and the lives of workers. Discussion of important issues such as comparable worth and sexual harassment drawing on research done in a variety of social science disciplines.

265. Women's Studies Research Methodology
First semester. Three credits. Prerequisite: WS 103 or WS 124 or HIST 121. Women’s Studies majors are strongly urged to take this course as early as possible and before PHIL 218.
Analyses gender bias in research design and practice, problems of androcentric values, and overgeneralization in research. Varieties of feminist research methods and their implications for the traditional disciplines. Student projects using different methodologies.

266. Women and Ethnicity: Changing Roles in a Changing Society
 Either semester. Three credits.
An examination of the intersections of gender, race and culture as these are played out in women's studies, oral histories, and other forms of testimony. Readings and discussions will explore the myths and realities of Asian-American, Latin, and African-American women’s experiences using a sociohistorical perspective.

267. Women and Poverty
Second semester. Three credits.
Focus on poverty in the United States with special attention to its effects on women and their families, including emphasis on race and class differences, and on the policies that keep women in poverty and those that will bring them out of it.

268. Gender and Communication
(Also offered as COMM 245.) Either semester. Three credits. Prerequisite: COMM 100 or instructor consent. Not open for credit to students who have passed COMM 226 or WS 278.
Differences in male/female communication, and an examination of cultural assumptions regarding gender in the communication process. Critically analyze the theory, politics and practice of communication and gender.

269. The Women's Movement
Either semester. Three credits. Not open for credit to students who have passed WS 278.
What is feminism? Who are the feminists and what do they want? How effective has the Women’s Movement been in accomplishing its goals? What are the most controversial questions it has raised? Is the Women's Movement dead or dying? We will research and discuss questions like these both through examination of the writings and activities of the contemporary Women’s Movement in the United States and through historical and international comparisons.

270. Women and Religion
(Also offered as ANTH 274.) Either semester. Three credits. Prerequisite: One Women's Studies course. Not open for credit to students who have passed WS 278 when offered as Women and Religion. Linnekin
Religion has been a source of personal empowerment and social change for women throughout history. This course will examine the various roles women have assumed in religion and its effects on their position in their personal lives and in society.

271. Seminar on Rape Education and Awareness I
First semester. One credit.
This course explores issues of sexual violence and trains those enrolled to facilitate rape awareness workshops for the campus community. Students are required to attend an intensive two-day training program and participate in weekly seminars.
272. Seminar on Rape Education and Awareness II
Second semester. One credit. Prerequisite: WS 271.
This course further explores broader issues of sexual violence and continues to train those enrolled to facilitate rape awareness workshops for the campus community. Students are required to participate in weekly seminars and facilitate rape awareness workshops.

273. Women in the Bible
(Also offered as ANTH 273.) Either semester. Three credits. Prerequisites: English 150 or 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.

289W. Senior Seminar in Women's Studies
Second semester. Three credits. Prerequisite: English 105 or 110 or 111 or 250. Recommended preparation: WS 265 and PHIL 218 or instructor consent. For WS majors only. McComiskey
Capstone course integrating and analyzing Women’s Studies theory and substance through research on a common topic and discussion of advanced texts.

290. Ethnicities, Sexualities, Modernisms
(Also offered as ARTH 290.) Either semester. Three credits.
Topics in twentieth-century visual culture (film, advertising, fine arts, crafts, literature), with emphasis upon issues related to social constructions of ethnicity and sexuality, and upon issues raised by feminist and postcolonial theories.

292. Foreign Study
Either or both semesters. Credit and hours by arrangement. May be repeated for credit. Consent of program director required, normally before the student’s departure. May count toward the major with consent of the director.

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

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

299. Independent Study
Either semester. Credits and hours by arrangement. This course may be repeated for credit with a change in subject matter. Open only with the consent of the instructor and Women's Studies Program Director.

Ratcliffe Hicks School of Agriculture
Director: Professor Suman Singha
Office: 211, W.B. Young Building
For major requirements, see the Ratcliffe Hicks section of this Catalog.
Courses in the Ratcliffe Hicks School of Agriculture are not open to baccalaureate students.

Agricultural and Resource Economics (SARE)

050. Principles of Agricultural and Resource Economics
Either semester. Three credits. Taught concurrently with ARE 150.
An introduction to agricultural economics, the role of agriculture in today’s United States economic system, and relationships that regulate the entire economic environment.

060. Agribusiness Management
Either semester. Three credits. Prerequisite: SARE 050.
Covers concepts and techniques essential in managing an agribusiness firm. Topics include: finance, production planning, marketing, and manpower management.

098. Special Topics
Either semester. Credits and hours by arrangement. Open only with consent of instructor. May be repeated for credit with a change of topic. Total credits allowed toward graduation requirements are restricted as outlined in Ratcliffe Hicks Section.

191. Independent Study
Either or both semesters. Credits and hours by arrangement. Consent of instructor required. Course may be repeated for credit. Total credits allowed toward graduation requirements are restricted as outlined in Ratcliffe Hicks Section.
An independent study project is mutually arranged between a student and an instructor.

Agriculture (SAAG)

001. Introduction to Computer Use
(Formerly offered as SAME 001.) Either semester. Three credits. Two class periods and one 2-hour laboratory period.
Use of computers for solving problems and accessing information. Includes word-processing, spreadsheets, databases and presentation software.

016. Introduction to Agricultural Mechanics
Either semester. Two credits. One class period and one 2-hour laboratory.
Small gas engines, welding and other applications of agricultural equipment in animal science and horticultural operations.

050. Freshman Seminar
First semester. One credit.
A course designed to assist incoming students in adjusting to college and improving their academic performance. Freshmen will learn about university resources and facilities, and strategies relating to study skills, problem solving, time management, and setting and achieving academic and personal goals.

090. Applied Mathematics
First semester. Three credits. Not open to students who have passed the RHSA math proficiency test.
Practical applications of mathematical principles to problems most likely to be encountered in course work and after graduation. Topics to be included are: basic arithmetic, percentages, ratios, fraction to decimal conversions and simple algebra. The use of graphs in the metric (SI) system will be covered. This course is required for all RHSA students except those who received exemption by exam.

091. Tech Prep
Either semester. Credits and hours by arrangement. Total credits not to exceed 12. Open only to students enrolled in the Agricultural Education Tech Prep program. Students taking this course will be assigned a final grade of S (satisfactory) or U (unsatisfactory). May be repeated for credit up to a total of 12 credits.
Topics and credits are established through pre-approved articulation agreements.

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

099. Independent Study
Either or both semesters. Credits and hours by arrangement. Consent of instructor required. Course may be repeated for credit. Total credits allowed toward graduation requirements are restricted as outlined in Ratcliffe Hicks Section.
An independent study project is mutually arranged between a student and an instructor.

Animal Science (SAAS)

004-005. Anatomy and Physiology of Domestic Animals
Both semesters. Three credits. Two class periods and one 2-hour laboratory period. Dinger, Hoagland
A study of the anatomy and physiology of the animal body including characteristics that impact animal production systems. The physiology of reproduction and digestion will receive emphasis. Management practices and techniques used to maximize production efficiency will be included.

006. Nutrition and Feeding of Livestock
Second semester. Three credits. Two class periods and one 2-hour laboratory period. Andrew
This course covers the basic nutrients present in feeds and their breakdown and use by animals. Methods of describing the nutritive value and properties of commonly used feedstuffs are discussed. Nutritive requirements, ration formulations, and feeding problems and practices are covered.

007. Animal Breeding and Genetics
Second semester. Three credits. Two-hour class period and 2-hour discussion and practice period. Hoagland
The principles of genetics, chemistry of nucleic acids, replication, transcription, translation and regulation of genes, population and quantitative genetics, and modern molecular genetic approaches as tools for breeding, and improving livestock production.

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

025. Behavior and Training of Domestic Animals
Second semester. Three credits. Two class periods and one 2-hour laboratory. Taught concurrently with ANSC 125. Darre
Application of behavior of cattle, horses, sheep,
027. Introduction to Companion Animals
Second semester. Three credits. Taught concurrently with ANSC 127.

Basic concepts of the nutrition, physiology, health and management of companion animals.

035. Production of Animals
Second semester. Three credits. Two class periods and one 2-hour laboratory period. 

Dinger

This course entails the appraisal, structure, use, and management of light horses.

036. Light Horse Training and Management
First semester. Two credits. One class period and one 3-hour laboratory period. Prerequisite: SAAS 035. 

Callahan

The course includes instruction in the breaking and training of young horses.

037. Methods of Equitation Instruction
Second semester. Two credits. One class period and one 2-hour laboratory or discussion period. Taught concurrently with ANSC 237. Consent of instructor required.

Callahan

The techniques and procedures of teaching equitation including the theories of riding and teaching methods. Practice teaching will be required under the supervision of the instructor.

038. Management of the Horse Breeding Farm
Second semester. Three credits. One class period and two 2-hour laboratory or discussion periods. Recommended preparation: SAAS 035. 

Dinger

This course is designed to develop technical and managerial skills necessary for operating horse farms. Programs for herd health, hoof care, nutrition, breeding, foaling and record keeping will be included.

040. Animal Products
First semester. Three credits. Two class periods and one 3-hour laboratory period. 

Faustman

An introduction to meat, dairy and poultry products. Issues concerning regulatory standards, nutritive value, safety and quality assessment will be emphasized. Laboratories will emphasize the production and processing of these animal food products. Field trips may be required.

052. Introduction to Poultry Industry
Second semester. Three credits. Two class periods and one 2-hour laboratory period. 

Darre

A practical application of scientific principles in the poultry industry. It will include classification, selection methods, breeding, incubation and chick development, brooding, nutrient requirements, processing and management practices.

064. Management Skills and Practices – Beef Cattle
Either semester. One credit. Hours by arrangement.

May be repeated once for credit. Students taking this course will be assigned a final grade of S (satisfactory) or U (unsatisfactory).

Practical experience in common management practices is offered by working in the University facilities under supervision.

Either semester. One credit. Hours by arrangement.

May be repeated once for credit. Students taking this course will be assigned a final grade of S (satisfactory) or U (unsatisfactory).

Practical experience in common management practices is offered by working in the University facilities under supervision.

066. Management Skills and Practices – Horses
Either semester. One credit. Hours by arrangement.

May be repeated once for credit. Students taking this course will be assigned a final grade of S (satisfactory) or U (unsatisfactory).

Practical experience in common management practices is offered by working in the University facilities under supervision.

067. Management Skills and Practices – Poultry
Either semester. One credit. Hours by arrangement.

May be repeated once for credit. Students taking this course will be assigned a final grade of S (satisfactory) or U (unsatisfactory).

Practical experience in common management practices is offered by working in the University facilities under supervision.

068. Management Skills and Practices – Sheep
Either semester. One credit. Hours by arrangement.

May be repeated once for credit. Students taking this course will be assigned a final grade of S (satisfactory) or U (unsatisfactory).

Practical experience in common management practices is offered by working in the University facilities under supervision.

070. Livestock Production
First semester. Four credits. Three class periods and one 2-hour laboratory period. Taught concurrently with ANSC 277S. Offered in odd-numbered years.

Hoagland

Biological and economic aspects of beef, sheep, and swine production. Field trips required.

076. Dairy Herd Management
First semester. Three credits. Two class periods and one 2-hour laboratory period. Taught concurrently with ANSC 275. 

Kazmer

This course is concerned with the biological and economical aspects of commercial milk production, including: milking, sanitation, nutrition, record keeping, and the physiology and anatomy of milk secretion.

077. Applied Dairy Herd Management
Second semester. Three credits. Two class periods and one 2-hour laboratory period. Taught concurrently with ANSC 275. 

Kazmer

The organization and management of dairy farms with emphasis upon business and economic decision making. Management programs in the areas of nutrition, disease control, waste management, selection, reproduction and milking will be evaluated. Field trips are required.

081. Horse Selection and Evaluation
Second semester. Two credits. One 4-hour laboratory or discussion period. Taught concurrently with ANSC 281. Consent of instructor required.

Bennett

Comparative evaluation, classification and selection of horses according to conformation, breed characteristics and performance. Judging skills including justification of placing through presentation of oral reasons will be developed. Field trips required.

083. Livestock and Carcass Evaluation
Second semester. Two credits. Two 2-hour laboratory periods. Taught concurrently with ANSC 283.

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, sheep and swine.

088. Advanced Animal and Product Evaluation
First semester. One credit. Hours by arrangement. Taught concurrently with ANSC 288. May be repeated for credit once. Consent of instructor required.

Intensive training in the evaluation of selected species of farm animals or their products. Type standards and the relation of anatomical features to physiological function are emphasized. Evaluation skills including justification of decisions will be developed. Students enrolled in this course will have the option to participate on intercollegiate animal and product evaluation teams. Field trips are required, some of which may occur prior to the start of the semester.

094. Seminar
Second semester. One credit. One 2-hour discussion period.

Zinn

A discussion of current employment opportunities in animal agriculture. In addition, students will prepare resumes and give oral presentations.

096. Professional Internship
Either semester. Credits and hours by arrangement. Open only for third semester students with consent of instructor and Department Head. Total credits allowed toward graduation requirements are restricted as outlined in Ratcliffe Hicks Section. Students taking this course will be assigned a final grade of S (satisfactory) or U (unsatisfactory).

Andrew, Darre

098. Special Topics
Either semester. Credits and hours by arrangement. Open only with consent of instructor. May be repeated for credit with a change of topic. Total credits allowed toward graduation requirements are restricted as outlined in Ratcliffe Hicks section. Contact Department Main Office for list of current topics and instructors.

099. Independent Study
Either or both semesters. Credits and hours by arrangement. Consent of instructor required. Students are advised to read the Ratcliffe Hicks regulation limiting the number of credits which may be applied to the minimum graduation requirements.

An independent study project is mutually arranged between student and an instructor.

Natural Resources Management and Engineering (SAME)

010. Introduction to Wildlife Management
Second semester. Three credits. Two class periods and one 2-hour laboratory period.

Basic wildlife techniques including habitat evaluation and identification signs. Emphasis will be placed on keeping a wildlife field journal. Field exercises and laboratory provide an opportunity to use and evaluate techniques for wildlife management.

098. Special Topics
Either semester. Credits and hours by arrangement. Open only with consent of instructor. May be repeated for credit with a change of topic. Total credits allowed toward graduation requirements are restricted as outlined in Ratcliffe Hicks Section.

099. Independent Study
Either or both semesters. Credits and hours by arrangement. Consent of instructor required. Course may be repeated for credit. Total credits allowed toward graduation requirements are restricted as outlined in Ratcliffe Hicks Section.

An independent study project is mutually arranged between a student and an instructor.
### Health and Disease Management of Animals

Second semester, alternate years (even). Three credits. Bushmich, Khan

This course will include a study of the causes of diseases, practical preventive control measures and specific mammalian and poultry diseases.

### Special Topics

Either semester. Credits and hours by arrangement. Open only with consent of instructor. May be repeated for credit with a change of topic. Total credits allowed toward graduation requirements are restricted as outlined in Ratcliffe Hicks Section.

### Independent Study

Either or both semesters. Credits and hours by arrangement. Consent of instructor required. Course may be repeated for credit. Students are advised to read the Ratcliffe Hicks School regulation limiting the number of credits which may be applied toward graduation.

An independent study project is mutually arranged between a student and an instructor.

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### Plant Science (SAPL)

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In-depth study of post-harvest requirements for specialized floral crops. Exposure to novel floral materials and abstract, tribute, high-style, and wedding designs. Retail price structuring, wire services, and mass-production concepts.

### Plant Pest Control

First semester. Three credits. Two class periods and one 2-hour laboratory period.

A practical survey of practices used for insect, disease and weed pests of turf, flowers, shrubs, trees and food crops. Consideration will be given to quarantine, mechanical, biological and chemical means of control. Field trips may be required.

### Integrated Pest Management

Second semester. Three credits. Three class periods. Prerequisite: SAPL 023 or 042, Gauthier

An overview of integrated pest management (IPM) techniques, from development to implementation, with horticultural crops.

### Landscape Plant Maintenance

Second semester. Three credits. Two class periods and one 2-hour field laboratory. Field trips required. Taught jointly with PLSC 245. Elliot


### Fruit Production

Second semester. Three credits. A practical course in fruit production, including information for home fruit growing. Particular emphasis is directed toward the culture of apples, peaches, pears, blueberries, grapes, raspberries and strawberries.

### Fruit Production – Laboratory

Second semester. Two credits. Two 2-hour laboratory periods. Prerequisite: SAPL 046, which may be taken concurrently.

A practical laboratory in the techniques and methods of fruit production and pruning of fruit crops. Emphasis is directed towards apples, peaches, pears, blueberries, grapes and raspberries. Field trips are required.

### Evaluating and Staging Horticultural Materials

First semester. One credit. Hours by arrangement. Open only with consent of instructor. This course may be repeated once for credit.

Organization and staging of horticultural exhibits and contest suitable for fairs, garden clubs, and community projects.

### Nursery Maintenance

First semester. Three credits. Two class periods and one 2-hour laboratory period. Corbett

A consideration of the culture, care and maintenance of shade trees and nursery stock. Laboratory periods will be devoted to planting, pruning and maintenance of shade trees and nursery material. At least one field trip will be required.

### Plant Propagation

Second semester. Three credits. Two class periods and one 2-hour laboratory period.

The study of methods used to reproduce agricultural and horticultural crops. Discussion will emphasize sexual and asexual propagation techniques. Field trips are required.
066. **Plant Materials, Evergreen Plants**  
Second semester. Three credits. Two class periods and one 2-hour laboratory period. *Corbett*  
Trees, shrubs and vines will be studied. Lectures will be devoted to the characteristics, ornamental value and selection of evergreen plants. Laboratory periods will be devoted to identification.

067. **Plant Materials, Non-Evergreen Plants**  
First semester. Three credits. One class period and two 2-hour laboratory periods. Prerequisite: SAPL 066. *Corbett*  
Trees, shrubs and vines will be studied. Lectures will be devoted to the characteristics, ornamental value and selection of non-evergreen plants. Laboratory periods will be devoted to identification.

069. **Landscape and Planting Design**  
Second semester. Four credits. Two class periods and two 2-hour laboratory periods. Prerequisite: SAPL 066, 067; and 031, which may be taken concurrently. *Corbett*  
The principles and techniques of landscaping the home grounds to include site analysis, drawing techniques, selection of materials, and selecting plants to fit the design.

071. **Horticultural Retailing**  
First semester. Three credits. Taught concurrently with PLSC 244. *Ashley*  
A discussion of the principles of retailing as applied to the sale of horticultural crops. Emphasis is given to planning, customer preference, competition, merchandising, pricing and inventory as they apply to landscaping, flower shop and garden center management.

074. **Horticulture Production Practicum – Nursery**  
Second semester. Credits and hours by arrangement. Prerequisite: SAPL 060. Consent of instructor. Students taking this course will be assigned a final grade of S (satisfactory) or U (unsatisfactory). *Corbett*  
Students will be responsible for planning, producing, and marketing a nursery crop. Students may use private facilities or the Ratcliffe Hicks C.R. Burr Teaching Nursery.

075. **Horticulture Production Practicum – Vegetables**  
Second semester. Credits and hours by arrangement. Prerequisite: SAPL 017. Consent of instructor. Students taking this course will be assigned a final grade of S (satisfactory) or U (unsatisfactory). *Ashley*  
Students will be responsible for planning, producing, and marketing a vegetable crop on a commercial scale. Requires the availability of private production facilities.

083. **Golf Course Management**  
Second semester. Three credits. Three class periods. Taught jointly with PLSC 283. *Rackliffe*  
Discussion of the specialized field of golf course management. Topics: cultural techniques including soil aeration, topdressing, mowing, and thatch removal; grass or species selection, fertilization, irrigation, personnel, golf course pest management and equipment and inventory management. Field trips required.

084. **Golf Course Design**  
First semester. Two credits. Two class periods. Taught jointly with PLSC 284. *Guillard, Miniutti*  
Introduction to golf course design theory, planning, and layout. Putting green and tee construction methods. Turfgrass species and cultivar selection for the golf course. Expertise and experience of departmental faculty and staff, independent and commercial consultants and designers, and golf course superintendents will be utilized. Field trips required.

086. **Pesticide Safety and Management**  
Second semester. Two credits. Two class periods. Taught jointly with PLSC 286. *Gauthier*  
Pesticide application equipment, pesticide safety and toxicity, equipment calibration, pesticide poisoning, first aid and crop worker protection standards. Managing the use of pesticides to increase safety to applicators and the environment as well as increasing pest management effectiveness utilizing principles of IPM.

087. **Internship**  
Either semester or summer. One to 6 credits. Hours by arrangement. Open to qualified students with consent of advisor and Department Head. This course may be repeated provided that the sum total of credits does not exceed six.  
Students will work with professionals in an area of their interest. Written reports, daily logs, and/or evaluations by professional supervisors may be required.

096. **Special Topics**  
Either semester. Credits and hours by arrangement. Open only with consent of instructor. May be repeated for credit with a change of topic. Total credits allowed toward graduation requirements are restricted as outlined in Ratcliffe Hicks Section.

099. **Independent Study**  
Either or both semesters. Credits and hours by arrangement. Consent of instructor required. Course may be repeated for credit. Total credits allowed toward graduation requirements are restricted as outlined in Ratcliffe Hicks Section.  
An independent study project is mutually arranged between a student and an instructor.