

485 Seminar in Biology (1)

An advanced seminar on various topics in biology. Each student will conduct in-depth library research on a topic of interest and present a seminar to the department. Prerequisite: senior/junior status and a major or minor in the natural sciences. Offered each spring.

489 Research in the Natural Sciences (3)

Provides students with the opportunity to conduct original scientific research in an area of interest. Students work closely with one or more members of the natural science faculty to develop and conduct a research project. Students present their findings orally during the semester's undergraduate research symposium and as a formal research paper. Students are encouraged to present their findings at a conference. Prerequisite: junior/senior status and a major in the natural sciences, prior approval by the project adviser, and consent of the instructor. May be repeated once for a total of 6 semester hours. Identical to CHEM 489 and EES 489. Offered each semester.

BUSINESS

(See Management, Business and Economics)

CENTER FOR THE STUDY OF RELIGIOUS FREEDOM

(Also see page 45)

DR. PAUL B. RASOR, Director

CSRF courses are interdisciplinary and incorporate diverse perspectives and methods of analysis. Center-affiliated courses are listed within particular academic disciplines.

The following courses have also been identified as focusing on issues, analyses, or processes related to religious freedom: INST 202; HIST 248, 317, 322, 400, 426, 451; PHIL 102, 110, 215; POLS 239, 335, 372, 435; RELST 116/316, 140, 319, 320, 336; SOC 110, 222, 230, 336.

CSRF COURSES (CSRF)**100 Religious Freedom Symposium (1)**

(Previously INST 100) A non-traditional course, sponsored by the Center for the Study of Religious Freedom, offers students an opportunity to continue discussions arising out of symposium series offered by the Center. Past topics have included "Religious Freedom in a Global Context," "Persecution and Toleration," and "Religious/Freedom, Southern Style," for example. Students attend the symposium series of programs, read background materials for each program topic, and participate in discussions that will be done mainly via Web conference. Examining a myriad of issues involved in the complex matter of religious freedom will involve the use of

a variety of disciplines—e.g., history, philosophy, political science, religious studies. Pass/fail grading. Offered intermittently.

275 Religious Freedom in America (3)

(Previously INST 275) An examination of the historical development and present state of religious freedom in the United States. Topics include the emergence of the idea of religious toleration in the West, the influence of Jefferson's Virginia Statute for Religious Freedom, the concepts of establishment and free exercise of religion in the U.S. Constitution, and the role of religion in American public and political life. Students acquire a conceptual framework and vocabulary for discussing current issues. The course is interdisciplinary in nature, drawing on historical, legal philosophical and political sources. Offered spring of even-numbered years.

355 Law and Religion in America (4)

(Previously RELST 355) Explores the various ways in which law and religion interact with and impact upon each other in American life. The approach is contextual and case-driven, meaning that we get at the larger, philosophical issues through the medium of specific legal cases and public debates from our past and present. Through these case studies, we reach the broader concerns: the legitimacy of law ("Where the law comes from"), the experience of free exercise of religion in American history, the legal enforcement of morality, and the establishment clause limits on the power of the majority. Prerequisites: at least six, preferably nine, semester hours in one or more of the following: religious studies, history, philosophy, political science.

CHEMISTRY

DR. JOYCE B. EASTER

DR. DEBORAH E. OTIS, Program Coordinator

The Department of Chemistry curriculum is designed to provide opportunities for curious and interested students to immerse themselves in a concentrated study of the various principles of classical and contemporary chemical knowledge. From introductory to upper level courses, applications are made of the basic theories and methods of chemical investigation, with an emphasis on problem-solving. The chemistry program accommodates chemistry majors, other science majors, pre-med/pre-vet students, and students planning to enter the health and allied health professions, as well as students wishing to teach chemistry at the secondary school level. Chemistry majors are prepared for careers in industry, business, government, and academia.

Major Requirements

Those courses designed for non-science majors, including CHEM 105, cannot be counted toward the major in chemistry (64-65 semester hours), but may be counted toward the degree (120 semester hours). The

student's academic program must be planned carefully if specific goals are to be achieved. Close coordination with the student's adviser is essential. In order to meet basic requirements in the major and for participation in the four-year graduation guarantee, the following course of study is determined by the year of entry.

For a student entering during the fall of an even-numbered year, the fall/spring sequence of courses would be:

Freshman Year:

CHEM 117/118; MATH 105/113

Sophomore Year:

CHEM 311/312; CHEM 321/322;
MATH 171/172

Junior Year:

CHEM 210; CHEM 260; CHEM 300;
CHEM 437; PHYS 221/222

Senior Year:

CHEM 400; CHEM 411/412; CHEM 422;
CHEM 480

For a student entering during the fall of an odd-numbered year, the fall/spring sequence of courses would be:

Freshman Year:

CHEM 117/118; MATH 171/172 or
MATH 105/113 with MATH 171 in the summer

Sophomore Year:

CHEM 210; CHEM 260
PHYS 221/222; MATH 172

Junior Year:

CHEM 300; CHEM 311/312; CHEM 321/322;
411/412; CHEM 422; CHEM 480

Senior Year:

CHEM 210/220; CHEM 400; CHEM 437

To complete the college's requirement in the area of computer literacy, students majoring in chemistry must show a proficiency in: 1) the use of e-mail, 2) the use of word processing, 3) the use of the Internet, and 4) the use of multimedia software. This proficiency is demonstrated by completing assignments in several courses required in the major, which include CHEM 118, 210, 311, 312, 322, 411, 412, 422, and 437.

Students seeking certification as secondary teachers of chemistry must also successfully complete either EES 130 or EES 132, in order to satisfy the requirement in the area of earth science.

Bachelor of Science:

COURSE NUMBER AND TITLE	SEM. HRS.
CHEM 117 College Chemistry I	4
CHEM 118 College Chemistry II	4
CHEM 210 Analytical Chemistry	4
CHEM 260 Inorganic Chemistry	3
CHEM 300 Chemical Literature Survey	1
CHEM 311 Organic Chemistry I	3
CHEM 312 Organic Chemistry II	3
CHEM 321 Organic Chemistry Laboratory I	1
CHEM 322 Organic Chemistry II	1
CHEM 400 Chemistry Seminar	1
CHEM 411 Physical Chemistry I	3
CHEM 412 Physical Chemistry II	3
CHEM 422 Physical Chemistry Laboratory	1
CHEM 437 Biochemistry	3
CHEM 480 Instrumental Methods of Analysis	4
ELECTIVE CHEMISTRY COURSES	
Select from the following: CHEM 270 Environmental Chemistry CHEM 345 Forensic Science Methods CHEM 438 Advanced Biochemistry CHEM 440 Methods of Biochemistry CHEM 450 Global Environmental Cycles CHEM 489 Research in the Natural Sciences	6-7

See continuation of choices next page

Chart continued from previous page

REQUIRED NSM DIVISION COURSES	
MATH 171 Calculus I	3
MATH 172 Calculus II	3
PHYSICS 221 Physics I	4
PHYSICS 222 Physics II	4
ELECTIVE NSM DIVISION COURSE	4
Select from the following: BIO 131 Principles of Biology I: Evolution and Ecology BIO 132 Principles of Biology II: Cell Biology and Genetics BIO 420 Cellular and Molecular Biology BIO 482/484 Microbiology with Laboratory	
TOTAL	63-64
ADDITIONAL COURSES NEEDED FOR SECONDARY CERTIFICATION	7
One of the following: EES 130 Physical Geology EES 132 Environmental Geology	3
TOTAL FOR SECONDARY CERTIFICATION	67-68

Minor Requirements

COURSE NUMBER AND TITLE (See p. 32 for general minor requirements)*	SEM. HRS.
CHEM 117 General Chemistry I	4
CHEM 210 Analytical Chemistry CHEM 270 Environmental Chemistry	OR 4
CHEM 260 Inorganic Chemistry	3
CHEM 300 Chemical Literature Survey	1
CHEM 311 Organic Chemistry I	3

CHEM 321 Organic Laboratory I	1
Chemistry electives at the 200 level or higher	7
TOTAL	23

CHEMISTRY COURSES (CHEM)

105 Basic Concepts in Chemistry (3) (E)

An introduction to chemical concepts. Mathematical methods are used when appropriate. The salient features of atomic structure, chemical bonding, and the mole concept are stressed. Designed for science-oriented students with inadequate background for CHEM 117. Also suitable for non-science majors. Lecture three hours. Prerequisite: MATH 105, equivalent, or consent. Offered each spring.

117 College Chemistry I (4) (E)

An introduction to chemical principles that includes atomic structure, chemical bonding, stoichiometry and thermochemistry. Lecture three hours, laboratory three hours each week. Prerequisites: high school chemistry (within the last five years) or CHEM 105 (or equivalent), two years of high school algebra or MATH 105 (or equivalent), and placement in Group A or B on the math placement test. Offered each fall.

118 College Chemistry II (4)

A further study of chemical principles. The principal subject areas are reaction kinetics, equilibrium, acids-bases, thermodynamics, oxidation-reduction, and electrochemistry. Prerequisite: CHEM 117. Lecture three hours, laboratory three hours each week. Offered each spring.

210 Analytical Chemistry (4)

Analytical techniques are applied to inorganic, organic and biochemical systems. The experimental methods include volumetric and gravimetric analysis, chromatographic and spectroscopic techniques. Class work is coordinated with the laboratory experiments. Prerequisites: CHEM 118. Lecture three hours, laboratory three hours each week. Offered fall of even-numbered years.

240 Forensic Science (3) (E) W

Explores the many aspects of physical evidence generated by criminal activity, including its collection, protection, scientific analysis, and court presentation. Identical to CJ 240. Prerequisite: CJ 200 and CHEM 105 (or 117). Offered fall of odd-numbered years.

260 Inorganic Chemistry (3)

An integrated lecture and laboratory experience introducing the concepts of inorganic chemistry in light of modern theory. Topics include atomic structure, chemical periodicity, bonding, descriptive chemistry, coordination chemistry, and solid-state structure. The laboratory exercises introduce basic inorganic techniques for the

synthesis and characterization of inorganic compounds. Prerequisite: CHEM 210 or 117 with consent. Lecture two hours, laboratory three hours each week. Offered spring of odd-numbered years.

270 Environmental Chemistry (4)

Identical to EES 270.

300 Chemical Literature Survey (1)

An introduction to the body of information which constitutes the chemical literature, including manual and computer-aided literature searching, utilizing the major sources of chemical information, and analysis of articles from chemical journals. Prerequisite: 14 semester hours in chemistry. Offered each fall.

305 Teaching Experience (1)

Qualified students assist chemistry instructors in the teaching of chemistry courses and laboratories. A student may enroll in CHEM 305 more than once for credit, but may apply no more than a total of three semester hours earned in this manner toward graduation. Prerequisite: consent. Offered each semester.

311 Organic Chemistry I (3)

The chemistry of carbon compounds with emphasis on structure, properties, reactions, reaction mechanisms and stereochemistry. A comprehensive survey of organic compounds with a focus on hydrocarbons, alkyl halides and alcohols. Prerequisite: CHEM 118. Corequisite: CHEM 321. Lecture three hours each week. Offered each fall.

312 Organic Chemistry II (3)

A continuation of CHEM 311 with a focus on the aromatic, amine, and carbonyl functional groups. Prerequisite: CHEM 311. Corequisite: CHEM 322. Lecture three hours each week. Offered each spring.

321 Organic Laboratory I (1)

Fundamental laboratory macroscale and microscale techniques of modern organic chemistry with an introduction to organic synthesis and product analysis. Prerequisite: CHEM 118. Corequisite: CHEM 311. Laboratory three hours each week. Offered each fall.

322 Organic Laboratory II (1)

Development of organic laboratory skills, including microscale techniques, synthesis, product analysis and spectroscopy. Prerequisite: CHEM 321. Corequisite: CHEM 312. Laboratory three hours each week. Offered each spring.

345 Forensic Science Methods (4)

A comprehensive evaluation of current developments in research, instrumentation, and laboratory technology utilized to detect, identify, analyze, and compare evidence generated by criminal activity. An integrated laboratory

experience emphasizes understanding of these various methodologies and their application to forensic science. Prerequisite: CHEM 118 or 240. Lecture three hours, laboratory three hours each week. Offered spring of even-numbered years.

400 Chemistry Seminar (1)

A seminar for the professional development of senior chemistry majors including the discussion and presentation of advanced topics in chemistry. Prerequisite: CHEM 300 and 18 semester hours in chemistry. Offered each fall.

411 Physical Chemistry I (3)

A mathematical treatment of physical-chemical properties and chemical reactions. Thermodynamics, statistical mechanics, and equilibrium are studied. Prerequisites: CHEM 210, MATH 171 and PHYS 221. Corequisite: CHEM 422. Offered fall of odd-numbered years.

412 Physical Chemistry II (3)

A continuation of CHEM 411 covering the topics of quantum mechanics, spectroscopy, and kinetics. Prerequisite: CHEM 411, MATH 172, and PHYS 222. Offered spring of even-numbered years.

422 Physical Chemistry Laboratory (1)

Experimental methods of physical chemistry with emphasis on instrumental methods. Individual or group projects may be assigned when appropriate. Corequisite: CHEM 412. Laboratory three hours each week. Offered fall of odd-numbered years.

437 Biochemistry (3)

W

A survey of the chemistry within biological systems. Introduction to structure and function of biomolecules, molecular components of cells, enzymes, and cellular metabolism. Prerequisite: CHEM 312. Offered fall of even-numbered years.

438 Advanced Biochemistry (3)

A comprehensive study of complex biochemical processes with an emphasis on cellular metabolism and its regulation. Prerequisite: CHEM 437. Offered spring of odd-numbered years.

440 Methods of Biochemistry (3)

(Winter Session)

Introduction to biochemistry laboratory skills and techniques with an emphasis on purification and analysis of proteins, nucleic acids, lipids, carbohydrates, and natural products. Prerequisite: CHEM 437 or CHEM 312/322 with consent. Consists of 30 three-hour laboratory sessions. Offered Winter Session of odd-numbered years.

450 Global Environmental Cycles (4)

Identical to EES 450.

470 Internship in the Natural Sciences (3)

An intensive study of a particular field of science through on-site field experience. Internships involve hands-on opportunities in the sciences that are relevant to that particular site. Students are expected to devote a minimum of at least 120 hours for three semester hours, but some placements may require more time. Students must coordinate their internship placement with the supervising faculty member at least two months prior to placement. Pass/fail grading. Prerequisites: junior/senior status and consent. Offered each semester.

480 Instrumental Methods of Analysis (4)

A study of the principles and methods of optimization of instrumental methods used in characterizing chemical systems. Topics include optical methods, electroanalytical methods, molecular spectroscopy, and chromatography methods. Analytical techniques are studied from an instrumental and chemical point of view. The laboratory stresses the instrumental methodologies of analytical procedures. Prerequisite: CHEM 210, 311 and 411. Three lecture hours, three laboratory hours each week. Offered spring of even-numbered years.

489 Research in the Natural Sciences (3)

Identical to BIO 489 and EES 489.

CLASSICS

The Classics department offers students the opportunity to explore the Greek and Roman roots of European and American cultural identity and heritage. By taking courses in Classical Civilization, students understand the richness and diversity of Greek and Roman cultures, while using the ancient world as a laboratory to gain wider perspectives on many elements of modern life that extend all the way back into our common past. Through courses in Latin and Greek languages, students attain a more direct experience of the lives of the ancients in their own living words, while gaining valuable understanding of the roots and usage of English and other modern languages.

Two major programs are available to students interested in classics. The interdisciplinary major in Classical Studies offers a general liberal arts experience with only a small amount of required coursework in ancient language. Students seeking a more focused program based in language study may elect the major in Latin. It is not possible for students to major both in Classical Studies and in Latin, but it is possible to combine the major in Latin with the minor in Classical Studies.

Major Requirements: Classical Studies

COURSE NUMBER AND TITLE	SEM. HRS.
LANGUAGE COMPONENT: Complete one of the following sequences: LATN 111, 112 Elementary Latin I, II AND LATN 211, 212 Intermediate Latin I, II OR LATN 211, 212 Intermediate Latin I, II OR LATN 305 Topics in Latin Prose AND LATN 306 Topics in Latin Poetry	6-14
CLASSICAL CIVILIZATION COMPONENT: Four of the following: ARTH 231 Ancient and Medieval Art CLAS 105 Classical Mythology GREK 111, 112 Elementary Ancient Greek I, II CLAS 120 Classical Archaeology CLAS 175 Sports and Society in Ancient Greece and Rome CLAS 209 Greek History CLAS 210 Roman History ENG 250 Topics: Ancient Drama ENG 265 Love, Sex, and Marriage in Western Literature HIST 111 World History to A.D. 1600 RELST 218 The New Testament World	12
Five of the following: CLAS 330 Classical and World Epic CLAS 350 Women in the Ancient World CLAS 370 Ancient World in the Cinema *LATN 305 Topics in Latin Prose *LATN 306 Topics in Latin Poetry PHIL 332 Ancient Philosophy POLS 433 Ancient Political Theory TH 301 Theatre History I	15

See continuation of choices next page