DEPARTMENT OF CHEMISTRY
COLLEGE OF ARTS AND SCIENCES

Faculty

F. (1994). University Professor of Chemistry and Department Chair. B.S., University of Missouri, St. Louis; Ph.D., Texas Tech University.

.D (1978). Hammons Professor of Chemistry and Vice President for Institutional Research. B.S., Union University; Ph.D., University of Illinois; Additional study, University of Florida, Oak Ridge Associated Universities, Argonne National Laboratory, Harvard University, and Oxford University (England).

A , A .

. (2011). Associate Professor of Chemistry. B.A., Augustana College; Ph.D., University of Oregon.

D A.

G. No minor is required.

E C

7-12

A. Complete the requirements for the Chemistry major as shown above including CHE 405.
B. Additional Requirements: CSC 105, PHY 112 (in B.S. core), PHY 231 & 232, MAT 212 (in B.S. Core), and membership in SMACS.
C. Professional Education: EDU 150, 250, 326, 418, 433; PSY 213, 318; SE 225
D. Completion of applicable portions of the Praxis II.
E. For additional information, see the Assistant Dean for Teacher Education and Accreditation.

C

A. CHE 111, 112, 211, 221, 314, 315, 324 326—23 hours
B. Elective, one of: 317, 319, 335, 405, 430—3 or 4 hours

Major in Chemistry with Discipline-Specific Honors

In addition to the requirements listed in I.A., students must complete

A. Honors contracts in two of the following courses: CHE 211, 315, 318, 319, or 335
B. An honors contract in one of the following courses: CHE 405, 430, or 435

Major in Biochemistry with Discipline-Specific Honors

In addition to the requirements listed in III.A., students must complete

A. Honors contracts in two of the following courses: CHE 211, 315, 318, 319, or 335.
B. An honors contract in CHE 329.

A D

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D

To remain in the program a student must earn at least a B in each honors contract course in the major. A student who earns a B in two honors contract courses in the major may continue in the program only with permission of the department committee. A committee of three or four faculty (including the course instructor or research mentor) will be created for each course. The committee will approve the honors contract with the student and will evaluate the honors project on a satisfactory/unsatisfactory basis. The course instructor will determine the overall course grade.

C C

1. Honors Contract Course Projects

Student Awards

C A is given by the faculty of the Department of Chemistry and Physics to the student who presents the best research paper of the year. The research must have been an original piece of work and must have been presented at a state, regional, or national professional chemistry meeting prior to graduation.

C. .C. F C A , given to encourage and sustain interest in the sciences, is awarded in recognition of outstanding scholastic achievement in Freshman Chemistry.

F C A . The Chemistry Department selects a freshman chemistry major or minor to receive this award based on outstanding scholastic achievement, financial need, Christian service, and school spirit.

Course Offerings in Chemistry (CHE)

( ) Hours Credit; F–Fall, W–Winter; S–Spring; Su–Summer

105. F C (4) F, ,
An introductory general chemistry course that includes study of both physical and chemical properties, structure and reaction of matter. Not applicable to pre-health professions except Nursing. Science credit will not be given to a student who has completed a course in either CHE or PHY. Three lectures and one 2-hour laboratory period/week.

106. F C (4) A
Prerequisite: CHE 105 or 111.
A beginning course in organic and biochemistry with emphasis on topics specifically related to the health sciences: carbohydrates, fats, proteins, vitamins, and hormones. Normal and abnormal metabolic processes and the role of ATP. Not open to science majors other than physical science and nursing. Three 1-hour lectures and one 3-hour laboratory period/week.

111. G C (4) F,
Prerequisite: high school chemistry or PHY 111. A strong mathematics background (especially in algebra) is recommended.
A comprehensive study of the fundamental experiments, principles, and theories of chemistry with emphasis on the quantitative relationships. The structure and properties of matter with their energy relationships are stressed. Three lectures and one 3-hour laboratory/week.

112. C E (4) ,
Prerequisite: CHE 111.
Detailed study of the principles of equilibrium in chemical systems. The laboratory is qualitative analysis. Three lectures and one 3-hour laboratory period/week.

113. C (2)
E ,
Prerequisite: CHE 111
An introduction to chemical instrumentation used in industry, including titrations, spectroscopy, and chromatography. One lecture and one 3-hour lab/week.

211. A C (3)
Prerequisite: CHE 112; Corequisite: CHE 221.
A continuation of the study of fundamental principles including topics in statistics, gravimetric analysis, titrimetric analysis (neutralization, precipitation, complex formation, oxidation-reduction), and spectrophotometric and electrochemistry analysis.

221. A C (2)
Prerequisite: CHE 112; Corequisite: CHE 211.
The application of gravimetric, titrimetric, spectrophotometric quantitative analysis, and chromatographic separations to the study of chemistry. Two 3-hour laboratory periods/week.

300. C (1) E
Safety policies and procedures for the use of hazardous chemicals. Topics include awareness, routes of chemicals into the body, safety apparatus and use; identification, types of chemical hazards; proper ways to handle, store, and dispose of hazardous chemicals.

301. (4) F,
Reciprocal credit: PHY 301. See PHY 301 for course description.

314. C (3) F
Prerequisite: CHE 112; Corequisite: CHE 324.
An introduction to the compounds of carbon, with emphasis on the relationship between structure and properties. Applications of bonding theory, reaction mechanism, and stereochemistry are included. Some functional groups containing halogen and oxygen will be examined in detail.

315. C (3)
Prerequisite: CHE 314; Corequisite: CHE 326.
An in-depth examination of the common oxygen and nitrogen functional groups with respect to structure and chemistry. Continued application of basic theory is included. Heterocyclic and biomolecules will also be examined. Three lectures/week.

317. C (3) F
Prerequisites: CHE 211, MAT 212, and PHY 232.
Application of physical techniques to chemical systems with emphasis on thermodynamics. The laws of thermodynamics will be derived and applied to phase and chemical equilibria, electrochemical cells, and surface phenomena.

425. (2)
A study of parasites of medical significance, both indigenous and foreign, with particular emphasis on life cycles and identification.

431.9 (2)
Gross, physical, microscopic, and chemical analysis of urine.

432. C C (1)
Basic understanding of altered physiology in disease; correlation between laboratory test results and anatomical/physiological changes.

440. E (0)
Preparation for the medical graduate for positions of leadership as supervisors and instructors.

179-279-379-479. E D
(1-3) A
All courses and their applications must be defined and approved prior to registering.

180-280-380-480. A (1-4)
All courses and their application must be defined and approved prior to travel.

195-6-7. (1-4)
295-6-7. (1-4)
Lower-level group studies which do not appear in the regular departmental offerings.

395-6-7. (1-4)
Upper-level group studies which do not appear in the regular departmental offerings.

495-6-7. (1-4)
Individual study under the guidance of a faculty member(s).

489-9. (1-3)
To be used at the discretion of the department.