

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

program. Entrance as a freshman requires an ACT Composite of 26 or higher with a Math ACT of 25 or higher, 4 units of high school math with a B average or better, high school chemistry and physics with a B average or better, and a successful personal interview with a faculty admissions committee. Entrance as a sophomore requires readiness to enter MAT 211, CHE 111 and PHY 231 with a CUM and science GPA of 2.5 or higher, and a successful interview with admissions committee.

- A. CHE 111, 112, 211, 221, 314, 315, 324, 326, 317, 318, 327, 319, 335—38 hours
- B. PHY 231, 232, 311, 313, 314; 325 or 420; 430—26 hours
- C. PHY or CHE 424; PHY or CHE 498; Upper level PHY or CHE—6 hours
- D. MAT 211, 212, 213, 314—15 hours
- E. ENG 111, 112; 201 or 202—9 hours
- F. ART 210; CHR 111, 112; BIO 112; CLU 195; HIS 101; and 9 hours of social science—27 hours

- A. Complete the requirements for the Chemistry major as shown above including CHE 405.
- B. Professional Education: EDU 150, 250, 326, 418, 433; PSY 213, 318; SE 225
- C. Completion of applicable portions of the Praxis II.
- D. For additional information, see the Assistant Dean for Teacher Education and Accreditation.

- A. Complete the requirements for the Chemical Physics major including both PHY 498 and CHE 498 plus PHY 317.
- B. Professional Education: EDU 150, 250, 326, 418, 433; PSY 213, 318; SE 225.
- C. Completion of applicable portions of the Praxis II.
- D. For additional information, see the Assistant Dean for Teacher Education and Accreditation.

- 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

The Department utilizes standardized tests of the American Chemical Society as final examinations for the second semester of all one-year courses. These courses include General (CHE 111-2), Organic (CHE 314-5 and CHE 435), and Physical (CHE 317-8). Standardized examinations are also used as the final examination in Fundamentals (CHE 105), Analytical (CHE 211), and Biochemistry (CHE 319), Inorganic (CHE 335 and CHE 430). Examination results are used to monitor progress of students as a group through their course of study at Union. Strengths and weaknesses of courses are also assessed by comparing class averages with national norms. Students are required to complete a research project (CHE 424) and give a seminar to faculty and colleagues (CHE 498).

is organized to better acquaint students interested in chemical science with professional opportunities in the field and the mechanics of preparing and presenting technical material. The organization instills professional pride in the chemical sciences, while stimulating awareness of the responsibilities and challenges of the modern chemist. Membership is open to any student pursuing an undergraduate degree in chemistry or physics.

is a national honorary science society for those who have completed 15 hours in natural science and mathematics and with a minimum 3.0 GPA in these courses. Membership advantages include recognition for academic achievements by the Sigma Zeta Honor Award, participation in nationally recognized research projects, and a means of cooperation in similar areas of interest by students of different colleges.

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.

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

. 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.

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

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.

Prerequisite: CHE 105 or 111.

A beginning course in organic and biochemistry with emphasis on topics specifically related to the health sciences:

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.

Prerequisite: CHE 317.

A continuation of CHE 317 with emphasis on dynamics and quantum chemistry: kinetics, mechanisms, and photochemistry; atomic and molecular electronic structure and application to spectroscopy.

Prerequisite: CHE 315, CHE 326, and BIO 112.

Introduction to the organic chemistry of living systems. Topics include the structure and function of proteins, enzymic control of chemical reactions, catabolism, anabolism, bioenergetics, biosynthesis, and molecular biology. Three lectures and one 3-hour lab/week.

A continuation of 319 with emphasis on bioenergetics and metabolism. Topics include the function and molecular control of catabolic pathways, synthesis of biomolecules, and regulation of metabolism. Three lectures and one 3-hour lab/week. Prerequisites: CHE 315, CHE 326, and BIO 112.

