DEPARTMENT OF CHEMISTRY
COLLEGE OF ARTS AND SCIENCES

Faculty

Michael Hayes (2009). Professor of Chemistry and Department Chair. B.S., Union University; Ph.D., University of Texas at Austin.

Tamara (Betsy) Caceres (2019). Assistant Professor of Chemistry. B.Pharm., Universidad Central del Este, Dominican Republic; Ph.D., Utah State University

Jimmy H. Davis (1978). Hammons Professor of Chemistry. 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).

Sally A. Henrie (1998). Professor of Chemistry. B.S., University of Arizona; Ph.D., South Dakota State University.

Randy F. Johnston (1994). University Professor of Chemistry. B.S., University of Missouri, St. Lou TJETEMC /Span <Lang (en-US)/MCID 7145 BDC BT-0.018 Tc 0 Tw 10 0 0 10 54 383.0822

B. Biology 112, 211, 221, 222, 315, 316, 320
C. Physics 213-214 or 231-232
D. Computer Science (3 hours) and MAT 111 or preferably MAT 211
E. A minimum of 33 hours of Medical Technology at an affiliated hospital as the fourth year of study.

IV. Major in Chemical Physics—119 hours

Designed for those seeking a broad background in the physical sciences to pursue graduate work in chemistry or physics or secondary teacher licensure, the major permits students with previous experiences to shorten the time spent in formal education without reducing the quality of the degree obtained.

Students with an advanced preparation in secondary school or as college sophomores may be selected for this 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 cumulative 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–4 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; HIS 101; and 9 hours of social science–27 hours
G. No minor is required.

V. Teacher Licensure with Endorsement in Chemistry 6–12
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 and 232, MAT 212 (in B.S. Core), and membership in SMACS.
C. Professional Education:
1 Prior to Internship–EDU 150, EDU 305, EDU 358, PSY 213, PSY/SE 230.
2. Fall of Internship Year–EDU 306, 340, 418, 440
3. Spring of Internship Year–EDU 441 and 451
4. CSC 105 is required in the BA core
D. Completion of applicable portions of the Praxis II.
E. For additional information, see the Director of Educator Preparation.

VI. Minor in Chemistry
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., 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
C. An honors contract in CHE 424/425 and 498

Major in Biochemistry with Discipline-Specific Honors

In addition to the requirements listed in II., 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.
C. An honors contract in CHE 424/425 and 498.

Admission Requirements for Majors with Discipline-Specific Honors

- Completion of at least 15 hours at Union University or in transfer

Progression in Majors with Discipline-Specific Honors

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. This 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.

Honors Contract Courses

1. Honors Contract Course Projects
In addition to the normal coursework, the discipline-specific honors student must complete one project in each honors contract course as noted here:
a. In the first honors contract course, prepare a review article on a topic studied within the course.
b. In the second honors contract course, prepare and deliver two 30-minute lectures on topics studied within the course.
c. In the third honors contract course, prepare a societal impact study of an important chemically related topic.
2. Research Course Project
The student must complete the first honors lecture course before starting the research course. The research course includes preparation of a formal written proposal for the work to be completed (written before work starts) and a defense of the proposal before the department committee.
3. Seminar Course Project
The student must prepare a research proposal (similar to the one for the research course) on a different topic and make an oral presentation of the proposal to the class and committee.

Assessment of Majors

The Department utilizes standardized tests of the American Chemical Society as final examinations for the first and/or 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 319-29), and 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).

Student Organizations

Student Members of the I (en-Uer)-2.7 (aI[coude039,m(7332 ƀBD17

Course Offerings in Chemistry (CHE)

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

102. Chemistry of Common Consumer Products (4) S, Su
A study of several of the many chemical compositions found in the everyday lives of American consumers. Students will learn how highly specialized mixtures of diverse substances enable

Medical Technology Hospital-in-Residence Curriculum

411. Clinical Chemistry (6)
Chemical analysis of various body fluids and the study of their relationship to disease states.

412. Instrumentation (1)
The principles, use, and care of instruments found in up-to-date laboratories.

421. Hematology and Coagulation (7)
Application of theory to technical performance in hematological procedures which aid in classification of anemias, leukemias, and other blood cell abnormalities.

422. Advanced Microbiology (7)
A lecture and lab course covering the role of microorganisms as they cause disease in humans. Methods employed in the identification of bacteria, fungi, viruses, and rickettsiae.

423. Serology (2)
A lecture and lab course in immunology, including demonstrating reactions between antigens and antibodies. Use of these reactions as a serodiagnostic tool is presented.

424. Immunohematology (5)
Includes selection, testing and bleeding of donors, identification of blood group antigens and antibodies, procedures employed in providing compatible blood for patients, and principles and procedures used in blood component therapy.

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

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

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

440. Principles of Management and Ethics (0)
Preparation for the medical graduate for positions of leadership as supervisors and administrators.

179-279-379-479. External Domestic Study Programs (1-3) As Needed
All courses and their applications must be defined and approved prior to registering.

179PF-279PF-379PF-479PF. External Domestic Study Programs (Pass/Fail) As Needed
All courses and their applications must be defined and approved prior to registering.

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

180PF-280PF-380PF-480PF. Study Abroad Programs