Chemistry Major

Bachelor of Science

Dr. Mark Watson, Interim Program Director

Chemistry Program Mission Statement

The mission of the chemistry program is to educate each student on the nature of chemistry and to prepare the student with sufficient knowledge and skills to pursue productive work in chemistry and to graduate students who are engaged citizens and scholars.

Program Description

Chemistry is the study of composition, structure and properties of matter. Our students are given a broad-based education to allow students to pursue a variety of careers. The Chemistry major prepares students to be successful in industry, pharmacy, government facilities and graduate or professional schools. The faculty encourage undergraduate research and students work closely with an academic advisor to provide a curriculum tailored to meet the needs of the student. Chemistry majors are in demand for local industry and their research experiment helps them be successful their future graduate education.

Chemistry Program Learning Outcomes

The graduate will be able to:

1. Apply the major concepts, principles and theories of chemistry to solve problems.
2. Demonstrate safe and ethical laboratory and synthesis skills to obtain accurate results.
3. Search the chemical literature, perform research, and create new scientific knowledge.
4. Evaluate data and communicate the findings of a chemical research project.

What You Will Study

The major in chemistry consists of 125-130 credits, including 46 credits of required and elective chemistry courses, 24 credits of required mathematics and physics courses, 7 credits in natural science and biology, and about 27credits of courses to achieve the General Education requirements.

The science and mathematics curriculum for the chemistry major is shown in the table below:

REQUIRED CHEMISTRY COURSES – 45 CREDIT HOURS		
CHEM 101	General Chemistry I and Lab	4 credits
CHEM 102	General Chemistry II and Lab	4 credits
CHEM 201	Organic Chemistry I and Lab	4 credits
CHEM 202	Organic Chemistry II and Lab	4 credits

REQUIRED CHEMISTRY COURSES – 45 CREDIT HOURS		
CHEM 251	Quantitative Analysis and Lab	4 credits
CHEM 362	Instrumental Analysis and Lab	4 credits
CHEM XXX	300 or 400-Level Electives	6 credits
CHEM 410	Biochemistry	4 credits
CHEM 412	Physical Chemistry I	3 credits
CHEM 413	Physical Chemistry II	3 credits
CHEM 494	Proposal Writing in Chemistry	1 credit
CHEM 495	Research in Chemical Science	3 credits
CHEM 496	Seminar in Chemical Science	1 credit
REQUIRED MATHEMATICS COURSES – 16 CREDIT HOURS		
MATH 123	Pre-Calculus	4 credits
MATH 201	Calculus I	4 credits
MATH 202	Calculus II	4 credits
MATH 203	Calculus III	4 credits
REQUIRED PHYSICS COURSES – 8 CREDIT HOURS		
PHSC 201	Introductory Physics I and Lab	4 credits
PHSC 202	Introductory Physics II and Lab	4 credits
REQUIRED BIOLOGY COURSE – 4 CREDT HOURS		
BIOL 130	Introductory Biology for Majors and Lab	4 credits
REQUIRED NATURAL SCIENCE COURSE – 3 CREDIT HOURS		
NSCI 220 or MATH 240	Statistics in Science and Research or Probability and Statistics	3 credits

An AP score of 4 or higher may be used to fulfill the CHEM 101 and CHEM 102 requirement. The initial course in MATH and eligibility to take CHEM 101 will be determined based on math course placement.

Please note that many chemistry and biology classes have a lab. Although the lab is registered for as a separate class, the credit hour totals above include the lab hours.

Additional Requirements

Students must meet all General Education Requirements required for graduation from the University of Charleston. Students should take care to fulfill prerequisites for upper division courses as noted in the course descriptions. In order to graduate, students must earn a C or better in all courses required for the major.

Successful completion of American Chemical Society (ACS) examinations may be required as part of the course assessments.

Chemistry majors should follow the Research Timeline described above in the section about Natural Sciences & Mathematics Department Requirements.

Admission Requirements

Students must gain general admission to the University of Charleston.

Chemistry Minor

Students can earn a minor in Chemistry by completing 18 credit hours of Chemistry classes (six of the 18 hours may be classes required for other degrees) in required classes. The required classes are:

CHEM 201, CHEM 202, CHEM 412, CHEM 414, CHEM 251, CHEM 251L, CHEM

496 and CHEM 410 or CHEM 411.

Majors outside the Natural Science department may be required to take additional hours as prerequisite or co-requisite classes.