

CHEMISTRY MAJOR

Dr. Juliana Serafin, Program Director

- Excellent preparation for employment, research or professional school.
- Strong emphasis on skill acquisition and the ability to perform independent research
- Hands-on laboratory experiences
- UC Student Chapter of the American Chemical Society

From the Faculty

“The mission of the chemistry program is to educate each student on the nature of chemistry and biochemistry, and to prepare the student with sufficient knowledge and skills to pursue productive work in chemistry, or to attend graduate school in chemistry, or to attend professional school in the health sciences, and to enable students in the use of chemistry to interpret everyday life in the pursuit of enlightened living and community involvement.”

Admission Requirements

Students must gain general admission to the University of Charleston. A visit to campus to meet with Admissions personnel and program faculty is strongly encouraged.

Program Outcomes

The graduate will:

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, 6 credits in natural science and biology, and about 50 credits of courses to achieve the Liberal Learning Outcomes. In order to graduate, a student must receive a minimum grade of “C” for each of the courses.

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

REQUIRED CHEMISTRY COURSES – 46 CREDIT HOURS		
CHEM 101	General Chemistry I	4 credits
CHEM 102	General Chemistry II	4 credits
CHEM 201	Organic Chemistry I	4 credits
CHEM 202	Organic Chemistry II	4 credits
CHEM 251	Quantitative Analysis	4 credits
CHEM 362	Instrumental Analysis	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 414	The Chemist's Toolbox	1 credit
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	4 credits
PHSC 202	Introductory Physics II	4 credits
REQUIRED BIOLOGY COURSE – 4 CREDIT HOURS		
BIOL 130	Introductory Biology for Majors	4 credits
REQUIRED NATURAL SCIENCE COURSE – 3 CREDIT HOURS		
NSCI 220	Statistics in Science and Research	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 SAT and/or ACT Math Scores.

Typical four-year schedule:

FRESHMAN YEAR			
FALL SEMESTER		SPRING SEMESTER	
CHEM 101 General Chemistry I	4	CHEM 102 General Chemistry II	4
FYE HUMN 1XX or SSCI 1XX	3	FYE HUMN 1XX or SSCI 1XX)	3
COMM 101 Writing I*	3*	COMM 102* Writing II	3*
BIOL 130 Introductory Biology Majors	4	HIST 211 World Cultures I or LLOs	3
MATH 123 Pre-Calculus	4	MATH 201 Calculus I	4
UNIV 101 Orientation to University	1	UNIV 102 The University Experience	2
		SPCH 103 Fundamentals of Speech**	3**
TOTAL CREDITS	16+3	TOTAL CREDITS	16+6

*Embedded in HUMN 1XX or SSCI 1XX

**Embedded in UNIV 102

SOPHOMORE YEAR

FALL SEMESTER		SPRING SEMESTER	
CHEM 201 Organic Chemistry I	4	CHEM 202 Organic Chemistry II	4
CHEM 251 Quantitative Analysis	4	CHEM 362 Instrumental Analysis	4
MATH 202 Calculus II	4	MATH 203 Calculus III	4
PHSC 201 Introductory Physics I	4	PHSC 202 Introductory Physics II	4
TOTAL CREDITS	16	TOTAL CREDITS	16

JUNIOR YEAR			
FALL SEMESTER		SPRING SEMESTER	
CHEM 412 Physical Chemistry I	3	CHEM 413 Physical Chemistry II	3
NSCI 220 Statistics	3	NSCI 345 Issues in Medicine	3
Elective	3	Elective	3
CHEM 411 Advanced Organic	3	HIST 251 American Republic	3
NSCI 333 History of Science	3	ENGL 2XX or 3XX for 2.3M & 3.2L	3
TOTAL CREDITS	15	TOTAL CREDITS	15

SENIOR YEAR			
FALL SEMESTER		SPRING SEMESTER	
CHEM 494 Proposal Writing in Chemistry	1	CHEM 420 Advanced Biochemistry	3
CHEM 410 Biochemistry	4	CHEM 496 Seminar in Chem. Science	1
CHEM 495 Research in Chem. Science	3	UNIV 459 or 460 University Capstone	3
ART 211 or 250 Art in Medicine or Photography	3	Elective courses up to 6 hours	6
Elective	3	CHEM 414 The Chemist's Toolbox	1
TOTAL CREDITS	14	TOTAL CREDITS	14

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. The student must pass both the lecture and lab portion of the class in order to receive any of the credits.

It is possible to obtain a Chemistry degree in 3 years. Please contact Dr. Serafin for a schedule.

Additional Requirements

Students must meet all Liberal Learning Outcomes 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.

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.