

Chemistry

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Chemistry Courses

Program Goals

- Content: Students will master fundamental chemical concepts and have knowledge of advanced chemical principles across a broad spectrum of chemistry disciplines.
- Laboratory: Students, while working within a cooperative laboratory environment, will be able to design experiments, carry those experiments out and utilize modern instruments and techniques effectively. Critical thinking and problem solving skills will be demonstrated by their ability to interpret their results and design new experiments based upon them.
- Communication: Students will be able to effectively communicate chemistry-related concepts and experimental results and conclusions in written, visual, and oral formats to scientists and non-scientists.
- Leadership and Civic Responsibility: Students will develop their leadership skills, a global perspective on chemistry issues, and engage in practices informed by social responsibility across the spectrum of differences.

Objectives

The Chemistry program offers an academic major leading to a Bachelor of Science degree and an academic minor. The program provides: (1) preparation for a professional career or graduate study in chemistry; (2) an understanding of basic chemistry concepts and experience in laboratory operations for those planning careers in related fields; (3) pre-professional study for those preparing for careers in medicine, dentistry, veterinary medicine, and nursing; and (4) preparation for those who wish to teach at the secondary level.

Program Requirements

Students must maintain a cumulative 2.3 GPA or better in courses required in the academic major. Students choosing a double major or minor within the science program may not apply electives to more than one major or minor. Only classes listed under "required courses" that coincide between both majors/minors may be applied to both.

Students must meet the college-wide graduation requirements in addition to the Chemistry major:

- 124 total hours
- 30 upper division hours
- WCore requirements

Chemistry Major

To fulfill the requirements for a major in Chemistry, students must complete the following as well as demonstrate competency in MATH 144:

Requirement Description	Credit Hours	Prerequisites
I. World Language Requirement	8	
Chemistry majors must complete eight credit hours in a single world language.		
II. Lower Division Courses	8	
CHEM 111 Principles of Chemistry I and Lab (4)		co-requisites: CHEM 111R recommended; MATH 144 required
CHEM 112 Principles of Chemistry II and Lab (4)		CHEM 111
III. Upper Division Courses	24	
CHEM 303 Organic Chemistry I and Lab (4)		CHEM 112
CHEM 304 Organic Chemistry II and Lab (4)		CHEM 303
CHEM 306 Quantitative Chemistry and Lab (4)		CHEM 112 and PHYS 151 or PHYS 211
CHEM 320 Inorganic Chemistry and Lab (4)		CHEM 112
CHEM 421 Physical Chemistry I and Lab (4)		CHEM 112, MATH 202, PHYS 212, PHYS 309
CHEM 422 Physical Chemistry II and Lab (4)		CHEM 112, MATH 202, PHYS 212. PHYS 309
IV. Electives	12	
<i>Students must take two of the following three courses:</i>		
CHEM 307 Instrumental Analysis and Lab (4)		CHEM 112 and PHYS 151 or PHYS 211
CHEM 350 Biochemistry and Lab (4)		BIOL 205 and CHEM 304
CHEM 370 Scientific Computing (4)		PHYS 211 or MATH 201 and PHYS 151
<i>Students must complete an additional four credit hours of coursework from the following:</i>		
CHEM 300 Special Topics in Chemistry (2-4)		instructor permission
CHEM 307 Instrumental Analysis and Lab (4)		CHEM 112 and PHYS 151 or PHYS 211
CHEM 350 Biochemistry and Lab (4)		BIOL 205 and CHEM 304
CHEM 370 Scientific Computing (4)		PHYS 211 or MATH 201 and PHYS 151
CHEM 400 Advanced Topics in Chemistry (1-5)		instructor permission
CHEM 401 Directed Studies in Chemistry (1-4)		senior standing, consent of instructor and school dean
CHEM 430 Undergraduate Research (1-4)		faculty mentor permission
CHEM 440 Internship (1-2)		junior/senior standing, see course description
V. Required Courses from Other Programs	22	
MATH 201 Calculus I (4)		MATH 144 or placement test
MATH 202 Calculus II (4)		MATH 201 or placement test
PHYS 211 Physics for Scientists and Engineers I and Lab (4)		MATH 144 and co-requisite: MATH 201
PHYS 212 Physics for Scientists and Engineers II and Lab (4)		PHYS 211 and co-requisite: MATH 202
PHYS 309 Mathematical Methods of Physics (4)		MATH 202 and PHYS 211
WCSAM 400 Science Capstone (2)		
TOTAL HOURS FOR CHEMISTRY MAJOR	76	

Recommended Plan of Study for Chemistry

	Fall Semester	Spring Semester
Freshman Year	CHEM 111	CHEM 112
Sophomore Year	CHEM 303 PHYS 211 MATH 201	CHEM 304 PHYS 212 MATH 202
Junior Year	CHEM 306 CHEM Elective	PHYS 309 CHEM 320
Senior Year	CHEM 421 CHEM Elective	CHEM 422 CHEM Elective WCSAM 400 (when offered)

Chemistry Minor

Requirement Description	Credit Hours	Prerequisites
I. Required Courses	16	
CHEM 111 Principles of Chemistry I and Lab (4)		co-requisites: CHEM 111R recommended; MATH 144 required
CHEM 112 Principles of Chemistry II and Lab (4)		CHEM 111
CHEM 303 Organic Chemistry I and Lab (4)		CHEM 112
CHEM 304 Organic Chemistry II and Lab (4)		CHEM 303
II. Electives	8	
<i>Complete four hours of coursework from the following:</i>		
CHEM 300 Special Topics in Chemistry (2-4)		instructor permission
CHEM 306 Quantitative Chemistry and Lab (4)		CHEM 112 and PHYS 151 or PHYS 211
CHEM 307 Instrumental Analysis and Lab (4)		CHEM 112 and PHYS 151 or PHYS 211
CHEM 320 Inorganic Chemistry and Lab (4)		CHEM 112
CHEM 350 Biochemistry and Lab (4)		BIOL 205 and CHEM 304
CHEM 370 Scientific Computing (4)		PHYS 211 or MATH 201 and PHYS 151
CHEM 401 Directed Studies in Chemistry (1-4)		senior standing, consent of instructor and school dean
CHEM 421 Physical Chemistry I and Lab (4)		CHEM 112, MATH 202, PHYS 212, PHYS 309
CHEM 422 Physical Chemistry II and Lab (4)		CHEM 112, MATH 202, PHYS 212, PHYS 309
CHEM 430 Undergraduate Research (1-4)		faculty mentor permission
CHEM 440 Internship (1-4)		junior/senior standing, see course description
<i>Complete at least four additional hours from the following:</i>		
CHEM 306 Quantitative Chemistry and Lab (4)		CHEM 112 and PHYS 151 or PHYS 211
CHEM 307 Instrumental Analysis and Lab (4)		CHEM 112 and PHYS 151 or PHYS 211
CHEM 320 Inorganic Chemistry and Lab (4)		CHEM 112
CHEM 350 Biochemistry and Lab (4)		BIOL 205 and CHEM 304
CHEM 370 Scientific Computing (4)		PHYS 211 or MATH 201 and PHYS 151
CHEM 421 Physical Chemistry I and Lab (4)		CHEM 112, MATH 202, PHYS 212, PHYS 309
CHEM 422 Physical Chemistry II and Lab (4)		CHEM 112, MATH 202, PHYS 212, PHYS 309
TOTAL HOURS FOR CHEMISTRY MINOR	24	