

Biochemistry

Contact Information

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The Biochemistry curriculum is designed to prepare students for the biomedical sciences and/or health professions through a strong background in chemistry and its application to biological systems. The degree, hosted by the Chemistry program in the School of Integrated Sciences, Sustainability and Public Health, meets or exceeds the requirements for those students pursuing a professional degree, e.g. medicine, dentistry, and pharmacy, as well as those interested in graduate work in associated sciences, e.g. biochemistry, pharmacology, and molecular biology. The program is accredited by the American Chemical Society's Committee on Professional Training and the curriculum meets the recommendations of the American Society for Biochemistry and Molecular Biology.

Honors in Biochemistry

Biochemistry majors may elect to participate in the honors program in Biochemistry. To graduate with honors in Biochemistry, a student must:

1. Complete all degree requirements.
2. Earn a minimum cumulative GPA of 3.0 for all UIS Chemistry courses and 3.50 for UIS courses overall.
3. Make a public presentation of the results of undergraduate research. (CHE 302 or CHE 400 or similar experiential learning project)

Undergraduate Research

One of the advantages of earning a Biochemistry degree from UIS is involvement in hands-on original lab research. The requirement is fulfilled by earning three credits of CHE 302 or CHE 400 ECCE: Undergraduate Research. These credits can be earned on campus in a project with one of the Chemistry program faculty, another faculty member in the Sciences, or in an off-campus research internship. Both courses include a final written report of the research results and a professional presentation. Contact a Chemistry faculty member to discuss possible projects or to get approval of a research opportunity outside the program.

The Bachelor's Degree

Advising

Students wishing to major in Biochemistry should consult with an academic advisor upon admission to the University to make sure they are taking their required courses in the proper sequence. In order to declare a Biochemistry major, students need to complete a change of curriculum form on the Records and Registration website. There is no separate admission to the major.

First-year students should contact the science advisor in the Center for Academic Success and Advising. Students with more than 30 hours (transfer students and sophomores) should contact the College of Health, Science, and Technology Academic Professional. We suggest you meet with your advisor at least one time each semester to discuss courses, careers, and research opportunities.

It is imperative that students beyond their first year regularly consult with a faculty member in the Chemistry program regarding their major.

Refer to the Chemistry website to view the program's Sample Curriculum / Program Guide.

General Education

All Biochemistry majors must fulfill the undergraduate general education requirements as described at the beginning of this catalog. Certain courses required for the UIS Biochemistry Bachelor of Science degree also fulfill general education requirements (listed in the table below). Consult with your academic advisor before registering to ensure you take the correct courses in the correct sequence.

Grading Policy

Chemistry courses for which the student has attained a grade of C- or better will be applied toward their B.S. degree in biochemistry (grades of D+ or lower will not be accepted). Biochemistry majors may repeat program courses for grade improvement only once.

Program Learning Outcomes

A Biochemist graduating from UIS will be characterized as being able to:

- Apply the scientific process(es).
- Communicate scientific information.
- Integrate chemical knowledge.
- Participate in the biochemistry profession.
- Perform appropriate laboratory skills.

Students majoring in Biochemistry may be asked to participate in surveys of focus groups in order to assist the Chemistry program in assessing its learning outcomes. Other evidences of student learning (e.g., exam scores, research papers) may be used in an anonymous and confidential manner for Chemistry program curriculum review and planning.

Requirements

Required Courses

Life Science		
BIO 141	General Biology I	4
Physical Science		
CHE 141	General Chemistry I	4
Mathematical Skills		
MAT 115	Calculus I	4
Applied Mathematics		
MAT 121	Applied Statistics	3
ECCE Engagement Experience		

CHE 400	ECCE: Undergraduate Research	3
or CHE 302	ECCE: Undergraduate Research	

or CHE 432 Introduction to Neuroscience

Total Hours **34**

Introductory Courses

CHE 141	General Chemistry I	4
CHE 142	General Chemistry II	4
CHE 143	Recitation for General Chemistry I	0
CHE 144	Recitation for General Chemistry II	0
CHE 267	Organic Chemistry I	3
CHE 268	Organic Chemistry I Laboratory	1
CHE 269	Organic Chemistry II	3
CHE 271	Organic Chemistry II Lab	1

Calculus (one year):

MAT 115	Calculus I	8
& MAT 116	and Calculus II	

Physics (one year):

ASP 201	University Physics I	8
& ASP 202	and University Physics II	

Total Hours **32**

Transfer students with deficiencies in the introductory courses may be required to make up the deficiencies during their first year of study. This extra work may mean that some students will require more than four years to complete the B.S. degree. Transcripts submitted by transfer students must show that the following course requirement categories have been met:

- General Chemistry I and II
- Organic Chemistry with lab (one year)
- Calculus (one year)
- Introductory Biology with lab (one year)
- Physics, calculus based (one year)

Intermediate and Advanced Courses

CHE 301	Scientific Writing and Communication	3
or BIO 301	General Seminar	
CHE 321	Chemical Analysis	4
CHE 400	ECCE: Undergraduate Research	3
or CHE 302	ECCE: Undergraduate Research	
CHE 401	Physical Chemistry I - Thermodynamics	3
CHE 418	Bioanalytical Chemistry	3
CHE 475	General Biochemistry	3
CHE 476	General Biochemistry Laboratory	2
CHE 485	Advanced Biochemistry	4

400-level Chemistry Electives **3**

Upper Division Biology Electives (choose from the list below): **6**

BIO 311	Cell Biology	
BIO 381	Genetics	
BIO 425	Medicinal Chemistry	
or CHE 425	Medicinal Chemistry	
BIO 432	Introduction to Neuroscience	

The three credits of CHE 302 or CHE 400 meet the University requirements for three credits of ECCE Engaged Citizenship. Additional Engaged Citizenship credits can be earned in an internship. There are local paid internships in the sciences. Contact the Internships and Prior Learning office for the current list of available internships at (217) 206-6640.