Chemistry

Bachelor of Science

- Pre-Medical Concentration
- The Science of the Environment Concentration

Undergraduate Minor

www.uis.edu/chemistry/
Email: che@uis.edu
Office Phone: (217) 206-6589
Office Location: HSB 314

The Chemistry curriculum is designed to prepare students for direct entry into the chemical profession or for further studies in graduate or professional programs. The department is accredited by the American Chemical Society’s Committee on Professional Training. Our curriculum leads to ACS certification in either chemistry or chemistry with a biochemistry track.

Undergraduate Research

One of the advantages of getting a Chemistry degree from UIS is the requirement to conduct an original research project. This requirement is fulfilled by earning three (3) credits of CHE 302 or CHE 400. These credits can be earned on campus in a project with one of the Chemistry Department faculty or in an off-campus research internship. The three credits of CHE 302 or CHE 400 meet the University requirements for three credits of ECCE Engaged Citizenship. The course includes a final written report of the research results and a professional presentation. Reports and presentations will be evaluated by the chemistry faculty as part of the annual departmental assessment of student learning. Contact a Chemistry faculty member to discuss possible projects or to get approval of a research opportunity outside the department.

Additional Engaged Citizenship credits can be earned in an internship. There are many local paid internships in the sciences. Contact the Internships and Prior Learning office for the current list of available internships at (217) 206-6640 (http://www.uis.edu/pl/).

Honors in Chemistry

Chemistry majors may elect to participate in the honors program in Chemistry. To graduate with honors in Chemistry, 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, and
3. make a public presentation of the results of undergraduate research (CHE 400 or similar experiential learning project). Students must apply for honors designation to the chair of the Chemistry Department prior to their final semester at UIS.

- Pre-Medical Concentration
- The Science of the Environment Concentration

The Bachelor's Degree

In addition to the B.S. in Chemistry, two concentrations are available for chemistry students – premedical, and science of the environment. The pre-medical concentration is designed to prepare students for applying to medical school or other health professions. The science of the environment concentration is useful for students seeking a career in environmental technology or government agencies.

Advising

Students wishing to major in Chemistry should consult with an academic advisor upon admission to the University to make sure they are taking required courses in the proper sequence. In order to be a chemistry 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 Undergraduate Academic Advising Center. Students with more than 30 hours (transfer students and sophomores) should contact the College of Liberal Arts and Sciences Advising Professional.

All of the faculty in the Chemistry Department are available for advising. We suggest that you meet with your department advisor one time each semester to discuss courses, careers, and research opportunities. To set an appointment, contact the office manager at (217) 206-6589.

Refer to the Chemistry website at www.uis.edu/chemistry/ to view the department’s Sample Curriculum/ Program Guide.

Assessment of Learning within the Discipline

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

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

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

Grading Policy

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

General Education

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

Life Science
BIO 141  Unity of Living Organisms  4

Physical Science
CHE 141  General Chemistry I  4

Mathematical Skills
MAT 115  Calculus I  4

Applied Mathematics
MAT 116  Calculus II  4

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

Degree Requirements

Introductory Courses
CHE 141  General Chemistry I  4
CHE 142  General Chemistry II  4
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  Calculus II  8

Physics (one year):
ASP 201  University Physics I  8
& ASP 202  University Physics II  8

Total Hours 32

Transfer students with deficiencies in the introductory courses may enter the program conditionally but will 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)
- Physics, calculus based (one year)

Intermediate and Advanced Courses
CHE 301  General Seminar  3
or BIO 301  General Seminar  3
CHE 321  Chemical Analysis  4
CHE 400  ECCE: Undergraduate Research  3
or CHE 302  ECCE: Undergraduate Research  3
CHE 401  Physical Chemistry I - Thermodynamics  3
CHE 402  Physical Chemistry II  3
CHE 415  Biochemistry I  4
CHE 421  Instrumental Analysis  4
CHE 422  Inorganic Chemistry  4

Chemistry Electives (300 or 400-level) 3

Total Hours 31

Degree Plan*

*Listed below is a SUGGESTED Degree Plan. For OFFICIAL program information, please refer to the catalog content above and consult your academic advisor.

Year 1

Fall

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHE 141  General Chemistry I  (or equivalent)</td>
<td>4</td>
</tr>
<tr>
<td>MAT 115  Calculus I  (or equivalent)</td>
<td>4</td>
</tr>
<tr>
<td>ENG 101  Rhetoric and College Writing</td>
<td>3</td>
</tr>
<tr>
<td>Freshman Seminar (Humanities or Social Sciences)</td>
<td>3</td>
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<tr>
<td><strong>Hours</strong></td>
<td>14</td>
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</table>

Spring

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHE 142  General Chemistry II  (or equivalent)</td>
<td>4</td>
</tr>
<tr>
<td>MAT 116  Calculus II  (or equivalent)</td>
<td>4</td>
</tr>
<tr>
<td>ENG 102  College Writing and Civic Engagement</td>
<td>3</td>
</tr>
<tr>
<td>Comparative Societies (Humanities or Social Sciences)</td>
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</tr>
<tr>
<td><strong>Hours</strong></td>
<td>14</td>
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Year 2

Fall

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHE 267  Organic Chemistry I  (or equivalent)</td>
<td>3</td>
</tr>
<tr>
<td>CHE 268  Organic Chemistry I Laboratory  (or equivalent)</td>
<td>1</td>
</tr>
<tr>
<td>ASP 201  University Physics I  (or equivalent)</td>
<td>4</td>
</tr>
<tr>
<td>BIO 141  Unity of Living Organisms  (or equivalent)</td>
<td>4</td>
</tr>
<tr>
<td>General Education Requirement (Humanities or Social Sciences)</td>
<td>3</td>
</tr>
<tr>
<td><strong>Hours</strong></td>
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</table>

Spring

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHE 269  Organic Chemistry II  (or equivalent)</td>
<td>3</td>
</tr>
<tr>
<td>CHE 271  Organic Chemistry II Lab  (or equivalent)</td>
<td>1</td>
</tr>
<tr>
<td>ASP 202  University Physics II  (or equivalent)</td>
<td>4</td>
</tr>
<tr>
<td>BIO 241  Biology of Organisms in the Environment  (or equivalent)</td>
<td>4</td>
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COM 112 Oral Communication 3

Year 3

Fall
CHE 321 Chemical Analysis 4
CHE 301 General Seminar 3
CHE 475 General Biochemistry 3
CHE 476 General Biochemistry Laboratory 2
ECCE Requirement (Global Awareness or U.S. Communities) 3

Hours 15

Spring
CHE 421 Instrumental Analysis 4
CHE Concentration Course or elective 4
CHE 302 ECCE: Undergraduate Research or 400 3
General Education Requirement (Visual, Creative and Performing Arts Humanities) 3
Elective 3

Hours 17

Year 4

Fall
CHE 401 Physical Chemistry I - Thermodynamics 3
CHE Concentration Course or elective 3-4
ECCE U.S. Communities/Global Awareness 3
General Education Requirement (Humanities or Social Sciences) 3

Hours 12-13

Spring
CHE 402 Physical Chemistry II 3
CHE 422 Inorganic Chemistry 4
CHE Concentration Course or elective 4
UNI 301 ECCE: Speakers Series 1
General Education Requirement (Humanities or Social Sciences) 3
Elective 3

Hours 18

Total Hours: 120-121

Chemistry Minor

This minor is only open to students who are NOT majoring in biochemistry.

To earn a minor in Chemistry, students must complete a minimum of 19 semester hours from the following courses. A minimum of eight hours of course work must be taken at UIS.

Core courses
CHE 141 General Chemistry I 4
CHE 142 General Chemistry II 4
CHE 267 Organic Chemistry I 3
CHE 268 Organic Chemistry I Laboratory 1

Electives
Select from the following: 7
CHE 400 ECCE: Undergraduate Research

Analytical chemistry
CHE 321 Chemical Analysis
CHE 421 Instrumental Analysis
CHE 431 Environmental Chemistry

Organic and Biochemistry
CHE 269 Organic Chemistry II
CHE 271 Organic Chemistry II Lab
CHE 418 Bioanalytical Chemistry
CHE 475 General Biochemistry
CHE 476 General Biochemistry Laboratory
CHE 485 Advanced Biochemistry

Physical and Inorganic Chemistry
CHE 401 Physical Chemistry I - Thermodynamics
CHE 402 Physical Chemistry II
CHE 422 Inorganic Chemistry

Total Hours 19

CHE 480 Special Topics In Chemistry