CHEMISTRY: ENVIRONMENTAL CHEMISTRY, BS

For the Degree of Bachelor of Science in Chemistry, Environmental Chemistry Concentration

department website: https://chemistry.illinois.edu
department faculty: Chemistry Faculty (https://chemistry.illinois.edu/directory/faculty-by-type)
advising: SCS Academic Advising (http://advising.scs.illinois.edu)
overview of college admissions & requirements: Liberal Arts & Sciences (http://catalog.illinois.edu/schools/las/academic-units)
college website: https://las.illinois.edu/

This concentration is designed to provide a background in environmental chemistry that is sufficient in breadth and depth to prepare a person to work as an environmental chemist in the public or private sectors and/or to pursue an advanced degree in the field. Students who complete this concentration will be certified in environmental chemistry by the American Chemical Society (ACS). The Environmental Chemistry Concentration is based on the Specialized Curriculum in Chemistry. Students will take a 3-hour, 300-level course in environmental chemistry and three 3-hour, upper level technical courses in environmental areas. These courses can be used as part of the required 14 hours of technical electives for the Specialized Curriculum in Chemistry.

Undergraduate Degree Programs in Chemistry

For the Degree of Bachelor of Science in Liberal Arts and Sciences

• Major in Computer Science & Chemistry, BSLAS (http://catalog.illinois.edu/undergraduate/eng_las/computer-science-chemistry-bslas)
• Major in Chemistry (Sciences and Letters) (http://catalog.illinois.edu/undergraduate/las/chemistry-bslas/#degreerequirementtext)
• Major in Chemistry (Sciences and Letters), Chemistry Teaching Concentration (http://catalog.illinois.edu/undergraduate/las/chemistry-bslas/chemistry-teaching)

For the Degree of Bachelor of Science in Chemistry

• Major in Chemistry (Specialized Curriculum) (http://catalog.illinois.edu/undergraduate/las/chemistry-bs/#degreerequirementtext)
• Major in Chemistry (Specialized Curriculum), Environmental Chemistry Concentration (p. 1)

For the Degree of Bachelor of Science in Chemistry, Environmental Chemistry Concentration

General education: Students must complete the Campus General Education (https://courses.illinois.edu/gened/DEFAULT/DEFAULT) requirements including the campus general education language requirement.
Minimum hours required for graduation: 120 hours.

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Hours</th>
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<tbody>
<tr>
<td>CHEM 202</td>
<td>Accelerated Chemistry I</td>
<td>35</td>
</tr>
<tr>
<td>CHEM 203</td>
<td>Accelerated Chemistry Lab I</td>
<td></td>
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<tr>
<td>CHEM 204</td>
<td>Accelerated Chemistry II</td>
<td></td>
</tr>
<tr>
<td>CHEM 205</td>
<td>Accelerated Chemistry Lab II 2</td>
<td></td>
</tr>
<tr>
<td>CHEM 236</td>
<td>Fundamental Organic Chem I</td>
<td></td>
</tr>
<tr>
<td>CHEM 237</td>
<td>Structure and Synthesis</td>
<td></td>
</tr>
<tr>
<td>CHEM 312</td>
<td>Inorganic Chemistry</td>
<td></td>
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<tr>
<td>CHEM 315</td>
<td>Instrumental Chem Systems Lab</td>
<td></td>
</tr>
<tr>
<td>CHEM 420</td>
<td>Instrumental Characterization</td>
<td></td>
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<tr>
<td>CHEM 436</td>
<td>Fundamental Organic Chem II</td>
<td></td>
</tr>
<tr>
<td>CHEM 442</td>
<td>Physical Chemistry I</td>
<td></td>
</tr>
<tr>
<td>CHEM 444</td>
<td>Physical Chemistry II</td>
<td></td>
</tr>
<tr>
<td>CHEM 445</td>
<td>Physical Principles Lab I</td>
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Advanced Chemistry

Chemistry/Biochemistry courses numbered 300 or higher, which must include one from the following:

CHEM 317 | Inorganic Chemistry Lab                               |       |
CHEM 437 | Organic Chemistry Lab                                  |       |
CHEM 447 | Physical Principles Lab II                             |       |

Additional laboratory work:

BIOC 455 | Technqs Biochem & Biotech                              |       |
CHEM 317 | Inorganic Chemistry Lab                               |       |
CHEM 437 | Organic Chemistry Lab                                  |       |
CHEM 447 | Physical Principles Lab II                             |       |
CHEM 483 | Solid State Structural Anlys                          |       |

Additional chemistry/biochemistry courses to complete the 11-hour requirement in advanced chemistry (excluding CHEM 499)

Mathematics: 1

MATH 220 | Calculus                                                 |       |
MATH 221 | Calculus I                                               |       |
MATH 231 | Calculus II                                              |       |
MATH 241 | Calculus III                                             |       |

Physics: 1

PHYS 211 | University Physics: Mechanics                           |       |
PHYS 212 | University Physics: Elec & Mag                           |       |
PHYS 214 | Univ Physics: Quantum Physics                            |       |

Technical Electives, including the following:

14

Required Mathematics: 5

MATH 225 | Introductory Matrix Theory                              |       |
MATH 285 | or equivalent                                           |       |

Strongly Recommended:

CHEM 499 | Senior Thesis (maximum of 10 hours)                     |       |
Recommended: basic computer science

Other technical courses chosen from:

Information listed in this catalog is current as of 03/2020
Chemistry (300 or higher), biochemistry, chemical engineering (200 or higher)

Courses in life sciences (all courses at 200 or higher)
Mathematics or computer science above the basic level
Other courses in the physical and biological sciences and engineering including CHEM 199

Nontechnical Requirements

General education:
Foreign language - three semesters of college study (or three years of high school study) in a single foreign language
Composition I writing requirement (RHET 105, CMN 111 and CMN 112, or equivalent)
Advanced Composition writing requirement

Humanities/Arts to satisfy the campus general education requirements
Social/Behavioral sciences to satisfy the campus general education requirements
Cultural Studies to satisfy the campus general education requirement

Free electives

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<tbody>
<tr>
<td>CHEM 360</td>
<td>Chemistry of the Environment or CEE 330 Environmental Engineering</td>
<td>3</td>
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Advanced Courses: Select three courses from the following:

CHEM 460  Green Chemistry
CEE 443   Env Eng Principles, Chemical
GEOL 380  Environmental Geology
IB 485    Environ Toxicology & Health
CHEM 397  Individual Study Junior
CHEM 497  Individual Study Senior
CHEM 499  Senior Thesis

Other 400-level courses dealing with economic, engineering, biological aspects of environmental chemistry upon consultation with the faculty advisor.

Restrictions: (1) Courses preparatory to or used to satisfy the minimum requirements specified in the above requirements may not be included as free electives. (2) No first-year foreign language course (e.g., 101, 102, or equivalent) may be included unless it is a different language than used to satisfy the foreign language nontechnical requirement.