The first two years of the Chemical Engineering curriculum provide a strong foundation in basic sciences through Physics, Mathematics, Chemistry, an introduction to what Chemical Engineers do, and the fundamental basis of Chemical Engineering (Mass and Energy Balances and Thermodynamics.) In the third year, students delve deeper into more specialized Chemistry courses such as Physical and Analytical Chemistry, while exploring fundamental Chemical Engineering courses such as Momentum Transfer, Separations, and Reactor Design. The Senior year incorporates all of this learning through high level technical electives, Process Control, Capstone Lab, and Capstone Design courses. It is through the lab and design class that students apply everything they have learned in previous Chemical Engineering courses to real-world team projects and presentations.

The Chemical Engineering specialized curriculum provides two areas of concentration: Chemical Engineering and Biomolecular Engineering. Each area is based on a strong fundamental understanding of Chemical Engineering, however the Biomolecular concentration's technical electives focus more on bio-applied processing and technology.

Areas of Concentration

- Chemical Engineering: The Chemical Engineering concentration is designed to prepare students for careers in the energy, chemical, food, energy, pharmaceutical, semiconductor processing, personal care, fiber and materials industries.
- Biomolecular Engineering: The Biomolecular Engineering concentration builds upon the traditional principles of chemical engineering, but specializes in biological and biotechnological systems in order to better prepare students who are interested in or seek employment in the food, pharmaceutical, and biotechnology industries.

General education: Students must complete the Campus General Education requirements including the campus general education language requirement. Minimum required major and supporting course work: A grade point average of 2.5 or higher in all courses required for the major earned on the UIUC campus is required in order to be accepted by the department as juniors and seniors. Minimum hours required for graduation: The curriculum requires 129 hours for graduation and is organized as shown below.

Orientation and Professional Development

These courses introduce opportunities and resources the college, department, and curriculum offers students. They also provide background on the Chemical Engineering curriculum, what chemical engineers do, and the skills to work effectively and successfully in the engineering profession.

Foundational Mathematics and Science

These courses stress the basic mathematical and scientific principles upon which the engineering discipline is based.

Chemical and Biomolecular Engineering Technical Core

These courses stress fundamental concepts and basic laboratory techniques that comprise the common intellectual understanding of chemical engineering and chemical science.
These courses teach fundamentals of expository writing.

These courses stress the rigorous analysis and design principles practiced in the major subdisciplines of chemical engineering embodied in the chemical engineering and biomolecular engineering concentrations.

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## Major in Chemical Engineering

For the Concentration in Biomolecular Engineering, see below (p. 3)

### Second Year

<table>
<thead>
<tr>
<th>Semester</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>First Semester</td>
<td>17</td>
</tr>
<tr>
<td>Second Semester</td>
<td>17</td>
</tr>
</tbody>
</table>

Second Year First Semester course information is above in the Suggested Sequence that is common for all students.

### Third Year

<table>
<thead>
<tr>
<th>Semester</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>First Semester</td>
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</tr>
<tr>
<td>Second Semester</td>
<td>17</td>
</tr>
</tbody>
</table>

### Fourth Year

<table>
<thead>
<tr>
<th>Semester</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>First Semester</td>
<td>16</td>
</tr>
<tr>
<td>Second Semester</td>
<td>10</td>
</tr>
</tbody>
</table>

Total Hours: 97

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1. Students who do not place into CHEM 202, or who do not satisfy the mathematics prerequisite for CHEM 202, may substitute the sequence CHEM 102, CHEM 103, CHEM 104, CHEM 105, CHEM 222, and CHEM 223 for CHEM 202, CHEM 203, CHEM 204, and CHEM 205.
2. For students entering the curriculum after the freshman year, 1 additional hr of credit from the list of approved engineering technical electives (List 1) may be substituted in place of CHBE 121. The ENG 100 requirement will be waived. Under no circumstances will these requirements be waived for students who are in the chemical engineering curriculum during their freshman year.

3. MATH 220 may be substituted, with four of the five credit hours applying toward the degree. MATH 220 is appropriate for students with no background in calculus.

4. At least 16 hours must be taken. All Campus General Education requirements must be satisfied, including those in approved course work in the Humanities/Arts, Social/Behavioral Sciences, and Cultural Studies, including the Western, Non-Western and/or U.S. Minorities components. The requirements for the Campus General Education categories Natural Sciences/Technology, Quantitative Reasoning I and II, Composition I, and Advanced Composition are fulfilled through required course work in the curriculum.

5. Three semesters of college credit in one foreign language is required. Three years of high school credit in one foreign language are equivalent to three semesters of college credit and satisfy the requirement.

6. Under no circumstances will PHYS 101-PHYS 102 be accepted as a substitute for any part of the Physics sequence.

7a. MATH 441 may be substituted for MATH 285. MATH 286 may be substituted for MATH 285.

7b. MATH 441 may be substituted for MATH 285. MATH 286 may be substituted for MATH 285.

8a. At least 19 hours must be selected from the departmentally approved List of Approved Chemical Engineering Technical Electives (http://chbe.illinois.edu/wp-content/uploads/2015/11/Technical.Electives.Current.pdf), satisfying these distribution requirements:
   a) 6 hours must be 400-level ChBE courses, with not more than 3 hours being CHBE 497 or 499.
   b) 3 hours any 400-level course from List 1.
   c) 6 hours any courses from List 1.
   d) 4 hours any 400-level courses from List 2.
   A maximum of 10 total hours of undergraduate research may be counted toward Technical Elective credit. The List of Approved Chemical Engineering Technical Electives may be obtained in 99 RAL or from the department Web site. (http://chbe.illinois.edu/undergraduate/explore-chbe-at-illinois/curriculum-academic-advising)

8b. At least 19 hours must be selected from the departmentally approved List of Approved Biomolecular Engineering Technical Electives Categories (http://chbe.illinois.edu/wp-content/uploads/2015/11/Technical.Electives.Current.pdf), satisfying these distribution requirements:
   a) 9 hours must be from Category A
   b) 6 hours must be from Category B
   c) 4 hours must be 400-level courses from List 2.
   A maximum of 3 hours from Category A may be undergraduate research credit. A maximum of 9 total hours of undergraduate research may be counted toward Technical Elective credit. The List of Approved Biomolecular Engineering Technical Electives may be obtained in Room 99 RAL or from the department Web site. (http://chbe.illinois.edu/undergraduate/explore-chbe-at-illinois/curriculum-academic-advising)

9. Students must register in one of the Chemical Engineering-specific CHEM 315 lab sections.

10. Enrollment in CHBE 430 is limited. Thus CHBE 430 may need to be taken in the second semester and CHBE 431 and/or additional electives taken in the first semester instead. Students in their final semester will have priority for getting into CHBE 430 and CHBE 431.

11. The sequence CHBE 430 and CHBE 431 satisfies the General Education Advanced Composition requirement.