CHEMICAL ENGINEERING DEGREE

Students must also complete the Undergraduate Registration Requirement (https://catalogs.northwestern.edu/undergraduate/requirements-policies/undergraduate-registration-requirement/) and the degree requirements of their home school.

Requirements (48 units)

Core Courses (27 units) ¹

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>PHYSICS 135-2 &amp; PHYSICS 135-3</td>
<td>General Physics and General Physics</td>
</tr>
<tr>
<td>CHEM 131-0 &amp; CHEM 132-0</td>
<td>General Chemistry 1 and General Chemistry 2</td>
</tr>
<tr>
<td>or CHEM 151-0 &amp; CHEM 152-0</td>
<td>Accelerated General Chemistry 1 and Accelerated General Chemistry 2</td>
</tr>
<tr>
<td>or CHEM 171-0 &amp; CHEM 172-0</td>
<td>Advanced General Inorganic Chemistry and Advanced General Physical Chemistry</td>
</tr>
</tbody>
</table>

4 units of basic science: ²

4 engineering analysis and computer proficiency courses (https://catalogs.northwestern.edu/undergraduate/engineering-applied-science/#requirementstext)

3 design and communications courses (https://catalogs.northwestern.edu/undergraduate/engineering-applied-science/#requirementstext)

7 social sciences/humanities courses (https://catalogs.northwestern.edu/undergraduate/engineering-applied-science/#requirementstext)

5 unrestricted electives (https://catalogs.northwestern.edu/undergraduate/engineering-applied-science/#requirementstext)

Major Program (21 units)

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>MAT_SCI 301-0</td>
<td>Materials Science Principles</td>
</tr>
<tr>
<td>CHEM_ENG 210-0</td>
<td>Analysis of Chemical Process Systems</td>
</tr>
<tr>
<td>CHEM_ENG 211-0</td>
<td>Thermodynamics</td>
</tr>
<tr>
<td>CHEM_ENG 212-0</td>
<td>Phase Equilibrium and Staged Separations</td>
</tr>
<tr>
<td>CHEM_ENG 275-0</td>
<td>Molecular &amp; Cell Biology for Engineers ³</td>
</tr>
<tr>
<td>CHEM_ENG 307-0</td>
<td>Kinetics and Reactor Engineering</td>
</tr>
<tr>
<td>CHEM_ENG 312-0 or IEMS 303-0</td>
<td>Probability and Statistics for Chemical Engineering or Statistics</td>
</tr>
<tr>
<td>CHEM_ENG 321-0</td>
<td>Fluid Mechanics</td>
</tr>
<tr>
<td>CHEM_ENG 322-0</td>
<td>Heat Transfer</td>
</tr>
<tr>
<td>CHEM_ENG 323-0</td>
<td>Mass Transfer</td>
</tr>
<tr>
<td>CHEM_ENG 341-0</td>
<td>Dynamics and Control of Chemical and Biological Processes</td>
</tr>
<tr>
<td>CHEM_ENG 342-0</td>
<td>Chemical Engineering Laboratory</td>
</tr>
<tr>
<td>CHEM_ENG 351-0</td>
<td>Process Economics, Design, &amp; Evaluation</td>
</tr>
<tr>
<td>CHEM_ENG 352-0</td>
<td>Chemical Engineering Design Projects</td>
</tr>
</tbody>
</table>

5 technical elective courses

2 advanced chemical engineering courses from an approved list available from the department

1 engineering course from an approved list available from the department or 1 unit of independent study

1 advanced science or mathematics course from an approved list available from the department

1 engineering, advanced science, or mathematics course from an approved list available from the department

See general requirements (https://catalogs.northwestern.edu/undergraduate/engineering-applied-science/#requirementstext) for details.

² PHYSICS 125-2 General Physics for ISP or PHYSICS 140-2 Fundamentals of Physics may be substituted for PHYSICS 135-2 General Physics. PHYSICS 125-3 General Physics for ISP or PHYSICS 140-3 Fundamentals of Physics may be substituted for PHYSICS 135-3 General Physics. Associated labs are PHYSICS 126-2 Physics for ISP Laboratory or PHYSICS 136-2 General Physics Laboratory and PHYSICS 126-3 Physics for ISP Laboratory or PHYSICS 136-3 General Physics Laboratory.

³ BIOL_SCI 201-0 Molecular Biology or BIOL_SCI 202-0 Cell Biology may substitute for CHEM_ENG 275-0 Molecular & Cell Biology for Engineers. Exemptions from this one unit of biology coursework are NOT granted for students testing out of and skipping BIOL_SCI 201-0 Molecular Biology through the Biological Sciences Department’s placement test. These students may use CHEM_ENG 275-0 Molecular & Cell Biology for Engineers or BIOL_SCI 202-0 Cell Biology to complete the required biology unit.