# 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.

## Course Title Requirements (48 units)

### Core Courses (32 units)

1. **4 mathematics courses** (https://catalogs.northwestern.edu/undergraduate/engineering-applied-science/#requirementstext)
2. **4 engineering analysis and computer proficiency courses** (https://catalogs.northwestern.edu/undergraduate/engineering-applied-science/#requirementstext)
3. **4 units of basic science:**
   - PHYSICS 135-2 General Physics
   - PHYSICS 135-3 and General Physics
   - CHEM 131-0 General Chemistry 1
   - CHEM 132-0 and General Chemistry 2
   - or CHEM 151-0 Accelerated General Chemistry 1
   - & CHEM 152-0 and Accelerated General Chemistry 2
   - or CHEM 171-0 Advanced General Inorganic Chemistry
   - & CHEM 172-0 and Advanced General Physical Chemistry
   - **3 design and communications courses** (https://catalogs.northwestern.edu/undergraduate/engineering-applied-science/#requirementstext)
   - **5 basic engineering courses:**
     - CHEM_ENG 210-0 Analysis of Chemical Process Systems
     - CHEM_ENG 211-0 Thermodynamics
     - CHEM_ENG 321-0 Fluid Mechanics
     - MAT_SCI 301-0 Materials Science Principles
     - CHEM_ENG 312-0 Probability and Statistics for Chemical Engineering
     - or IEMS 303-0 Statistics
   - **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 (16 units)

**11 Required Courses:**

- CHEM 210-1 Organic Chemistry
- CHEM 210-2 and Organic Chemistry
- CHEM_ENG 212-0 Phase Equilibrium and Staged Separations
- CHEM_ENG 275-0 Molecular & Cell Biology for Engineers
- CHEM_ENG 307-0 Kinetics and Reactor Engineering
- CHEM_ENG 322-0 Heat Transfer
- CHEM_ENG 323-0 Mass Transfer
- CHEM_ENG 341-0 Dynamics and Control of Chemical and Biological Processes
- CHEM_ENG 342-0 Chemical Engineering Laboratory
- CHEM_ENG 351-0 Process Economics, Design, & Evaluation
- CHEM_ENG 352-0 Chemical Engineering Design Projects

**5 technical electives:**

- 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

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

2 PHYSICS 125-2 General Physics for ISP or PHYSICS 140-3 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 123-3 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.