# CHEMICAL ENGINEERING DEGREE

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

## Course Requirements (48 units)

### Core Courses (32 units)

1. **4 mathematics courses** ([https://catalogs.northwestern.edu/undergraduate/engineering-applied-science/#requirementstext](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](https://catalogs.northwestern.edu/undergraduate/engineering-applied-science/#requirementstext))
3. **4 units of basic science**:
   - PHYSICS 135-2 & PHYSICS 135-3: General Physics and General Physics
   - CHEM 131-0 & CHEM 132-0: General Chemistry 1 and General Chemistry 2
   - or CHEM 151-0 & CHEM 152-0: Accelerated General Chemistry 1 and Accelerated General Chemistry 2
   - or CHEM 171-0 & CHEM 172-0: Advanced General Inorganic Chemistry and Advanced General Physical Chemistry
4. **3 design and communications courses** ([https://catalogs.northwestern.edu/undergraduate/engineering-applied-science/#requirementstext](https://catalogs.northwestern.edu/undergraduate/engineering-applied-science/#requirementstext))
5. **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
6. **7 social sciences/humanities courses** ([https://catalogs.northwestern.edu/undergraduate/engineering-applied-science/#requirementstext](https://catalogs.northwestern.edu/undergraduate/engineering-applied-science/#requirementstext))
7. **5 unrestricted electives** ([https://catalogs.northwestern.edu/undergraduate/engineering-applied-science/#requirementstext](https://catalogs.northwestern.edu/undergraduate/engineering-applied-science/#requirementstext))

## Major Program (16 units)

### Required Courses:

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

## Technical Electives:

1. **2 advanced chemical engineering courses** from an approved list available from the department.
2. **1 engineering, advanced science, or mathematics course** from an approved list available from the department.

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1. See general requirements ([https://catalogs.northwestern.edu/undergraduate/engineering-applied-science/#requirementstext](https://catalogs.northwestern.edu/undergraduate/engineering-applied-science/#requirementstext)) for details.
2. BIOL_SCI 215-0 Genetics and Molecular Biology or BIOL_SCI 219-0 Cell Biology may substitute for CHEM_ENG 275-0 Molecular & Cell Biology for Engineers.