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 Requirements (48 units)

Core Courses (32 units)

- 4 mathematics courses (https://catalogs.northwestern.edu/undergraduate/engineering-applied-science/#requirementstext)
- 4 engineering analysis and computer proficiency courses (https://catalogs.northwestern.edu/undergraduate/engineering-applied-science/#requirementstext)
- 4 units of basic science: ¹
  - PHYSICS 135-2 & PHYSICS 135-3 General Physics
  - CHEM 131-0 & CHEM 132-0 General Chemistry 1 & General Chemistry 2
    - or CHEM 151-0 & CHEM 152-0 Accelerated General Chemistry 1 & Accelerated General Chemistry 2
    - or CHEM 171-0 & CHEM 172-0 Advanced General Inorganic Chemistry & 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 & CHEM 210-2 Organic Chemistry and Organic Chemistry
- CHEM_ENG 212-0 Phases Equilibrium and Staged Separations
- CHEM_ENG 275-0 Molecular & Cell Biology for Engineers ²
- 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 See general requirements (https://catalogs.northwestern.edu/undergraduate/engineering-applied-science/#requirementstext) for details.
² PHYSICS 140-2 Fundamentals of Physics may be substituted for PHYSICS 135-2 General Physics. PHYSICS 140-3 Fundamentals of Physics may be substituted for PHYSICS 135-3 General Physics. Associated labs are PHYSICS 136-2 General Physics Laboratory and PHYSICS 136-3 General Physics Laboratory.
³ 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.