# Mechanical 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)

- 4 mathematics courses ([https://catalogs.northwestern.edu/undergraduate/engineering-applied-science/#requirementstext](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](https://catalogs.northwestern.edu/undergraduate/engineering-applied-science/#requirementstext))
- 4 units of basic science:
  - PHYSICS 135-2 & PHYSICS 135-3 & PHYSICS 136-2 & PHYSICS 136-3: General Physics and General Physics Laboratory, and General Physics Laboratory
  - CHEM 131-0 & CHEM 141-0 & CHEM 151-0 & CHEM 161-0: General Chemistry 1 and General Chemistry Laboratory 1, Accelerated General Chemistry 1 and Accelerated General Chemistry Laboratory 1
  - or CHEM 171-0 & CHEM 181-0: Advanced General Inorganic Chemistry and Advanced General Inorganic Chemistry Laboratory
- 3 design and communications courses ([https://catalogs.northwestern.edu/undergraduate/engineering-applied-science/#requirementstext](https://catalogs.northwestern.edu/undergraduate/engineering-applied-science/#requirementstext))
- 5 basic engineering courses:
  - MECH_ENG 233-0: Electronics Design
  - CIV_ENV 216-0: Mechanics of Materials I
  - MECH_ENG 241-0: Fluid Mechanics I
  - MAT_SCI 201-0: Introduction to Materials
  - MECH_ENG 224-0: Scientific and Embedded Programming in Python
- 7 social sciences/humanities courses ([https://catalogs.northwestern.edu/undergraduate/engineering-applied-science/#requirementstext](https://catalogs.northwestern.edu/undergraduate/engineering-applied-science/#requirementstext))
- 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)

### 8 required courses:

- COMP_SCI 212-0: Mathematical Foundations of Comp Science
- MECH_ENG 224-0: Scientific and Embedded Programming in Python
- MECH_ENG 314-0: Machine Dynamics
- MECH_ENG 240-0: Intro to Mechanical Design and Manufacturing
- MECH_ENG 315-0: Theory of Machines: Design of Elements
- MECH_ENG 340-1: Computer Integrated Manufacturing: Manufacturing Processes
- MECH_ENG 377-0: Heat Transfer
- MECH_ENG 390-0: Intro to Dynamic Systems

### 2 capstone courses:

- MECH_ENG 398-1 & MECH_ENG 398-2: Engineering Design I and Engineering Design II (taken sequentially and counting toward the final 12 units taken before graduation)

### 6 concentration courses from one of the nine concentration areas:

1. See Core Courses Requirements ([https://catalogs.northwestern.edu/undergraduate/engineering-applied-science/#requirementstext](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 General 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. Students planning to take advanced ELEC_ENG courses may petition to substitute ELEC_ENG 221-0: Fundamentals of Circuits.
4. May not be taken with CHEM 342-1: Thermodynamics or CHEM_ENG 211-0: Thermodynamics.
5. Or take 1 300-level or above mathematics or basic science course.