# MECHANICAL 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:
  - PHYSICS 135-2 & PHYSICS 135-3 & PHYSICS 136-2 & PHYSICS 136-3
    - General Physics
    - and General Physics Laboratory
  - CHEM 131-0 & CHEM 141-0 & CHEM 151-0 & CHEM 161-0 & CHEM 171-0 & CHEM 181-0
    - General Chemistry 1 & General Chemistry Laboratory 1 & Accelerated General Chemistry 1 & Accelerated General Chemistry Laboratory 1 & Advanced General Inorganic Chemistry & Advanced General Inorganic Chemistry Laboratory

### Design and Communications Courses (3 units)

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

### Basic Engineering Courses (5 units)

- 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

### Social Sciences/Humanities Courses (7 units)

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

### Unrestricted Electives (5 units)

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

## Major Program (16 units)

### Required Courses (16 units)

- 8 required courses:
  - COMP_SCI 212-0: Mathematical Foundations of Comp Science
  - or CHEM 215-1: Organic Chemistry I
  - 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

### Capstone Courses (2 units)

- 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)

### Concentration Courses (6 units)

- 6 concentration courses from one of the nine concentration areas:
  - ME Breadth; Aerospace Engineering; Design; Energy and Sustainability; Engineering Mechanics of Materials and Structures; Fluids, Energy, and Thermal Systems; Manufacturing; Micro-Nano Engineering; and Robotics.

(Courses in each concentration area are specified on the department website)

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1. See Core Courses 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 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.