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.

Requirements (48 units)

Core Courses (27 units)

- 4 mathematics courses (https://catalogs.northwestern.edu/undergraduate/engineering-applied-science/#requirementstext)
- 4 units of basic science:
  - PHYSICS 135-2 General Physics
  - & PHYSICS 135-3 and General Physics Laboratory
  - & PHYSICS 136-2 and General Physics Laboratory
  - CHEM 131-0 and Fundamentals of Chemistry I
  - & CHEM 141-0 and Fundamentals of Chemistry Laboratory I
  - or CHEM 151-0 General Chemistry I
  - & CHEM 161-0 and General Chemistry Laboratory I
  - or CHEM 171-0 Advanced General Inorganic Chemistry
  - & CHEM 181-0 and Advanced General Inorganic Chemistry Laboratory

- 4 engineering analysis and computer proficiency courses (https://catalogs.northwestern.edu/undergraduate/engineering-applied-science/#requirementstext)
- 3 design and communications courses (https://catalogs.northwestern.edu/undergraduate/engineering-applied-science/#requirementstext)
- 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 (21 units)

- 12 required courses
  - CIV_ENV 216-0 Mechanics of Materials I
  - MAT_SCI 201-0 Introduction to Materials Science and Engineering Principles
  - MECH_ENG 222-0 Thermodynamics & Statistical Mechanics - I
  - MECH_ENG 224-0 Scientific and Embedded Programming in Python
  - MECH_ENG 314-0 Machine Dynamics
  - 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)

- 1 math/science technical elective course
  - Any 300-level course listed as 100% Mathematics & Basic Science Topics on the ABET Partitioning Table or COMP_SCI 212-0 or CHEM 215-1

- 6 courses to satisfy a concentration area listed below
  - Mechanical Engineering Breadth
  - Aerospace Engineering
  - Design
  - Energy and Sustainability
  - Engineering Mechanics of Materials and Structures
  - Fluids, Energy, and Thermal Systems
  - Manufacturing
  - Micro-Nano Engineering
  - Robotics

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 Laboratory for ISP or PHYSICS 136-2 General Physics Laboratory and PHYSICS 126-3 Physics Laboratory for ISP 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 Course must be listed as 100% Mathematics & Basic Science Topics on the ABET Partitioning Table (https://www.mccormick.northwestern.edu/academics/undergraduate/abet/course-partitioning.html) or appear on the Mechanical Engineering Math/Science Technical Elective table (https://catalogs.northwestern.edu/undergraduate/engineering-applied-science/mechanical-engineering/mechanical-engineering-degree/abet/course-partitioning.html). Associated labs may be substituted for PHYSICS 125-2 General Physics for ISP or PHYSICS 140-3 Fundamentals of Physics may be substituted for PHYSICS 135-2 General Physics. Associated labs are PHYSICS 126-2 Physics Laboratory for ISP or PHYSICS 136-2 General Physics Laboratory and PHYSICS 126-3 Physics Laboratory for ISP or PHYSICS 136-3 General Physics Laboratory.
6 Courses and other concentration requirements are specified on the Mechanical Engineering department website. Students should declare their concentration no later than the end of their 2nd year.