

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)¹

Course **Title**
4 mathematics courses (<https://catalogs.northwestern.edu/undergraduate/engineering-applied-science/#requirementstext>)

4 units of basic science:²

PHYSICS 135-2 & PHYSICS 135-3 & PHYSICS 136-2 & PHYSICS 136-3	General Physics and General Physics and General Physics Laboratory and General Physics Laboratory
CHEM 131-0 & CHEM 141-0 or CHEM 151-0 & CHEM 161-0 or CHEM 171-0 & CHEM 181-0	Fundamentals of Chemistry I and Fundamentals of Chemistry Laboratory I General Chemistry I and General Chemistry Laboratory I Advanced General Inorganic Chemistry 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)

Course **Title**

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 ⁴
MECH_ENG 224-0 or COMP_SCI 211-0	Scientific and Embedded Programming in Python Fundamentals of Computer Programming II
MECH_ENG 233-0	Electronics Design ³
MECH_ENG 240-0	Intro to Mechanical Design and Manufacturing
MECH_ENG 241-0	Fluid Mechanics I
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)
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1 math/science technical elective course⁵

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 below⁶

Mechanical Engineering Breadth
Aerospace Engineering
Design
Energy Systems and Sustainability
Manufacturing
Mechanical Sciences
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://www.mccormick.northwestern.edu/mechanical/documents/pre-approved-list-of-3xx-level-math-science-courses-08192021.pdf>)

⁶ Courses and other concentration requirements are specified on the Mechanical Engineering department website (<https://www.mccormick.northwestern.edu/mechanical/academics/undergraduate/curriculum/>). Students should declare their concentration no later than the end of their 2nd year.