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 Title 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: General Physics and General Physics Laboratory
- PHYSICS 136-2 & PHYSICS 136-3: General Physics Laboratory
- CHEM 131-0 & CHEM 141-0: General Chemistry 1 and General Chemistry Laboratory 1
  - or CHEM 151-0 & CHEM 161-0: 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)

#### 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 222-0: Thermodynamics & Statistical Mechanics - I

#### 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)

- 7 required courses:
  - MECH_ENG 202-0: Mechanics II
  - MECH_ENG 224-0: Experimental Engineering
  - MECH_ENG 240-0: Intro to Mechanical Design & Manufacrtng
  - MECH_ENG 315-0: Theory of Machines - Design of Elements
  - MECH_ENG 340-1: Comp Integ Manufacturing: Manufacturing Processes
  - MECH_ENG 377-0: Heat Transfer I
  - MECH_ENG 390-0: Intro to Dynamic Systems

- 2 capstone courses:
  - MECH_ENG 398-1 & MECH_ENG 398-2: Engineering Design - Senior Capstone, Quarter 1 and Engineering Design II - Senior Capstone, Quarter 2 (taken sequentially and counting toward the final 12 units taken before graduation)

#### Advanced Study Courses

**Dynamics/Controls**

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
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</thead>
<tbody>
<tr>
<td>MECH_ENG 314-0</td>
<td>Machine Dynamics</td>
</tr>
<tr>
<td>MECH_ENG 363-0</td>
<td>Mechanical Vibrations</td>
</tr>
<tr>
<td>EECS 360-0</td>
<td>Introduction to Feedback Systems</td>
</tr>
</tbody>
</table>

**Mechanics**

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>MECH_ENG 327-0</td>
<td>Finite Elements for Stress Analysis</td>
</tr>
<tr>
<td>MECH_ENG 362-0</td>
<td>Stress Analysis</td>
</tr>
</tbody>
</table>

**Thermofluid Science**

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<thead>
<tr>
<th>Course</th>
<th>Title</th>
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</thead>
<tbody>
<tr>
<td>MECH_ENG 322-0</td>
<td>Thermodynamics &amp; Statistical Mechanics - II</td>
</tr>
<tr>
<td>MECH_ENG 373-0</td>
<td>Engineering Fluid Mechanics</td>
</tr>
</tbody>
</table>

### Electives Requirements

- **4 electives:**
  - All technical electives must be 300 level or above.
  - 1 technical elective must be a mathematics or basic science course.
  - 2 technical electives must be mechanical engineering courses.
  - 1 technical elective may be in mathematics, basic science, or engineering
  - Students are encouraged to concentrate electives in areas of interest. A list of nine areas of concentration, including appropriate courses and descriptions, is available on the department website.
  - No more than 2 units of MECH_ENG 399-0 Projects are allowed.
  - DSGN 360-0 Design Competition carries 1 unit of credit only if taken over 2 consecutive quarters. If repeated for credit, only 1 unit may be used as a technical elective, and no more than 2 units total may count toward the degree.
  - DSGN 245-0 Introduction to Computer Aided Design I: NX may not be counted toward the degree even as an unrestricted elective.

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1. See Core Courses Requirements (https://catalogs.northwestern.edu/undergraduate/engineering-applied-science/#requirementstext) for details.
2. Students planning to take advanced EECS courses may petition to substitute EECS 221-0 Fundamentals of Circuits
3. May not be taken with CHEM 342-1 Thermodynamics or CHEM_ENG 211-0 Thermodynamics

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4 electives:

See Electives Requirements below

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1. See Core Courses Requirements (https://catalogs.northwestern.edu/undergraduate/engineering-applied-science/#requirementstext) for details.
2. Students planning to take advanced EECS courses may petition to substitute EECS 221-0 Fundamentals of Circuits
3. May not be taken with CHEM 342-1 Thermodynamics or CHEM_ENG 211-0 Thermodynamics