## Mechanical Engineering

### Freshman Year

<table>
<thead>
<tr>
<th>Fall Semester</th>
<th>Spring Semester</th>
</tr>
</thead>
<tbody>
<tr>
<td>Math 1371 Calculus I (placement into course, or pre-req)</td>
<td>Math 1372 Calculus II (1371)</td>
</tr>
<tr>
<td>Phys 1301W Intro Physics I (&amp;Math 1371)</td>
<td>Phys 1302W Intro Physics II (1301, &amp;Math 1372)</td>
</tr>
<tr>
<td>CSE 1001 1st Yr Experience</td>
<td>Chem 1065 Chem Princ I Lab (&amp;1061)</td>
</tr>
<tr>
<td>Liberal Education course (recommend Biol 1009)</td>
<td>Chem 1061 Chem Princ I (placement into course of 1015, &amp;1065)</td>
</tr>
<tr>
<td>Liberal Education course or Writ 1301</td>
<td>Liberal Education course or Writ 1301</td>
</tr>
</tbody>
</table>

### Sophomore Year

<table>
<thead>
<tr>
<th>Fall Semester</th>
<th>Spring Semester</th>
</tr>
</thead>
<tbody>
<tr>
<td>Math 2374 Multivariable Calc (1372)</td>
<td>Math 2373 Lin Alg/Diff Eq (1372)</td>
</tr>
<tr>
<td>MatS 2001 Intro to Engrg Matls (CSE, Chem 1061/65, Math 1372, Phys 1301)</td>
<td>ME 3331 Thermodynamics (Chem 1061/65, Phys 1301)</td>
</tr>
<tr>
<td>MatS 2002 Engrg Matls Lab (&amp;MatS 2001, ME majors only)</td>
<td>CSci 1113 Intro to C/C++ (Math 1371)</td>
</tr>
<tr>
<td>ME 2011 Intro Engineering (CSE pre-major)</td>
<td>Liberal Education course</td>
</tr>
</tbody>
</table>

### Junior Year

<table>
<thead>
<tr>
<th>Fall Semester</th>
<th>Spring Semester</th>
</tr>
</thead>
<tbody>
<tr>
<td>ME 3332 Fluid Mechanics (UD, 3331, Math 2373)</td>
<td>ME 3333 Heat Transfer (UD, 3332)</td>
</tr>
<tr>
<td>IE 3521 Stats, Qual, Reliab (Math 1372)</td>
<td>ME 3281 Sys Dyn &amp; Control (UD, AEM 2021, Math 2373)</td>
</tr>
<tr>
<td>EE 3005 Fund of EE (Phys 1302, Math 2373)</td>
<td>ME 4031W Basic Measure Lab (UD, 3331, IE 3321)</td>
</tr>
<tr>
<td>EE 3006 Fund of EE Lab (&amp;3005)</td>
<td>Liberal Education course</td>
</tr>
</tbody>
</table>

### Senior Year

<table>
<thead>
<tr>
<th>Fall Semester</th>
<th>Spring Semester</th>
</tr>
</thead>
<tbody>
<tr>
<td>ME 4x3x Senior Lab (4031)</td>
<td>ME 4054W Senior Design (UD, 3222, 3281, 3333, 4031, EE 3005)</td>
</tr>
<tr>
<td>Technical Elective I (recommend ME 4053)</td>
<td>Technical Elective III</td>
</tr>
<tr>
<td>Technical Elective II</td>
<td>Technical Elective IV</td>
</tr>
<tr>
<td>Liberal Education course</td>
<td>Liberal Education course</td>
</tr>
</tbody>
</table>

### About This Plan

- This plan is not a contract. Curriculum can change. The APAS is the official method for tracking completion of University degree requirements.
- Shaded courses are only offered in the indicated semester.
- Course pre-requisites and co-requisites (designated by &) are listed below the course number and title. Upper Division (UD) requires admission to the major prior to enrollment.
- Students can take either the CSE-only or University-wide versions of the math course (Math 1371/1271, 1372/1272, 2373/2243, 2374/2263).
- Biological Science with lab must be taken A-F to fulfill Natural Science requirement.

### Department Contact Information

- Website: www.me.umn.edu
- Main Phone: 612-625-5842
- Main Office: 1100 ME
- Director of Undergraduate Studies: Professor Tom Chase
- Departmental Contact: Miranda Miller; hein0258@umn.edu

### University Degree Requirements

All students must complete the following Writing & Liberal Education requirements, as noted on their APAS report. See link for full Core & Theme names: z.umn.edu/liberaleducation

**Writing Requirements:**
- University Writing: Writ 1301/1401 or equivalent
- Writing Intensive (WI):
  - Two: 1xxx or 2xxx level **
  - One: 3/4/5xxx level (in major)*
  - One: 3/4/5xxx level (any dept.)*
- Requirements with an (*) will be fulfilled by taking courses at UM-TC required for this major.

**Liberal Education:**

- **CORES:** Bio, Phy*, Hist, SocS, Ltr, AH, Mth*
- **THEMES:** Env, DSJ, GP, TS

---

**Total Credits Needed for Degree:** 125
What can I do with a major in...
Mechanical Engineering

ACTIVITIES MECHANICAL ENGINEERING MAJORS DO:
Mechanical engineering is one of the broadest engineering disciplines. Mechanics, energy and heat, mathematics, engineering sciences, design, and manufacturing form the foundation of mechanical engineering. Mechanical engineers design and develop power-producing machines, such as internal combustion engines, steam and gas turbines, and jet and rocket engines. They use computers not only to form preliminary designs for systems or devices, but also to perform calculations that will predict the behavior of the design and to collect and analyze performance data. Mechanical engineers also design and develop power-using machines, such as refrigeration and air-conditioning equipment, robots, machine tools, material handling systems, and industrial production equipment. Mechanical engineers design tools needed by other engineers to do their work. They combine practical and technical skills with analytical and intellectual pursuits, while valuing work that requires research and a high level of creativity. In addition, mechanical engineers may work in production operations in manufacturing or agriculture, maintenance, or technical sales. Many mechanical engineers are administrators or managers.

Mechanical engineers can specialize in applied mechanics, design engineering, heat transfer, power plant engineering, nanofabrication, pressure vessels and piping, plant maintenance, biomedical engineering, construction, and underwater technology.

INDUSTRIES MECHANICAL ENGINEERING MAJORS WORK IN (SAMPLE LISTING):
- Manufacturing
- Measurement systems
- Automotive
- Research and development
- Petroleum
- Heating and cooling
- Alternative energy
- Consulting
- Packaging
- Government agencies
- Technical sales
- Environmental
- Pumps and fluid systems
- Telecommunications
- Biomedical
- Computer technologies

EMPLOYERS WHO HIRE MECHANICAL ENGINEERING MAJORS (SAMPLE LISTING):
- 3M
- PERBIX
- Eaton Corporation
- Polar Semiconductor Inc.
- Medtronic
- Boston Scientific
- RFA Engineering
- General Motors
- Cargill
- Emerson Process MGMT
- Datacard Group
- General Electric
- Ford Motor Company
- Donaldson Company
- Ecolab
- Polaris
- Graco Inc.
- Rockwell Automation
- Boston Scientific
- Flint Hills Resources
- Land O'Lakes
- Cummins
- ExxonMobil
- St. Jude Medical
- Honeywell
- Ingersoll Rand
- Target Corporation
- Andersen Corporation

TYPES OF POSITIONS FOR MECHANICAL ENGINEERING MAJORS (SAMPLE LISTING):
- **Design engineer**: Develops mechanical automation designs from customer specifications, conducts design reviews with customers, uses analytical tools to assist in the design process, and interfaces with suppliers.
- **Energy engineer**: Works with architects, engineers, contractors, and stakeholders to provide energy efficiency and sustainable design services to the commercial building sector by identifying opportunities for energy savings and reduction.
- **Drilling engineer**: Plans and designs oil and gas wells worldwide drilling with an emphasis on safety, cost, and efficiency improvement.
- **Quality engineer**: Supports development and ensures compliance with the company’s quality management system (QMS) in accordance with industry standards and provides technical support to product engineering, marketing, manufacturing, etc.

**Some of these positions may require an advanced degree.**