# Mechanical Engineering

## Freshman Year

<table>
<thead>
<tr>
<th>Fall Semester</th>
<th>Spring Semester</th>
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<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>Liberal Education course</td>
<td>Chem 1065 Chem Princ I Lab (&amp;Math 1301)</td>
</tr>
<tr>
<td>Liberal Education course or Writ 1301</td>
<td>Chem 1061 Chem Princ I (placement into course or 1015, &amp;1065)</td>
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## Sophomore Year

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<tr>
<th>Fall Semester</th>
<th>Spring Semester</th>
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<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>MatS 2002 Engrg Matls Lab (&amp;Math 2001, ME majors only)</td>
</tr>
<tr>
<td>ME 2011 Intro Engineering (CSE pre-major)</td>
<td>Liberal Education course</td>
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## Junior Year

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<tr>
<th>Fall Semester</th>
<th>Spring Semester</th>
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<tr>
<td>ME 3221 Fund Des &amp; Manuf (UD, &amp;2011, AEM 3031, MatS 2001)</td>
<td>ME 3222 Mech &amp; Mach Des (UD, &amp;2221, CSci 1113)</td>
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<tr>
<td>ME 3332 Fluid Mechanics (UD, 3331, Math 2373)</td>
<td>ME 3333 Heat Transfer (UD, 3332)</td>
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<tr>
<td>IE 3521 Stats, Qual, Reliab (Math 1372)</td>
<td>ME 3281 Sys Dyn &amp; Control (UD, AEM 2021, Math 2373)</td>
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<tr>
<td>EE 3005 Fund of EE (Phys 1302, Math 2373)</td>
<td>ME 4031W Basic Measure Lab (UD, 3331, IE 3521)</td>
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<td>EE 3006 Fund of EE Lab (&amp;3005)</td>
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## Senior Year

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

| **Total Credits Needed for Degree:** | 125 |

## 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.

## Applying to your Major
Students who have completed the required courses for admission to this major (double-boxed and one with dashed outline on plan) and have a 3.2 UM-TC technical GPA at the end of the fall semester will be guaranteed admission. All other students who have completed the required courses will be considered for admission on a space-available basis. Admission following the spring semester is only based on space availability. The major application database is available at z.umn.edu/csemajorapp.

## Department Contact Information
- Website: www.me.umn.edu
- Main Phone: 612-625-5842
- ME Departmental Advising Office: 1120 ME
- Director of Undergraduate Studies: Professor Tom Chase
- Departmental Advising: Miranda Miller; meundergrad@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 Requirements

<table>
<thead>
<tr>
<th>CORES:</th>
<th>THEMES:</th>
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<tbody>
<tr>
<td>Bio</td>
<td>4 of 5:</td>
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<td>DSJ</td>
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<td>Env</td>
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<td>AH</td>
<td>TS</td>
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<td>Mth*</td>
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*Not required for students admitted prior to Fall 2018; recommend as Tech Elective.*
Mechanical Engineering

POSSIBLE POSITIONS

- **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.
- **Development engineer**: Applies research findings to develop new or improved products or manufacturing processes.
- **Manufacturing engineer**: Plans the tooling, construction, and assembly of the product as dictated by the design specifications.
- **Mechanical engineer**: Designs power-producing machines, such as electric generators, internal combustion engines, and steam and gas turbines, as well as power-using machines.
- **Project engineer**: Schedule preparation, pre-planning and resource forecasting for engineering and other technical activities relating to the project.
- **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.
- **Research and development engineer (R&D)**: Researches structure, processing, properties and performance of materials for the development and use of applications in various fields.

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

INDUSTRIES

- Alternative energy
- Automotive
- Biomedical
- Computer technologies
- Consulting
- Environmental
- Government agencies
- Heating and cooling
- Manufacturing
- Measurement systems
- Packaging
- Petroleum
- Pumps and fluid systems
- Research and development
- Technical sales
- Telecommunication

EMPLOYERS

- 3M
- Abbott
- Andersen Corporation
- Boston Scientific
- Daikin Applied
- Emerson
- Flint Hills Resources
- Ford Motor Company
- Graco
- Honeywell
- Hormel Foods Corporation
- Ingersoll Rand/Trane
- Medtronic
- National Instruments
- PaR Systems
- Parker Hannifin
- Perbix/Tesla Motors
- RFA Engineering
- Rockwell Automation
- Smiths Medical

CSE Career Outcomes

**Average Starting Salary:**

$64,815*

**Post-graduation Outcomes:**

*Salary and Career Outcomes gathered from the 2016-2017 CSE Graduation Survey
Post-graduation outcomes reflect the percentage of students who were employed full-time in their field or were enrolled in a graduate program.

More Information

Career Center: cse.umn.edu/career
Salary Information: z.umn.edu/csesalary
More Information on Undergraduate Majors: cse.umn.edu/majors

Please visit the Career Center to continue exploring this major.