THIS IS MEANT TO BE A GUIDE ONLY MECHANICAL ENGINEERING STUDENTS SHOULD ALWAYS CONSULT WITH THEIR ME FACULTY ADVISORS REGARDING COURSE WORK.
PROGRAM IN MECHANICAL ENGINEERING

Mechanical engineers are among the most versatile, flexible, and broadly based engineers in the profession. Our students acquire knowledge in the fields of energy, material properties, fluid mechanics, solid mechanics, dynamics, laboratory techniques, design methodology, and system analysis. Our graduates apply their skills in jobs requiring engineering design, development, manufacturing, research, and resource management.

The University of Rochester has offered an undergraduate degree in mechanical engineering for over 80 years. This program provides effective preparation for students who enter industry immediately upon graduation as well as good background for graduate study in engineering and other fields.

The curriculum provides a balance of courses in the humanities and social sciences, physics, applied mathematics, and basic engineering. Emphasis is placed on the underlying fundamentals in the required engineering course-work, enabling graduates to adapt throughout their careers to rapid advances in science and technology. Training in the design process gradually supplements the analytical content of the courses as the undergraduate progresses. Our laboratory and design courses emphasize team projects. Formal oral and written presentations are key elements of these projects. A required senior year sequence in design acts as a capstone in this process.

Many undergraduates in the department assist faculty members in research projects during the academic year and the summer. This work can lead to publication in the professional archival literature. It is encouraged for those students so inclined. Recent projects involving undergraduates include experiments in controlled nuclear fusion using high-powered lasers, use of the electron microscope and testing machines to study engineering materials, mechanics of soldered and welded joints, studies in human microcirculation, experimental studies in optics manufacturing, modeling crystal growth, and experiments on nonlinear dynamical systems.

CURRICULUM AND REQUIREMENTS

Required Mechanical Engineering Courses
ME 110 – Intro to CAD and Drawing
ME 120 – Engineering Mechanics I – Statics
ME 121 – Engineering Mechanics II – Dynamics
ME 123 – Thermodynamics
ME 204 – Mechanical Design
ME 205 – Advanced Mechanical Design
ME 213 – Mechanical Systems
ME 223 – Heat Transfer
ME 225 – Introduction to Fluid Dynamics
ME 226 – Introduction to Solid Mechanics
ME 241 – Fluid Dynamics Laboratory
ME 242 – Materials and Solids Laboratory
ME 251 – Heat and Power Applications
ME 280 – Introduction to Materials Science

Foundation Requirements for Mechanical Engineering Majors
• One semester of Chemistry CHM 131 OR 151
• Calculus MTH 161, 162, 163 and 164 (MTH 141, 142 and 143 Equivalent to MTH 161 & 162)
• Two Physics courses, PHY 121 and 122
• One Natural Science course (see attached list)
• Circuits – ECE 210 is recommended (Junior year)
• Engineering Computing – CSC160
• Technical Elective- an EAS 10X course is recommended (Freshman year)(see attached list)
Degree Foundation Requirements for engineering majors

- WRT 105 – Reason and Writing (a basic writing course)
- One cluster in humanities or social science plus one extra humanity or social science course (16 credits)
- Three free electives

WRITING REQUIREMENTS

Primary Writing Requirement
The Primary Writing Requirement is normally completed in the Freshman year, and must be satisfied before admission to the program. (WRT 105 – Reason and Writing) See the website:
http://www.rochester.edu/College/CCAS/AdviserHandbook/PrimWrReq.html

Upper Level Writing Requirement
Upper Level Writing Requirements are satisfied in the Junior and Senior years with the completion of ME 241, 242, 204 and 205.

TRANSFER CREDITS

Students who use transfer credit for any one or more of these courses from another institution to the UR must consult with the Mechanical Engineering Department’s transfer approval adviser.

ADMISSION TO THE MECHANICAL ENGINEERING MAJOR
For admission to the mechanical engineering major, the student must have completed the first two years as listed in the four-year degree program below. In addition, the student must have attained a grade-point average of 2.0 or better in all mechanical engineering courses taken, and an overall grade-point average of 2.0 or better.

ELECTIVES

Our program has one required technical elective and one required natural science elective. There are also three free electives in addition to the four required Cluster electives in the humanities and social sciences. These may be used to make it easier to complete a minor, acquire a language, take graduate courses in engineering, acquire business/management skills, or generally broaden the undergraduate experience.

DISTRIBUTION REQUIREMENTS
In addition to the required writing course, students must take four courses in the humanities or social sciences. Three of these courses must constitute a cluster. The accreditation Board for Engineering and Technology specifies that distribution requirements meet certain conditions. The first condition is that the set of courses taken must exhibit some depth, and cannot all be at the introductory level. This condition is normally satisfied by a cluster. The second condition is that courses dealing only with routine skills or exercises of personal craft are not suitable distribution requirements.

REGISTRATION FORMS

Your registration must be signed by your advisor and have the department authorization stamp. The stamp may be acquired from the Undergraduate Coordinator. The stamp is required on all registration forms from Freshman year through and including Sophomore year. The stamp is a requirement of the Hajim School of Engineering and Applied Sciences.

PETITIONS

In exceptional circumstances
Students may petition for exception from some Mechanical Engineering program requirements. Please contact the Chair of the Mechanical Engineering Undergraduate committee for information.
STANDARD FOUR-YEAR PROGRAM

Below is the standard four-year program for students who decide on a mechanical engineering major in their first or second year.

<table>
<thead>
<tr>
<th>First Year</th>
<th>Fall</th>
<th>Spring 8</th>
</tr>
</thead>
<tbody>
<tr>
<td>MTH 161</td>
<td>4 Credit Hours</td>
<td>MTH 162</td>
</tr>
<tr>
<td>CHM 131</td>
<td>5 Credit Hours</td>
<td>PHY 121</td>
</tr>
<tr>
<td>Technical Elective*</td>
<td>4 Credit Hours</td>
<td>CSC 160 4 Credit Hours</td>
</tr>
<tr>
<td>WRT 105</td>
<td>4 Credit Hours</td>
<td>Cluster Course 4 Credit Hours</td>
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<tr>
<td>(Primary Writing)</td>
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<tr>
<td><strong>Total Credit Hours</strong></td>
<td><strong>17 CR HR</strong></td>
<td><strong>Total Credit Hours</strong></td>
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<thead>
<tr>
<th>Second Year</th>
<th>Fall</th>
<th>Spring</th>
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</thead>
<tbody>
<tr>
<td>MTH 164</td>
<td>4 Credit Hours</td>
<td>MTH 163 or 165</td>
</tr>
<tr>
<td>PHY 122</td>
<td>4 Credit Hours</td>
<td>Natural Science 4 Credit Hours</td>
</tr>
<tr>
<td>ME 120</td>
<td>4 Credit Hours</td>
<td>ME 123 4 Credit Hours</td>
</tr>
<tr>
<td>ME 110</td>
<td>2 Credit Hours</td>
<td>ME 226 4 Credit Hours</td>
</tr>
<tr>
<td>Cluster Course</td>
<td>4 Credit Hours</td>
<td>Cluster Course 4 Credit Hours</td>
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<tr>
<td><strong>Total Credit Hours</strong></td>
<td><strong>18 CR HR</strong></td>
<td><strong>Total Credit Hours</strong></td>
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<tr>
<th>Third Year</th>
<th>Fall</th>
<th>Spring</th>
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<tbody>
<tr>
<td>ME 121</td>
<td>4 Credit Hours</td>
<td>Circuits 4 Credit Hours</td>
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<tr>
<td>ME 225</td>
<td>4 Credit Hours</td>
<td>ME 223 4 Credit Hours</td>
</tr>
<tr>
<td>ME 280</td>
<td>4 Credit Hours</td>
<td>ME 241 4 Credit Hours</td>
</tr>
<tr>
<td>Cluster Course</td>
<td>4 Credit Hours</td>
<td>Cluster Course 4 Credit Hours</td>
</tr>
<tr>
<td><strong>Total Credit Hours</strong></td>
<td><strong>16 CR HR</strong></td>
<td><strong>Total Credit Hours</strong></td>
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<tr>
<th>Fourth Year</th>
<th>Fall</th>
<th>Spring</th>
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<tbody>
<tr>
<td>ME 204</td>
<td>4 Credit Hours</td>
<td>ME 205 4 Credit Hours</td>
</tr>
<tr>
<td>ME 242</td>
<td>4 Credit Hours</td>
<td>ME 213 4 Credit Hours</td>
</tr>
<tr>
<td>ME 251</td>
<td>4 Credit Hours</td>
<td>Free Elective 4 Credit Hours</td>
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<tr>
<td>Free Elective</td>
<td>4 Credit Hours</td>
<td>Free Elective 4 Credit Hours</td>
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<tr>
<td><strong>Total Credit Hours</strong></td>
<td><strong>16 CR HR</strong></td>
<td><strong>Total Credit Hours</strong></td>
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*An EAS 10X course is strongly recommended

AVERAGE FOR GRADUATION

Mechanical Engineering majors must obtain a cumulative average of 2.0 or higher for all required mechanical engineering courses, and an overall grade-point average of 2.0 or higher.

ASME

Students are encouraged to join and be active in the student chapter of ASME, the professional society for mechanical engineers. In addition, seniors are encouraged to take Part A of the New York State Professional Engineering License examination.
**TECHNICAL & NATURAL SCIENCE ELECTIVES**

**TECHNICAL ELECTIVES:**

BME- Any course at the 200 level or higher **except BME 201**

CSC- 170, 171, 172, 173, and any course at the 200 level or higher

CHE- 113 and any course at the 200 level or higher

ECE- 111, 112, 113, 114, 140 and any course at the 200 level or higher

ME- Any course not otherwise required (with the restriction that EAS104 must be taken in the freshman year)

MTH- 150 and any course at the 200 level or higher

OPT- Any course at the 200 level or higher

EAS104

If taken in the freshman year- BME 101, CHE 150, ECE 101, OPT 101

**NATURAL SCIENCE/MATHEMATICS ELECTIVES:**

AST- 102, 104, 105, 111, 142 and any course at the 200 level of higher

BIO- 110, 111, 198 and any course at the 200 level or higher

CHM- 132 and any course at the 200 level or higher

EES- 101, 102, 103, 106, 111, 119, and any course at the 200 level or higher

MTH- 150 and any course at the 200 level or higher

PHY- 103, 123, 143, and any course at the 200 level or higher

AP credit may be used to satisfy the natural science elective requirement if, and only if, the course is approved as equivalent to a UR course by the home department of the course, and, the equivalent course is one that ME approves as satisfying the natural science elective requirement.