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 160 – Engineering Computation I
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 260 – Engineering Computation II
ME 280 – Introduction to Materials Science

Foundation Requirements for Mechanical Engineering Majors
- One semester of Chemistry CHM 131, 137 (recommended) 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 (or 121P and 122P)
- One Natural Science course (see attached list)
- Circuits – ECE 210 is recommended (Junior year)
- Engineering Computing – ME 160 (2 credits) ME 260 (2 credits)
- 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
- 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.

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.

### First Year

<table>
<thead>
<tr>
<th>Fall</th>
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<tbody>
<tr>
<td>MTH 161 4 Credit Hours</td>
<td>MTH 162 4 Credit Hours</td>
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<tr>
<td>CHM 131/137 5 Credit Hours</td>
<td>PHY 121 4 Credit Hours</td>
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<td>Technical Elec* 4 Credit Hours</td>
<td>Dist. Elec. 4 Credit Hours</td>
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<td>WRT 105 4 Credit Hours</td>
<td>ME 120 4 Credit Hours</td>
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<td><strong>Total Credit Hours 17 CR HR</strong></td>
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### Second Year

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<tr>
<td>MTH 165 4 Credit Hours</td>
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<tr>
<td>PHY 122 4 Credit Hours</td>
<td>ME 123 4 Credit Hours</td>
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<tr>
<td>Dist. Elec. 4 Credit Hours</td>
<td>ME 226 4 Credit Hours</td>
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<td>ME 121 4 Credit Hours</td>
<td>ME 110 2 Credit Hours</td>
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<td>ME 160 2 Credit Hours</td>
<td>ME 260 2 Credit Hours</td>
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<td><strong>Total Credit Hours 18 CR HR</strong></td>
<td><strong>Total Credit Hours 16 CR HR</strong></td>
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### Third Year

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<tr>
<td>ME 225 4 Credit Hours</td>
<td>ME 223 4 Credit Hours</td>
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<tr>
<td>ME 280 4 Credit Hours</td>
<td>ME 241 4 Credit Hours</td>
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<tr>
<td>Nat. Sci. Elect. 4 Credit Hours</td>
<td>Circuits 4 Credit Hours</td>
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<tr>
<td>Dist. Elec. 4 Credit Hours</td>
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<td><strong>Total Credit Hours 16CR HR</strong></td>
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### Fourth Year

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<tr>
<td>ME 204 4 Credit Hours</td>
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<tr>
<td>ME 242 4 Credit Hours</td>
<td>ME 213 4 Credit Hours</td>
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<td>ME 251 4 Credit Hours</td>
<td>Free Elective 4 Credit Hours</td>
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<tr>
<td><strong>Total Credit Hours 16 CR HR</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

TYPICAL TECHNICAL ELECTIVES
It is recommended that students take an EAS10x course in their Freshmen year. Other acceptable courses fulfilling this requirement are listed below. Because new courses are sometimes added, this list is not comprehensive. Students should check with the ME department about the acceptability of any course not on the list. Note that the typical technical elective should normally be a four credit course. However, it may be possible to combine two 2-credit courses, provided both courses otherwise qualify.

BME – Any course at the 200 level or higher except BME 201
CS – 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/ME104 must be taken in the freshman year).
OPT – Any course at the 200 level or higher
MTH – 150 and any course at the 200 level or higher
STT – 212 and 213
If taken during the freshman year, any course listed or cross-listed as EAS 10X, including BME 101, CHE 150, ECE 101, ME 104, or OPT 101
Note: Note that AP credit cannot normally be used to satisfy this requirement. However if a student is granted credit for a course on the Technical Elective list, that course can then be used to fulfill this requirement. Example: A student receives an AP score of 4 or 5 on their Statistics Test, which may be used for STT 212. Since STT 212 is on the list of acceptable Technical Electives, this credit may be used to fulfill the requirement for a Technical Elective.

TYPICAL NATURAL SCIENCE ELECTIVES:
AST – 111, 142 and any course at the 200 level or 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
Note that AP credit cannot normally be used to satisfy this requirement. However if a student is granted credit for a course on the NSDR list, that course can then be used to fulfill this requirement. Examples:
   a) A student receives an AP score of 4 or 5 on their Earth and Environmental Sciences test and is granted credit for EES 103. Since EES 103 is on the list of acceptable NSDR courses, the credit for EES 103 may be used to fulfill the Natural Science Distribution Requirement.

   b) A student receives an AP score of 4 or 5 on their Biology test and is granted four credits of elective biology. This does not provide credit for a course on the NSDR list and so cannot be used to fulfill the Natural Science Distribution Requirement. However, it can be used as one of the student’s free electives.