BACHELOR OF SCIENCE IN MECHANICAL ENGINEERING

Program Contact: Lynn Byers (lynn.byers@quinnipiac.edu) 203-582-5028

Mechanical engineers are employed in the research, design, development and manufacturing of a broad range of tools, engines, machines and other mechanical devices and components. Through exposure to the University Curriculum, foundational course work in science, mathematics, major field courses, and extracurricular activities, students graduating with a BS in Mechanical Engineering achieve intellectual proficiencies in critical thinking and reasoning, scientific literacy, quantitative reasoning, information fluency, creative thinking and visual literacy. They are prepared to enter the profession or to pursue graduate studies with a solid foundation in the breadth of mechanical engineering. They also achieve interpersonal proficiencies in written and oral communication, responsible citizenship, diversity awareness and sensitivity and social intelligence.

BS in Mechanical Engineering Curriculum

The Bachelor of Science in Mechanical Engineering program requires 126 credits.

Within the policies of the School of Computing and Engineering, the Mechanical Engineering program enforces credit limits during the academic terms. Exceeding 18 credits in the Fall or Spring semester, 4 credits in the January term, or 10 credits in each Summer term requires the approval of the dean’s office.

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>FY 101</td>
<td>First-Year Seminar</td>
<td>3</td>
</tr>
<tr>
<td>EN 101</td>
<td>Introduction to Academic Reading and Writing</td>
<td>3</td>
</tr>
<tr>
<td>EN 102</td>
<td>Academic Writing and Research</td>
<td>3</td>
</tr>
<tr>
<td>MA 285</td>
<td>Applied Statistics</td>
<td>3</td>
</tr>
<tr>
<td>CHE 110</td>
<td>General Chemistry I</td>
<td>4</td>
</tr>
<tr>
<td>&amp; 110L</td>
<td>General Chemistry I Lab</td>
<td>4</td>
</tr>
<tr>
<td>EC 111</td>
<td>Principles of Microeconomics</td>
<td>3</td>
</tr>
<tr>
<td>Humanities</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>Fine Arts</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>BIO 101</td>
<td>General Biology I</td>
<td>4</td>
</tr>
<tr>
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<td>4</td>
</tr>
<tr>
<td>CHE 111</td>
<td>General Chemistry II</td>
<td>4</td>
</tr>
<tr>
<td>&amp; 111L</td>
<td>General Chemistry II Lab</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>Humanities, Social Science, Fine Arts (2 classes; must be from two different areas)</td>
<td>6</td>
</tr>
<tr>
<td>ENR 110</td>
<td>The World of an Engineer</td>
<td>3</td>
</tr>
<tr>
<td>MA 151</td>
<td>Calculus I</td>
<td>4</td>
</tr>
<tr>
<td>PHY 121</td>
<td>University Physics</td>
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<td>University Physics</td>
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Integrative Capstone:

University Capstone 3

In addition to the University Curriculum, students majoring in Mechanical Engineering must complete the following requirements:

Foundational Courses for Mechanical Engineering

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<thead>
<tr>
<th>Code</th>
<th>Title</th>
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</tr>
</thead>
<tbody>
<tr>
<td>CSC 106</td>
<td>Introduction to Programming for Engineers</td>
<td>3</td>
</tr>
<tr>
<td>MA 153</td>
<td>Calculus II: Part A</td>
<td>2</td>
</tr>
<tr>
<td>MA 154</td>
<td>Calculus II: Part B</td>
<td>2</td>
</tr>
<tr>
<td>MA 251</td>
<td>Calculus III</td>
<td>4</td>
</tr>
<tr>
<td>MA 265</td>
<td>Matrix Algebra and Differential Equations</td>
<td>4</td>
</tr>
<tr>
<td>PHY 122</td>
<td>University Physics II</td>
<td>4</td>
</tr>
</tbody>
</table>

Common Engineering Curriculum

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>ENR 210</td>
<td>Engineering Economics and Project Management</td>
<td>3</td>
</tr>
<tr>
<td>ENR 395</td>
<td>Professional Development Seminar</td>
<td>1</td>
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</table>

Mechanical Engineering Courses

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
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<tbody>
<tr>
<td>MER 210</td>
<td>Fundamentals of Engineering Mechanics and Design</td>
<td>3</td>
</tr>
<tr>
<td>MER 240</td>
<td>Introduction to Mechanical Engineering Design</td>
<td>1</td>
</tr>
<tr>
<td>MER 220</td>
<td>Mechanics of Materials and Mechanics of Materials Lab</td>
<td>4</td>
</tr>
<tr>
<td>MER 221</td>
<td>Dynamics</td>
<td>3</td>
</tr>
<tr>
<td>MER 230</td>
<td>Engineering Materials and Engineering Materials Lab</td>
<td>4</td>
</tr>
<tr>
<td>MER 250</td>
<td>Computer Aided Design</td>
<td>3</td>
</tr>
<tr>
<td>MER 310</td>
<td>Fluid Mechanics</td>
<td>3</td>
</tr>
<tr>
<td>MER 320</td>
<td>Thermodynamics</td>
<td>3</td>
</tr>
<tr>
<td>MER 330</td>
<td>Introduction to Circuits and Introduction to Circuits Lab</td>
<td>4</td>
</tr>
<tr>
<td>MER 340</td>
<td>Manufacturing/Machine Component Design</td>
<td>4</td>
</tr>
<tr>
<td>&amp; 340L</td>
<td>Manufacturing/Machine Component Design Lab</td>
<td>4</td>
</tr>
<tr>
<td>MER 350</td>
<td>Mechanical Engineering Design</td>
<td>3</td>
</tr>
<tr>
<td>MER 360</td>
<td>Heat Transfer</td>
<td>3</td>
</tr>
<tr>
<td>MER 470</td>
<td>Dynamic Modeling and Control and Dynamic Modeling and Controls Lab</td>
<td>4</td>
</tr>
<tr>
<td>MER 490</td>
<td>Engineering Professional Experience</td>
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</tr>
<tr>
<td>MER 498</td>
<td>ME Major Design Experience</td>
<td>3</td>
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</table>

Directed Study Electives

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Three technical electives (any MER elective or 200-level or higher CER, IER, SER, MA, BIO, CHE course)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Three graduate courses toward 3+1 or 4+1 ME/ MBA</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Three graduate courses toward 4+1 ME/ Masters in Cybersecurity</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Bachelor of Science in Mechanical Engineering 1
Bachelor of Science in Mechanical Engineering

Three electives used toward completion of a minor
Other options as approved by the ME program director

Total Credits 126

Student Outcomes
Attainment of the following outcomes prepares graduates to enter the professional practice of engineering:

a. an ability to identify, formulate and solve complex engineering problems by applying principles of engineering, science, and mathematics.
b. an ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety and welfare, as well as global, cultural, social, environmental, and economic factors.
c. an ability to communicate effectively with a range of audiences.
d. an ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts.
e. an ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks and meet objectives.
f. an ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions.
g. an ability to acquire and apply new knowledge as needed, using appropriate learning strategies.

Program Educational Objectives
Within four to seven years after graduation, mechanical engineering program alumni are expected to:

a. Attain multiple positions of responsibility in which they:
   a. contribute to teams
   b. manage resources
   c. solve complex problems
   d. communicate information
   e. influence decisions
   f. act ethically
   g. balance constraints
b. Continue self-development through formal and informal learning opportunities.
c. Obtain sustained employment and/or further education in a technical/professional field.
d. Develop a capacity to engage independently in meaningful creative endeavors.

Seamless Transfer Agreement with Gateway Community College (GCC), Housatonic Community College (HCC) and Norwalk Community College (NCC)
Under this Transfer Agreement, GCC, HCC and NCC graduates will be guaranteed admission into a bachelor's degree program with third year (junior) status at Quinnipiac University on the condition that they:

- Graduate with an associate in arts, an associate in science in business, College of Technology engineering science and computer science, nursing or an allied health degree with a minimum cumulative GPA of 3.0 (this may be higher in specific programs).
- Satisfy all other Quinnipiac University transfer admission requirements and requirements for intended major.

Quinnipiac University agrees to accept the general education embedded in these associate degree programs in accordance with Quinnipiac preferred choices for general education as meeting all the requirements of its undergraduate general education except for the Integrative Capstone Experience and where courses are encumbered by the major (e.g., General Chemistry for the Disciplinary Inquiry Natural Science requirement for a Biochemistry major).

Suggested Transfer Curriculum for BS in Mechanical Engineering
A minimum of 60 credits is required for transfer into the BS in Mechanical Engineering program. Below is a sample plan of study for the first two years.

<table>
<thead>
<tr>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>First Year</td>
<td></td>
</tr>
<tr>
<td>Fall Semester</td>
<td></td>
</tr>
<tr>
<td>English I</td>
<td>3</td>
</tr>
<tr>
<td>Calculus I</td>
<td>4</td>
</tr>
<tr>
<td>General Chemistry I with Lab</td>
<td>4</td>
</tr>
<tr>
<td>Introduction to Engineering</td>
<td>3</td>
</tr>
<tr>
<td>Elective</td>
<td>3</td>
</tr>
<tr>
<td><strong>Credits</strong></td>
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<tr>
<td>Spring Semester</td>
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<tr>
<td>English II</td>
<td>3</td>
</tr>
<tr>
<td>Calculus-Based Physics</td>
<td>4</td>
</tr>
<tr>
<td>Calculus II</td>
<td>4</td>
</tr>
<tr>
<td>General Chemistry II with Lab</td>
<td>4</td>
</tr>
<tr>
<td><strong>Credits</strong></td>
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</tr>
<tr>
<td>Second Year</td>
<td></td>
</tr>
<tr>
<td>Fall Semester</td>
<td></td>
</tr>
<tr>
<td>Calculus-Based Physics II</td>
<td>4</td>
</tr>
<tr>
<td>Calculus III - Multivariable</td>
<td>4</td>
</tr>
<tr>
<td>Elective</td>
<td>3</td>
</tr>
<tr>
<td>Second Year</td>
<td></td>
</tr>
<tr>
<td>Fall Semester</td>
<td></td>
</tr>
<tr>
<td>Calculus-Based Physics II</td>
<td>4</td>
</tr>
<tr>
<td>Calculus III - Multivariable</td>
<td>4</td>
</tr>
<tr>
<td>Elective</td>
<td>3</td>
</tr>
<tr>
<td>Elective</td>
<td>3</td>
</tr>
<tr>
<td>---------------</td>
<td>-----</td>
</tr>
<tr>
<td><strong>Credits</strong></td>
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**Spring Semester**

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Differential Equations</td>
<td>3</td>
</tr>
<tr>
<td>Engineering Statics</td>
<td>3</td>
</tr>
<tr>
<td>Microeconomics</td>
<td>3</td>
</tr>
<tr>
<td>Engineering Dynamics</td>
<td>3</td>
</tr>
<tr>
<td>Elective</td>
<td>3</td>
</tr>
<tr>
<td><strong>Credits</strong></td>
<td>15</td>
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</tbody>
</table>

**Total Credits**

| Total Credits | 61    |