MECHANICAL ENGINEERING, B.S. (ALTOONA)

Begin Campus: Any Penn State Campus

End Campus: Altoona

Degree Requirements

For the Bachelor of Science degree in Mechanical Engineering, a minimum of 131 credits is required:

<table>
<thead>
<tr>
<th>Requirement</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>General Education</td>
<td>45</td>
</tr>
<tr>
<td>Requirements for the Major</td>
<td>113-114</td>
</tr>
</tbody>
</table>

27 of the 45 credits for General Education are included in the Requirements for the Major. This includes: 9 credits of GN courses; 6 credits of GQ courses; 3 credits of GS courses; 9 credits of GWS courses.

Requirements for the Major

To graduate, a student enrolled in the major must earn a grade of C or better in each course designated by the major as a C-required course, as specified by Senate Policy 82-44 (http://senate.psu.edu/policies-and-rules-for-undergraduate-students/82-00-and-83-00-degree-requirements/#82-44).

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>CMPSC 200</td>
<td>Programming for Engineers with MATLAB</td>
<td>3</td>
</tr>
<tr>
<td>IE 312</td>
<td>Product Design and Manufacturing Processes</td>
<td>3</td>
</tr>
<tr>
<td>MATH 220</td>
<td>Matrices</td>
<td>2-3</td>
</tr>
<tr>
<td>MATH 231</td>
<td>Calculus of Several Variables</td>
<td>2</td>
</tr>
<tr>
<td>MATSE 259</td>
<td>Properties and Processing of Engineering</td>
<td>3</td>
</tr>
<tr>
<td>ME 390</td>
<td>Academic and Career Development for Mechanical Engineers</td>
<td>0.5</td>
</tr>
<tr>
<td>ME 490</td>
<td>Professional Development for Mechanical Engineers</td>
<td>0.5</td>
</tr>
</tbody>
</table>

Prescribed Courses: Require a grade of C or better

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHEM 110</td>
<td>Chemical Principles I</td>
<td>3</td>
</tr>
<tr>
<td>EDSGN 100</td>
<td>Cornerstone Engineering Design</td>
<td>3</td>
</tr>
<tr>
<td>EMCH 211</td>
<td>Statics</td>
<td>3</td>
</tr>
<tr>
<td>EMCH 212</td>
<td>Dynamics</td>
<td>3</td>
</tr>
<tr>
<td>EMCH 213</td>
<td>Strength of Materials</td>
<td>3</td>
</tr>
<tr>
<td>ENGL 202C</td>
<td>Effective Writing: Technical Writing</td>
<td>3</td>
</tr>
<tr>
<td>MATH 140</td>
<td>Calculus With Analytic Geometry I</td>
<td>4</td>
</tr>
<tr>
<td>MATH 141</td>
<td>Calculus With Analytic Geometry II</td>
<td>4</td>
</tr>
<tr>
<td>MATH 251</td>
<td>Ordinary and Partial Differential Equations</td>
<td>4</td>
</tr>
<tr>
<td>ME 300</td>
<td>Engineering Thermodynamics I</td>
<td>3</td>
</tr>
<tr>
<td>ME 320</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>ME 330</td>
<td>Computational Tools</td>
<td>3</td>
</tr>
<tr>
<td>ME 340</td>
<td>Mechanical Engineering Design Methodology</td>
<td>3</td>
</tr>
<tr>
<td>ME 348</td>
<td>Circuit Analysis, Instrumentation, and Statistics</td>
<td>4</td>
</tr>
<tr>
<td>ME 360</td>
<td>Mechanical Design</td>
<td>3</td>
</tr>
<tr>
<td>ME 370</td>
<td>Vibration of Mechanical Systems</td>
<td>3</td>
</tr>
</tbody>
</table>

Additional Courses

Select 1 credit of First-Year Seminar          | 1       |
Select 3 credits from the following:           | 3       |
  - BIOL 141 Introduction to Human Physiology   |         |
  - CHEM 111 & PHYS 214 Experimental Chemistry I and General Physics: Wave Motion and Quantum Physics | | |
  - CHEM 112 Chemical Principles II             |         |
Select 3 credits from the following:           | 3       |
  - ECON 14 Principles of Economics             |         |
  - ECON 102 Introductory Microeconomic Analysis and Policy | | |
  - ECON 104 Introductory Macroeconomic Analysis and Policy | | |
Select 2 credits from the following:           | 2       |
  - EMCH 316 Experimental Determination of Mechanical Response of Materials | | |
  - ME 315 Heat Transfer Laboratory             |         |
  - ME 325 Fluids Laboratory                    |         |
  - ME 355 Dynamic Systems Laboratory          |         |
  - ME 375 Vibrations Laboratory               |         |

Additional Courses: Require a grade of C or better

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<thead>
<tr>
<th>Code</th>
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</tr>
</thead>
<tbody>
<tr>
<td>ENGL 15</td>
<td>Rhetoric and Composition</td>
<td>3</td>
</tr>
<tr>
<td>or ENGL 30H</td>
<td>Honors Rhetoric and Composition</td>
<td></td>
</tr>
</tbody>
</table>

Supporting Courses and Related Areas

Select 3 credits in a 400-level ME Technical Elective course from department list excluding ME 410, ME 440W, ME 441W, ME 442W, ME 443W, ME 450, ME 454, ME 490, ME 494, and ME 496 | 3       |
Select 6 credits in Engineering Technical Elective courses from department list | 6       |
Select 3 credits in General Technical Elective courses from department list 1,2 | 3       |

General Education

Connecting career and curiosity, the General Education curriculum provides the opportunity for students to acquire transferable skills necessary to be successful in the future and to thrive while living in interconnected contexts. General Education aids students in developing intellectual curiosity, a strengthened ability to think, and a deeper sense
of aesthetic appreciation. These are requirements for all baccalaureate
students and are often partially incorporated into the requirements
of a program. For additional information, see the General Education
Requirements (https://bulletins.psu.edu/undergraduate/general-
education/baccalaureate-degree-general-education-program/) section of
the Bulletin and consult your academic adviser.

The keystone symbol appears next to the title of any course that is
designated as a General Education course. Program requirements may
also satisfy General Education requirements and vary for each program.

Foundations (grade of C or better is required.)
• Quantification (GQ): 6 credits
• Writing and Speaking (GWS): 9 credits

Knowledge Domains
• Arts (GA): 6 credits
• Health and Wellness (GHW): 3 credits
• Humanities (GH): 6 credits
• Social and Behavioral Sciences (GS): 6 credits
• Natural Sciences (GN): 9 credits

Integrative Studies (may also complete a Knowledge Domain
requirement)
• Inter-Domain or Approved Linked Courses: 6 credits

University Degree Requirements
First Year Engagement
All students enrolled in a college or the Division of Undergraduate Studies
at University Park, and the World Campus are required to take 1 to 3
credits of the First-Year Seminar, as specified by their college First-Year
Engagement Plan.

Other Penn State colleges and campuses may require the First-Year
Seminar; colleges and campuses that do not require a First-Year Seminar
provide students with a first-year engagement experience.

First-year baccalaureate students entering Penn State should consult
their academic adviser for these requirements.

Cultures Requirement
6 credits are required and may satisfy other requirements
• United States Cultures: 3 credits
• International Cultures: 3 credits

Writing Across the Curriculum
3 credits required from the college of graduation and likely prescribed as
part of major requirements.

Total Minimum Credits
A minimum of 120 degree credits must be earned for a baccalaureate
degree. The requirements for some programs may exceed 120 credits.
Students should consult with their college or department adviser for
information on specific credit requirements.

Quality of Work
Candidates must complete the degree requirements for their major and
earn at least a 2.00 grade-point average for all courses completed within
their degree program.

Limitations on Source and Time for Credit Acquisition
The college dean or campus chancellor and program faculty may require
up to 24 credits of course work in the major to be taken at the location or