

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:

Requirement	Credits
General Education	45
Requirements for the Major	113-114

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.

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 in the college or program where the degree is earned. Credit used toward degree programs may need to be earned from a particular source or within time constraints (see Senate Policy 83-80 (<http://senate.psu.edu/policies-and-rules-for-undergraduate-students/82-00-and-83-00-degree-requirements/#83-80>)). For more information, check the Suggested Academic Plan for your intended program.

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>).

Code	Title	Credits
Prescribed Courses		
CMPSC 200	Programming for Engineers with MATLAB	3
IE 312	Product Design and Manufacturing Processes	3
MATH 220	Matrices	2-3
MATH 231	Calculus of Several Variables	2
MATSE 259	Properties and Processing of Engineering Materials	3
ME 390	Academic and Career Development for Mechanical Engineers	0.5
ME 490	Professional Development for Mechanical Engineers	0.5
<i>Prescribed Courses: Require a grade of C or better</i>		
CHEM 110	Chemical Principles I	3
EDSGN 100	Cornerstone Engineering Design	3
EMCH 211	Statics	3

EMCH 212	Dynamics	3	Select 6 credits in Engineering Technical Elective courses from department list	6
EMCH 213	Strength of Materials	3		
ENGL 202C	Effective Writing: Technical Writing	3	Select 3 credits in General Technical Elective courses from department list ^{1,2}	3
MATH 140	Calculus With Analytic Geometry I	4		
MATH 141	Calculus with Analytic Geometry II	4		
MATH 251	Ordinary and Partial Differential Equations	4		
ME 300	Engineering Thermodynamics I	3		
ME 320	Fluid Flow	3		
ME 330	Computational Tools	3		
ME 340	Mechanical Engineering Design Methodology	3		
ME 348	Circuit Analysis, Instrumentation, and Statistics	4		
ME 360	Mechanical Design	3		
ME 370	Vibration of Mechanical Systems	3		
ME 410	Heat Transfer	3		
ME 450	Modeling of Dynamic Systems	3		
ME 454	Mechatronics	3		
PHYS 211	General Physics: Mechanics	4		
PHYS 212	General Physics: Electricity and Magnetism	4		
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 3 credits from the following:		3		
ME 440W	Mechanical Systems Design Project			
ME 441W	Thermal Systems Design Project			
ME 442W & ME 443W	Advanced Vehicle Design I and Advanced Vehicle Design II			
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			
<i>Additional Courses: Require a grade of C or better</i>				
CAS 100	Effective Speech	3		
or CAS 100A	Effective Speech			
or CAS 100B	Effective Speech			
ENGL 15	Rhetoric and Composition	3		
or ENGL 30H	Honors Rhetoric and Composition			
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		

¹ Three rotations of Engr Co-op (ENGR 295, ENGR 395, and ENGR 495) can be used as 3 credits of GTE.

² Students who complete Basic ROTC may substitute 6 of the ROTC credits for 3 credits of GTE and 3 credits of GHW.