

Bachelor of Science in Mechanical Engineering

2024-25 Catalog Year

subject to change and catalog regulations.

Program Overview

What is Mechanical Engineering? The [ABET-accredited](#) Mechanical Engineering program at OSU-Cascades is part of the OSU College of Engineering's School of Mechanical, Industrial and Manufacturing Engineering. It combines engineering fundamentals with energy-focused technical courses within the Energy Systems Engineering Option.

Student Outcomes: School of MIME Mechanical Engineering (ME) Program

The below lists the skills, knowledge, and behaviors characteristic of every student who graduates from Oregon State School of Mechanical, Industrial & Manufacturing Engineering with a bachelor's degree in mechanical engineering.

These **Mechanical Engineering Outcomes** are grouped by the MIME Program Educational Objective (PEO) with which they are most closely associated:

- **PEO 1.)** Created value to organizations through the analysis, evaluation, and improvement of engineered systems and processes using appropriate systems engineering methods and tools.
 - Ability to apply mathematics, science, and engineering.
 - Ability to design and conduct experiments, as well as to analyze and interpret data.
 - Ability to identify, formulate, and solve engineering problems.
 - Ability to use the techniques, skills, and modern engineering tools necessary for engineering practice.
- **PEO 2.)** Communicated effectively across disciplines and cultures to manage and/or lead activities in support of organizational goals and objectives.
 - Ability to function on multi-disciplinary teams.
 - Understanding of professional and ethical responsibility
 - Ability to communicate effectively.
 - Knowledge of contemporary issues
- **PEO 3.)** Innovated systems and processes, in response to organizational challenges, through the application of structured and unstructured systems engineering methodologies, including engineering design and problem-solving.
 - Ability to design a system, component, or process to meet desired needs within realistic constraints.
 - Broad education is necessary to understand the impact of engineering solutions in a global and societal context.
 - Recognition of the need for, and an ability to engage in, life-long learning.

Degree Requirements

Students completing the ME major complete the following requirements.

- University Graduation Requirements
 - College of Engineering Requirements
 - Baccalaureate Core (“Bacc Core”)
 - Mechanical Engineering major and option courses
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Program Requirements

OSU Graduation Requirement:

Students are required to meet the University Graduation requirements as well as complete course work required for their major to graduate with a Bachelor of Science in Energy Systems Engineering. **All catalog and course selection information is subject to change pending catalog declaration year.* catalog.oregonstate.edu/regulations/#text

- 180 minimum = total number of credits required to graduate
- 60 minimum = number of upper division credits required
- 45 of last 75 credits must be OSU credits
- Max 135 credits transferred to OSU
- Max 18 W grades (withdraw)
- Max 11 credits PAC

College of Engineering Academic Standing

Progression Model

- **Grades of C or better** and a minimum of 2.50 cumulative OSU GPA
- Maintain 2.50 term and/or cumulative OSU GPA and 65% of courses completed
 - Warning: OSU term GPA is below a 2.50 and/or completion is under 65%
 - Probation: After 24 OSU credits attempted, if both term and cumulative standards are not met
 - Suspension: If on probation and have a subsequent term OSU GPA under 2.50 and/or pace under 65%
- **S/U Grading:** ESE students may not take for S/U grading (Satisfactory/Unsatisfactory) any course listed as a requirement for the major.

Academic Progression Model Information: <https://engineering.oregonstate.edu/current-students/advising/progression>

Important Notes:

- **It is the student’s responsibility to double check that all requirements are met.** The advisor can suggest courses and assist the student in constructing a plan of study, but the student in the end is responsible for assuring all requirements for graduation are met.
- Degree requirements are subject to change and dependent on catalog year of admission and major declaration.
- MECOP Internship information: www.mecopinc.org/

Students will work with their Academic Advisor and use the Bacc Core approved list for OSU-Cascades to choose courses for the Bacc Core requirements. To find information about Bacc Core or for the approved list, visit: <https://admissions.oregonstate.edu/course-articulations>

Student Name: _____ ID#: _____

Baccalaureate Core:

Use the OSU-Cascades Bacc Core course guide to plan courses osucascades.edu/advising/baccalaureate-core

An ASOT-Business or an AAOT has completed all Skills & Perspectives requirements in the Bacc Core.

Skills Requirements	Course	Grade
Health/Fitness		
Mathematics	MTH 251 in major	
Writing I^	WR 121Z in major	
Writing II	WR 227Z in major	
Speech^	COMM 111Z or 114 in major	
Perspective Requirements: no more than 2 from 1 department		
Cultural Diversity		
Literature & the Arts		
Social Processes & Institutions	ECON 201 or ECON 202 in major	
Western Culture		
Physical Science	PH 211 in major	
Biological Science		
Additional Science (Physical or Biological)	PH 212 in major	
Difference, Power & Discrimination		
Synthesis Requirements: cannot be from the same department		
Contemporary Global Issues		
Science, Technology & Society		

Major Requirements

First & Second year courses: All courses must be completed with a C grade or better

x	Course	Title	Pre-requisites	Credits	Term Offered*	Grade
	CH 201	Chemistry for Engineering Majors	MTH 111Z	3	F	
	CH 202	Chemistry for Engineering Majors	CH 201	3	W	
	COMM 111Z or COMM 114	Public Speaking or Argument & Critical Discourse		4 or 3	F, W, SP	
	ECON 201 or ECON 202	Intro. to Microeconomics or Intro. To Macroeconomics	MTH 111Z or equivalent is recommended	4	F, W or SP	
	ENGR 100	The OSU Engineering Student		3	F	
	ENGR 102	Design Engineering & Problem Solving		3	W	
	ENGR 103	Engr. Computation & Algorithmic Thinking	ENGR 102 & MTH 112Z	3	SP	
	ENGR 201	Electrical Fundamentals I	MTH 251 & MTH 252	3	F	
	ENGR 202	Electrical Fundamentals II	ENGR 201	3	W	
	ENGR 211	Statics	MTH 252	3	F	
	ME 217	Mechanical Engineering Dynamics	ENGR 103, ENGR 211, & PH 211	4	W	
	ENGR 213	Strength of Materials	ENGR 211	3	SP	
	ENGR 248	Engineering Graphics & 3-D Modeling		3	W	
	ME 203	Computational Methods for Engineering	ENGR 103 & MTH 254	3	SP	
	MTH 251	Differential Calculus	MTH 112Z or placement	4	F, W, SU	
	MTH 252	Integral Calculus	MTH 251	4	W, SP, SU	
	MTH 254	Vector Calculus I	MTH 252	4	SP, SU, F	
	MTH 256	Applied Differential Equations	MTH 254	4	F	
	MTH 341	Linear Algebra I	MTH 254	3	W	
	PH 211	General Physics with Calculus	Rec: MTH 251 & co-req MTH 252	4	F	
	PH 212	General Physics with Calculus	PH 211	4	W	
	PH 213	General Physics with Calculus	Rec: PH 212 & MTH 254	4	SP	
	ST 314	Introduction to Statistics for Engineers	MTH 252	3	SP	
	WR 227Z	Technical Writing	WR 121Z	4	W, SP, SU	

Third & Fourth year courses: All courses must be completed with a C grade or better

x	Course	Title	Pre-requisites	Credits	Term Offered*	Grade
	ENGR 390	Engineering Economy		3	F	
	ENGR 415	Engineering Capstone Design I		4	F	
	ENGR 416	Engineering Capstone Design II	ENGR 415	4	W	
	MATS 321	Intro. To Materials Science	CH 202	4	W	
	ME 310	Introduction to Thermodynamics	ME 217 or ENGR 212, MTH 256	4	F	
	ME 316	Mechanics of Materials	ENGR 213 & MTH 256	3	W	
	ME 330	Intro. To Fluid Mechanics & Heat Transfer	ME 310	4	SP	
	ME 373	Mechanical Engineering Methods	ENGR 103, MTH 256, MTH 341, & ME 203	4	W	
	ME 382	Intro. To Design	ME 217, ENGR 213, & ENGR 248	4	Hybrid S	
	ME 320	Systems Dynamics and Control	ME 217 or ENGR 212	4	F	
	ME 351 or ESC 340	Intro. to Instrumentation and Measurement Systems or Intro. to Experimentation	ME 217, ENGR 202, & ENGR 213 Or ENGR 202, CS 162, PH 213 & ST 314	4 4	W	
	ME 383	Mechanical Component Design	ME 316, ME 217 & ENGR 213	4	Hybrid F	

Energy Systems Engineering Option: The Energy Systems Engineering option provides Engineering Science students with the opportunity to focus on the design, processes, and systems used to convert, distribute, and store energy with the 28 CH of required electives listed below.

x	Course	Title	Pre-requisites	Credits	Term Offered*	Grade
	ESE 355	Energy Regulation	ENGR 390	4	SP	
	ESE 450	Energy Generation Systems	**ME 310	4	SP	
	ESE 470	Electrical Energy Distribution Systems	ENGR 202 & ME 311 or ME 310*	4	SP	
	ESE 471	Energy Storage Systems	**ENGR 202 & ME 310	4	SP	
	IE 415	Simulation and Decision Support Systems	**IE 212 & ST 314	4	W	
	IE 425	Industrial Systems Optimization	ST 314 & MTH 341	4	F	

IMPORTANT NOTES

* All projected course term offering is subject to change.

**Pre-requisites pending review

All info is subject to change at catalog policy.

All PH courses need to be taken at the same institution.