Engineering Physics
Sample Curriculum for Mechanical Engineering Specialization

Student Information

Name:_____ OSU Email: _____

Suggested Curriculum

This should be used as a **guide** only. Semester offerings are subject to change.

Year	Autumn	Spring
1	___ Physics 1270[1] *(Into Physics I)* ..... 5 hr ___ Math 1151 *(Calculus I)* ..... 5 hr ___ Engineering 1181 *(Intro Engineering I)* ..... 2 hr ___ Engineering 1100 *(Engineering Survey)* ..... 1 hr ___ Writing & Info Literacy GE ..... 3 hr	___ Physics 1271[1] *(Intro Physics II)* ..... 5 hr ___ Math 1172 (*Eng Mathematics A)* ..... 5 hr ___ Engineering 1182 *(Intro Engineering II)* ..... 2 hr ___ Social and Behavioral Sciences GE ..... 3 hr ___ GenEd 1201[3] ..... 1 hr
2	___ Physics 2300 *(Mechanics I)* ..... 4 hr ___ **Physics 2095** *(Physics Seminar)* ..... 1 hr ___ CSE 1222[2] *(C++ Programming)* ..... 3 hr ___ Math 2173 *(Eng Mathematics B)* ..... 3 hr ___ ME 2010 *(Statics)* ..... 2 hr ___ Literary, Visual and Performing Arts GE ..... 3 hr	___ Physics 2301 *(Mechanics II)* ..... 4 hr ___ Math 2174[4] *(Differential Eq/Linear Algebra)* ..... 3 hr ___ ME Elective ..... 3 hr ___ Physics 3700 *(Data Analysis Lab)* ..... 3 hr ___ Historical and Cultural Studies GE ..... 3 hr
3	___ **Physics 5500** *(Quantum Mechanics)* ..... 4 hr ___ ME Elective ..... 3 hr ___ ME Elective ..... 3 hr ___ Targeted Elective[6] ..... 3 hr ___ Citizenship Theme GE[7] ..... 3 hr	___ **Physics 5400** *(Electromagnetism)* ..... 4 hr ___ Physics 4700 *(Electronics Lab)* ..... 3 hr ___ ME Elective ..... 2 hr ___ ME Elective ..... 3 hr ___ Race, Ethnicity, Gender Diversity GE ..... 3 hr
4	___ **Physics 5800**[8] *(Eng Phy Capstone I)* ..... 3 hr ___ ME Elective ..... 3 hr ___ ME Elective ..... 3 hr ___ Targeted Elective[6] ..... 3 hr ___ Citizenship Theme GE[7] ..... 3 hr ___ Student Choice Theme GE[7] ..... 3 hr	___ **Physics 5801**[8] *(Eng Phy Capstone II)* ..... 3 hr ___ ME Elective ..... 2 hr ___ ME Elective ..... 3 hr ___ Targeted Elective[6] ..... 3 hr ___ Physics Elective[5] ..... 4 hr ___ Student Choice Theme GE[7] ..... 3 hr

Total Hours to complete the degree program = 131; Courses printed in **bold** are taught only during the term shown.

[1] Students can take Physics 1250-1251, 1250H-1251H, 1260-1261, or 1270-1271

[2] Students can take CSE 1222, CSE 1223, CSE 1224, Astronomy 1221, or Engr 1281H as their programming course

[3] GenEd 1201 must be taken within the first three semesters

[4] Or (Math 2415 and Math 2568) or (Math 2255 and Math 2568) or Math 5520H can be completed in pace of Math 2174.

[5] Physics Elective options are Physics 3470, 5300, 5401H, 5501, 5600, 5680, and 5810

[6] A list of Targeted Electives options is available at go.osu.edu/targeted-electives.

[7] Take either two 3-credit hour classes or one 4-credit hour class for each of the two GE Thematic Pathways requirements. If two 3-hour courses are taken, they must be from different subjects.

[8] Students can take the College of Engineering Multidisciplinary Capstone Design sequence, Engineering 5901.01-5902.01 in place of Physics 5800-5801. Enrollment in ENGR 5901.01 requires approval. More information about ENGR 5901.01, including the

enrollment request details, can be found on the Department of Engineering Education website.

Engineering Specializations

Engineering Physics students are required to take at least 27 hours from one of the following engineering specializations. Note: this document outlines the requirements for the **Mechanical Engineering** (ME) specialization.

Aerospace Engineering
Chemical & Biomolecular Engineering
Computer Science & Engineering
Electrical and Computer Engineering
Industrial & Systems Engineering
Materials Science & Engineering
Mechanical Engineering
Nuclear Engineering

Requirements for each specialization can be found below and at physics.osu.edu/engineering-physics-program/engineering-physics-degree-requirements

Mechanical Engineering Specialization

Required course (2 hours)

Course	Course title	Credits	Term	Prerequisites
ME 2010	Statics	2	Au, Sp	ENGR 1181 or 1281H; Physics 1250, 1260, or 1270; and Math 1151

Electives courses (choose 25 hours)

Course	Course title	Credits	Term	Prerequisites
ME 2020	Introduction to Mechanics of Materials	3	Au, Sp	ME 2010
ME 2030	Dynamics	3	Au, Sp	ME 2010
ME 2850.01*	Numerical Methods in Mechanical Engineering	3	Au, Sp	ME 2010; prereq or concur: Math 2174, 2568, or 2415
ME 2900*	Introduction to Design in Mechanical Engineering	3	Au**	ME 2010 and (Physics 1251, 1261, or 1271) (the MSE 2010 prereq is waived for Engineering Physics majors)
ME 3260*	System Dynamics and Vibrations	3	Au, Sp	ME 2850 and 2030; prereq or concur: ME 2900 and (ECE 2300 or Physics 4700)
ME 3360*	System Integration and Control	3	Au, Sp	ME 3260; prereq or concur: ME 3503, ME 2900, and (ECE 2300 or Physics 4700)
ME 3500	Engineering Thermal Sciences	3	Au, Sp	(Math 2174, 2255, or 2415) and (Physics 1250, 1260, or 1270)
ME 3501*	Introduction to Engineering Thermodynamics	3	Au, Sp	Chemistry 1210 or 1250; pre-req or concur: ME 2850
ME 3503*	Introduction to Fluid Mechanics	3	Au, Sp	ME 2850 and 3501

ME 3670*	Design and Analysis of Machine Elements I	2	Au, Sp	ME 2020, 2030, and 2580 (the MSE 2010 prereq is waived for Engineering Physics majors)
ME 3671*	Design and Analysis of Machine Elements II	3	Au, Sp	ME 3670 and 3751
ME 3751*	Kinematics and Mechanism Design	2	Au, Sp	ME 2030 and 2850
ME 3870*	Intro to Measurements and Data Analysis in Mechanical	3	Au, Sp	Statistics 3450; GE Foundation Writing and Information Literacy course; pre-req or concur: ME 3503 and 2900
ME 4505	Introduction to Nuclear Science and Engineering	3	Au, Sp	Math 2153 or above; and Physics 1251, 1261, or 1271
ME 4510*	Heat Transfer	3	Au, Sp	ME 3503
ME 4536	Nuclear Reactor Systems	3	Sp	ME 4505
ME 5003	Nuclear Reactor Systems and Analysis	3	Sp	ME 4505 and ME 3501
ME 5030	Intermediate Dynamics	3	Sp	ME 2030
ME 5134*	Introduction to Vibrations of Deformable Solids	3	Sp	ME 2020; and Math 2174 or 2415
ME 5139*	Applied Finite Element Method	3	Au, Sp	ME 2020
ME 5144	Engineering Fracture Mechanics	3	Sp	ME 2020; and Math 2174 or 2415
ME 5234	Vehicle Dynamics	4	Sp	ME 3360 and 3671
ME 5240	Mechanical Vibrations	3	Au	ME 3260; pre-req or concur: ME 3360
ME 5339*	Simulation Techniques for Dynamic Systems	3	Au, Sp	ME 3360
ME 5372	Theory and Applications of Feedback Control	3	Sp	ME 3360
ME 5374	Smart Materials and Intelligent Systems	3	Au	ME 3360
ME 5427	Introduction to Turbomachinery	3	Au, Sp	ME 3503
ME 5463	Introduction to Real Time Robotics Systems	3	Au, Sp	Math 2174 or (Math 2415 and 2568); and (Physics 1250, 1260, or 1270); and (CSE 1222, ENGR 1181, ENGR 1281H, or ENGR 1221)
ME 5530	Internal Combustion Engines	3	Au	ME 3501
ME 5539	Applied Computational Fluid Dynamics and Heat Transfer	3	Au, Sp	ME 3501 and ME 3503; pre-req or concur: ME 4510
ME 5541	Heating, Ventilating, and Air Conditioning	3	Sp	ME 4510
ME 5550	Engineering Principles in Cancer	3	Sp	ME 3500 or ME 3503
ME 5600	Applied Project Management in Product Development Team Environments	3	Au	Junior or Senior standing (Rank 3 or 4)
ME 5670	Advanced MCAD modeling with CATIA	3	Sp	ME 3670

ME 5680	Computer Aided Design and Manufacturing	4	Au, Sp	ME 3670
ME 5682.01	Fundamentals of Product Design Engineering	3	Au, Sp	Junior or Senior standing (Rank 3 or 4)
ME 5751	Design and Manufacturing of Compliant Mechanisms and Robots	3	Au, Sp	ME 3670

* Indicates that you will not be able to enroll yourself into these classes. Email Lindsey Thaler (thaler.21@osu.edu) after your scheduling window opens to request enrollment.

** ME 2900 is offered during both autumn and spring semesters but it is only open to Engineering Physics majors during autumn semester

General Education Requirement

A list of approved general education courses can be found at advising.engineering.osu.edu/current-students/curriculum/general-education