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 ___ Thematic Pathways #1[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** *(Eng Phy Capstone I)* ..... 3 hr ___ ME Elective ..... 3 hr ___ ME Elective ..... 3 hr ___ Targeted Elective[6] ..... 3 hr ___ Thematic Pathways[7] #2 ..... 3 hr ___ Thematic Pathways[7] #3 ..... 3 hr	___ **Physics 5801** *(Eng Phy Capstone II)* ..... 3 hr ___ ME Elective ..... 2 hr ___ ME Elective ..... 3 hr ___ Targeted Elective[6] ..... 3 hr ___ Physics Elective[5] ..... 4 hr ___ Thematic Pathways[7] #4 ..... 3 hr

Total Hours to complete the degree program = 131

[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] The requirement is to take either two 3-credit hour classes or one 4-credit hour class for each of the two GE Theme categories

Courses printed in **bold** are taught only during the term shown.

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 at https://physics.osu.edu/engineering-physics-program/concentration-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)
ME 3260*	System Dynamics and Vibrations	3	Au, Sp	ME 2850 and 2030; prereq or concur: ME 2900 or ECE 2300
ME 3360*	System Integration and Control	3	Au, Sp	ME 3260; prereq or concur: ME 3503, ME 2900, and ECE 2300
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

ME 3670*	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