Engineering Physics
Sample Curriculum for Aerospace 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 ___ CSE 1222[2] *(C++ Programming)* ..... 3 hr ___ GenEd 1201[3] ..... 1 hr
2	___ Physics 2300 *(Mechanics I)* ..... 4 hr ___ **Physics 2095** *(Physics Seminar)* ..... 1 hr ___ Math 2173 *(Eng Mathematics B)* ..... 3 hr ___ Physics 3700 *(Data Analysis Lab)* ..... 3 hr ___ **AAE 2200** *(Intro to Aerospace Engr)* ..... 4 hr ___ Literary, Visual and Performing Arts GE ..... 3 hr	___ Physics 2301 *(Mechanics II)* ..... 4 hr ___ Math 2174[4] *(Differential Eq./Linear Algebra)* ..... 3 hr ___ **AAE 2405** *(Thermodynamics)* ..... 3 hr ___ Social and Behavioral Sciences GE ..... 3 hr ___ Historical and Cultural Studies GE ..... 3 hr
3	___ **Physics 5500** *(Quantum Mechanics)* ..... 4 hr ___ AAE Elective ..... 3 hr ___ AAE Elective ..... 3 hr ___ AAE Elective ..... 3 hr ___ Citizenship Theme GE[7] ..... 3 hr	___ **Physics 5400** *(Electromagnetism)* ..... 4 hr ___ Physics 4700 *(Electronics Lab)* ..... 3 hr ___ AAE Elective ..... 3 hr ___ Targeted Elective[6] ..... 3 hr ___ Race, Ethnicity, Gender Diversity GE ..... 3 hr
4	___ **Physics 5800**[8] *(Eng Phy Capstone I)* ..... 3 hr ___ AAE Elective ..... 3 hr ___ AAE 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 ___ AAE 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, Engr 1221, 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 2568) or (Math 2255 and 2568) or (Math 5520H) can be completed in place of Math 2174. Those pursuing the ECE concentration should take Math 2415 and 2568.

[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 **Aerospace Engineering** specialization.

Aerospace Engineering
Chemical & Biomolecular Engineering
Computer Science & Engineering
Electrical 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

Aerospace Engineering Specialization

Required courses (7 hours)

Course	Course title	Credits	Term	Prerequisites
AAE 2200	Intro to Aerospace Engr	4	Au	Physics 1270 (or 1250 or 1260); concur: Math 2153 or 2173
AAE 2405*	Thermodynamics	3	Sp	AAE 2200

Electives courses (choose 20 hours)

Course	Course title	Credits	Term	Prerequisites
AAE 3520*	Flight Vehicle Dynamics	3	Sp	AAE 2200; prereq or concur: ME 2030 or Physics 2301
AAE 3521*	Fundamentals of Flight Vehicle Control	3	Au	AAE 3520
AAE 3522*	Fundamental Astronautics	3	Sp	AAE 3520; prereq or concur: AAE 2405
AAE 3542*	Flight Vehicle Structures I	3	Au	AAE 2200, ME 2030, and ME 2040 (or ME 2010+2020)
AAE 3543*	Flight Vehicle Structures II	3	Sp	AAE 3542
AAE 3560*	Fundamentals of Aerodynamics	3	Au	AAE 2200, 2405; and Math 2174 (or Math 2568+2415). Pre-req or concur: ECE 2300 (note: students can petition to use Physics 4700 to fulfil the ECE 2300 co-req)
AAE 3570*	One Dimensional Gas Dynamics	3	Sp	AAE 3560
AAE 3580*	Heat Transfer	3	Sp	AAE 3560
AAE 3581*	Numerical Methods in AAE	3	Au	Math 2174 or (Math 2415+2568)
AAE 4550	Principles of Flight Vehicle Propulsion	3	Au	AAE 3570

AAE 5610	Helicopter Aerodynamics	3	Sp	AAE 3570
AAE 5612	Aircraft Performance & Flight Test Engr	3	varies	AAE 3520 and 3570
AAE 5615	Intro to Computational Aerodynamics	3	Au	AAE 3570 and 3581
AAE 5620	Stability and Control of Flight Vehicles	3	Sp	AAE 3521
AAE 5621	Guidance, Navigation, & Control of Aero. Vehicles	3	varies	AAE 3521
AAE 5626	Orbital Mechanics for Engineers	3	Au	AAE 3520 and ME 2030
AAE 5751	Advanced Air-Breathing Propulsion	3	Sp	AAE 4550
AAE 5752	Advanced Space Propulsion	3	Sp	AAE 4550
AAE 5775.01	Hypersonic Flow	3	Au	AAE 3570

* 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.

General Education Requirement

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