Physics Major – College of Arts and Sciences

For students who began at The Ohio State University autumn 2024 or after.

Suggested Curriculum

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

Year	Autumn	Spring
1	___ Physics 1248[1] *(Mechanics, Work, Energy)* 4 hr ___ Math 1140 *(Calculus with Review I)* 4 hr ___ ASC 1100.xx *(College Survey)* 1 hr ___ World Language 1 4 hr ___ Writing & Info Literacy GE 3 hr	___ Physics 1249[1] *(Fluid dynamics, Thermo)* 3 hr ___ Math 1141 *(Calculus with Review II)* 4 hr ___ World Language 2 4 hr ___ CSE 1222[2] *(C++ Programming)* 3 hr ___ GenEd 1201[3] 1 hr
2	___ **Physics 2095** *(Physics Seminar)* 1 hr ___ Physics 1251 *(E&M, Waves, Optics)* 5 hr ___ Math 1152 (*Calculus II)* 5 hr ___ World Language 3 4 hr	___ Physics 2300 *(Mechanics I)* 4 hr ___ Physics 3700 *(Data Analysis Lab)* 3 hr ___ Math 2153 *(Calculus III)* 4 hr ___ Social and Behavioral Sciences GE 3 hr
3	___ Physics 2301 *(Mechanics II)* 4 hr ___ Math 2415[4] *(Differential Equations)* 3 hr ___ Career Elective[5] 3 hr ___ Historical and Cultural Studies GE 3 hr ___ Thematic Pathways #1 3 hr	___ **Physics 5400** *(Electromagnetism)* 4 hr ___ Third Physics Lab[6] 3 or 4 hr ___ Career Elective[5] 3 hr ___ Literary, Visual and Performing Arts GE 3 hr ___ Race, Ethnicity, Gender Diversity GE 3 hr
4	___ **Physics 5500** *(Quantum Mechanics)* 4 hr ___ Physics 5700 *(Physics Senior Lab)* 3 hr ___ Career Elective[5] 3 hr ___ Thematic Pathways #2 3 hr	___ Career Elective[5] 3 hr ___ Physics Elective[7] 3 or 4 hr ___ Thematic Pathways #3 3 hr ___ Thematic Pathways #4 3 hr ___ GenEd 4001 *(Reflection Seminar)* 1 hr

Total Hours to complete the degree program = 121

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

[1] Physics 1248+1249 equals Physics 1250 and is for students in STEM fields.

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

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

[4] Or Math 2255 or 2174 or 5520H

[5] See below for additional information on Career Electives

[6] Choose one: Physics 4700 (Electronics Lab) or Physics 5680 (Big Data Analytics) or Physics 5810 (Computational Physics)

[7] Choose one: Physics 3470, 5261, 5300, 5401H, 5501, 5501H, 5600, and (if not taken as a lab): 5680, 5810. Note that the Physics Electives cannot double count as a Career Elective, a Free Elective, or Third Physics Lab.

Career Electives

Students are required to take at least 12 credit hours of Career Electives that are appropriate for their goals, interests, and career plans. Career Electives can come from outside the Department of Physics.

Career Electives must meet the following criteria:

- Cannot be a course already required by the program as outlined above (e.g., Physics 2300).
- Students can apply up to two Theme GE courses to their major as Career Electives. The courses must be in different Themes (one in "Citizenship" and one in the "choice" Theme). No overlap is allowed between the Foundations GE categories and major coursework.

- The course must be graded A-E as opposed to pass/non-pass or satisfactory/unsatisfactory
- The course must be 2000 level or above
- Seminars and undergraduate research cannot count
- Per university policy, no overlap with a minor is permitted

Students are encouraged to work with their physics academic advisor to choose Career Electives that are appropriate for their interests and goals.

A list of possible Career Electives is below. This does not include all options. ^ indicates an overlap with a GE Theme requirement.

Astronomy 2140 – Planets and the Solar System^
Astronomy 2141 – Life in the Universe^
Chemistry 2510 & 2520 – Organic Chemistry I & II
Chemistry 2540 & 2550 – Organic Chemistry Laboratory I & II
Civil Engineering 3530 – Learning From Disasters: Extreme Events and Their Impact on Infrastructure, Engr & Society^
Communication 2110 – Principles of Effective Public Speaking
Communication 2331 – Strategic Communication Principles^
Communication 2596^ – Communicating Science, Health, Environment, & Risk^
Communication 3240 – Science Communication
Communication 3404 – Media Law and Ethics
CSE 2221 – Software 1
Earth Sciences 2203 – Environmental Geoscience^
Earth Sciences 2911 – The Climate Crisis: Mechanisms, Impacts, and Mitigation^
ECE 2020 – Introduction to Analog Systems and Circuits
ECE 3030 – Semiconductor Electronic Devices
ECE 5037 – Solid State Electronics and Photonics Laboratory
ECE 5537 – Semiconductor Device Characterization and Modeling Lab
English 3020 – Writing about Sustainability^
English 3022 – Media Sustainability^
English 3340 – Reimagining Climate Change^
English 3304 – Business and Professional Writing
English 3305 – Technical Writing
English 3405 – Professional Communication
Engineering 2300 – Exploring Diversity, Equity & Inclusion in Engineering Contexts^
Geography 3755 – Geography of the European Union and the Challenges of Sustainability^
Geography 5900 – Weather, Climate, and Global Warming
Industrial and Systems Engineering 2040: Engineering Economics
Math 2568 – Linear Algebra
Math 4551 – Vector Analysis
Math 4552 – Complex Analysis
Math 4580 & 4581 – Abstract Algebra I & II
Math 5756 & 5757 – Mathematical Methods in Relativity Theory I & II
ME 3500 – Engineering Thermal Sciences
MSE 2010 – Introduction to Engineering Materials
Nuclear Engineering 4505 – Introduction to Nuclear Engineering
Nuclear Engineering 5606 – Nuclear Reactor Systems
Physics 5300 – Theoretical Mechanics
Physics 5401H – Honors Electromagnetism II
Physics 5501 or 5501H – Quantum Mechanics II
Physics 5600 – Statistical Mechanics
Public Affairs 2120 – Public Service and Civic Engagement^
Public Affairs 2620 – Science, Engineering, and Technology Policy
Public Affairs 3620 – US Space Policy and the Global Space Economy
Public Affairs 5620 – Rapid Innovation for Public Impact