

# Department of Physics and Astronomy

College of Science and Mathematics  
Location: Sundquist Science Complex, B332  
Phone: 931-221-6116  
Website: <http://www.apsu.edu/physics/>

## PHYSICS (B.S.)

What do computers, GPS, and CD players have in common? They all sprang from early technologies developed by physicists. Physicists lead the way in almost every new technology. They are well paid, and there is no shortage of career opportunities. Industries of all types are scanning graduating classes for bright problem-solvers with broad technical understanding—exactly what the physics department at APSU produces.

The physics major is intended to prepare students for graduate school and/or a career in any of a wide variety of science technology, engineering, and mathematics disciplines. A minor is required (a mathematics minor is recommended).

General Education (see TBR Common Core)	Credit Hours
University-Wide Freshman Seminar Requirement	41
	1

### Lower Division Major Requirements **35**

Phys 2110/2111	University Physics I with Lab	5
Phys 2120/2121	University Physics II with Lab	5
Phys 3005	Theoretical Methods	4
Phys 3010	Intermediate Mechanics	3
Phys 3030	Electricity and Magnetism	3
Phys 3550/3551	Experimental Methods with Lab	4
Phys 3700/3701	Modern Physics with Lab	4
Phys 3800	Quantum Mechanics	3
Phys 4000/4001	Computational Methods with Lab	4

### Upper Division Major Requirements

• Math 1910 Calculus and Analytic Geometry I	5
• Math 1920 Calculus and Analytic Geometry II	5
• Math 2110 Calculus	3
• Math 3120 Differential Equations	3
• CSCI 2000 Programming and Data Structures using C++	4

### Science Literacy requirement **3**

- Engl 2700 Scientific Writing

### Science or Mathematics electives at any level **8**

#### Upper-division electives (10 hours) chosen from:

• Phys 3050/3051 Introductory Circuits with Lab	4
• Phys 3060/3061 Advanced Circuits with Lab	4
• Phys 3100/3101 Optics with Lab	4
• Phys 3740 Thermal and Statistical Physics	3
• Phys 3750/3751 Laser Physics with Lab	4
• Phys 3900/3901 Nuclear and Radiation Physics with Lab	4
• Phys 4110 Cooperative Educational Experience	6
• Phys 4150, 4160, 4170 Special Topics in Physics	1, 2, 3

• Phys 4151, 4161, 4171 Research Experience	1, 2, 3
• Phys 4200 Introduction to Solid State Physics	3
• Phys 4300 Image Processing	3
• Phys 4810 Theoretical Mechanics	3
• Phys 4830 Theoretical Electricity and Magnetism	3
• Phys 4850 Advanced Quantum Mechanics	3
• Phys 4950, 4960, 4970 Independent Study in Physics	1, 2, 3
• Astr 3005/3006 Observational Astronomy	2
• Astr 3030/3031 Methods and Instrumentation in Astronomy	3
• Astr 4010 Astrophysics I	3
• Astr 4020 Astrophysics II	3
• Astr 4150, 4160, 4170 Special Topics in Astronomy	1, 2, 3
• Astr 4151, 4161, 4171 Research Experience	1, 2, 3
• Astr 4950, 4960, 4970 Independent Study in Astronomy	1, 2, 3
• Biol 4440/4441 Cell and Molecular Biology	4
• Biol 4450/4451 Biotechnology	4
• Chem 3220/3221 Instrumental Analysis	4
• Chem 3440/3441 Inorganic Chemistry	4
• Chem 3510/3511 Organic Chemistry I	4
• Chem 3520/3521 Organic Chemistry II	4
• Chem 4240/4241 Advanced Instrumental Methods	4
• Chem 4300/4301 Brief Biochemistry	4
• Chem 4310/4311 Biochemistry I	4
• Chem 4320/4321 Biochemistry II	4
• Chem 4350/4351 Physical Biochemistry	4
• Chem 4440/4441 Advanced Inorganic Chemistry	4
• CSci 3005 Object-Oriented Programming	3
• CSci 3110 Computer Systems	3
• CSci 3250 Data Structures and Algorithm Analysis	3
• Csci 3400 Computer Organization I	3
• CSci 3410 Computer Organization II	3
• CSci 4450 Artificial Intelligence	3
• Geog 3060/3061 Quantitative Geosciences	4
• Geog 3150/3151 Geographic Information Systems I	4
• Geog 3250/3251 Geographic Information Systems II	4
• Geog 3940 Technological Hazards in the Environment	3
• Geog 4160/4161 Environmental Modeling and GIS	4
• Geog 4170/4171 Meteorology	4
• Geog 4180/4181 Climatology	4
• Geog 4260/4261 Remote Sensing	4
• Geog 4270/4271 Watershed Management and Modeling	4
• Geol 3000/3001 Structural Geology	4
• Geol 3030/3031 Environmental Geology	4

- Geol 3060/3061 Quantitative Geosciences 4
- Geol 3100/3101 Stratigraphy and Sedimentation 4
- Geol 3500/3501 Mineralogy 4
- Geol 4100 Seminar in Tectonics 3
- Geol 4250/4251 Hydrogeology 4
- Geol 4260/4261 Remote Sensing 4
  
- Math 3000 Discrete Mathematics 3
- Math 3130 Differential Equations II 3
- Math 3250 Statistical Methods I 3
- Math 3260 Statistical Methods II 3
- Math 3270 Experimental Design 3
- Math 3450 Linear Algebra 3
- Math 4160 Complex Analysis 3
- Math 4210 Topology 3
- Math 4240 Probability 3
- Math 4250 Mathematical Statistics 3
- Math 4260 Stochastic Processes 3
- Math 4460 Applied Mathematics 3
- Math 4500 Modern Algebra 3
- Math 4670 Numerical Analysis 3
  
- Or other upper-level (3000 or higher) classes with approval of the Chair of Physics and Astronomy

**A minor is not required (a mathematics minor is suggested, 3 additional math credits at the 3000 or higher level are required for a mathematics minor)**

**General Education Core requirements not included above (31 hours)**

**All upper-level physics courses (3000-level or higher) require prerequisites to be passed with a grade of C or better.**