Physics- Bachelor of Science

For information, contact the Department of Physics, 217 Kreger Hall, 513-529-5625.

The Physics B.S. degree prepares students for graduate study or employment in physics and related fields, including applied and engineering physics, biophysics, biomedical engineering, medical school, teacher licensure in physics, or careers in business or law. Students are encouraged to speak with a Department advisor early in order to select the most appropriate advanced coursework for their career goals.

Teacher Licensure

Students who wish to combine teacher licensure with an Arts and Science major must observe the rules, procedures, and restrictions pertaining to admission to a licensure cohort as outlined in the College of Education, Health and Society chapter. For information, contact the Office of Student Services in the College of Education, Health and Society, 202 McGuffey Hall, 513-529-6418.

Program Requirements

(54-63 credit hours, plus 15 related hours)

Core Requirements and Related Hours

Code	Title	Credit Hours
Core requirements (25 credit hours)		
PHY 181	General Physics I	4
PHY 182	General Physics II	4
PHY 183	General Physics Laboratory I	1
PHY 184	General Physics Laboratory II	1
PHY 281	Contemporary Physics I: Foundations	3
PHY 282	Contemporary Physics II: Frontiers	3
PHY 286	Introduction to Computational Physics	3
PHY 292	Electronic Instrumentation	2
PHY 293	Contemporary Physics Laboratory	2
PHY 294	Laboratory in Electronic Instrumentation	2
PHY 401	Physics Assessment Examination	0
Related hours (15 credit hours)		
MTH 151	Calculus I	4
MTH 222	Introduction to Linear Algebra	3
MTH 251	Calculus II	4
MTH 252	Calculus III	4
Total Credit Hours		**40**

Advanced Coursework

In addition to the core requirements and related hours, advanced coursework is required. Complete the following advanced coursework **OR** select one concentration.

Designed for students interested in the applied or engineering physics, or the interdisciplinary study of physics.

Code	Title	Credit Hours
Advanced Coursework (at least 29 credit hours)		
PHY 483	Mathematical Methods in Physics	4
Any one of PHY 437, PHY 451, PHY 461, or PHY 491.		4
Any PHY course numbered 400 and above excluding seminar and independent study.		3-4
Any second major, co-major, or minor. [1]		18+
Total Credit Hours		**29+**

[1] For an applied or engineering physics emphasis, select a second major or minor from the College of Engineering and Computing. For a biomedical engineering emphasis, the Concentration in Biological Physics is the recommended advanced coursework option.

Concentration in Advanced Physics

Designed for students intending graduate study in physics or for students interested in a broad theoretical background in physics.

Code	Title	Credit Hours
Advanced Coursework (32-34 credit hours)		
MTH 347	Differential Equations	3
PHY 437	Intermediate Thermodynamics and Introduction to Statistical Physics	4
PHY 451	Classical Mechanics	4
PHY 461	Electromagnetic Theory	4
PHY 483	Mathematical Methods in Physics	4
PHY 491	Introduction to Quantum Mechanics I	4
PHY 488	Research Capstone in Physics	3
Select one advanced laboratory course from the following:		3-4
PHY 441	Optics and Laser Physics	
PHY 442	Spectroscopy of Atoms and Molecules	
PHY 471	Advanced Electronics	
PHY 486	Advanced Computational Physics	
Select one advanced elective from the following or an additional advanced laboratory course:		3-4
PHY 421	Molecular and Cellular Biophysics	
PHY 422		
PHY 467	Seismology	
PHY 481	Gravitation and Spacetime	
Total Credit Hours		**32-34**

Concentration in Biological Physics

Designed for students interested in biophysics, physics-based biomedical fields, or medical school. The Physics B.S. with a Concentration in Biological Physics satisfies at least 39 of the 61-66 hours required of the Premedical and Pre-Health Studies Co-Major.

Code	Title	Credit Hours
Advanced Coursework (35-38 credit hours)		
BIO 116	Biological Concepts: Structure, Function, Cellular, and Molecular Biology	4
CHM 141	College Chemistry	3

CHM 142	College Chemistry	3
CHM 144	College Chemistry Laboratory	2
CHM 145	College Chemistry Laboratory	2
CHM 241	Organic Chemistry	3
CHM 244	Organic Chemistry Laboratory	2
PHY 421	Molecular and Cellular Biophysics	4
or PHY 422		
STA 301	Applied Statistics	3
Any one of the following:		3-4
BIO 203	Introduction to Cell Biology	
MBI 201	General Microbiology	
Any one of the following:		3-4
MTH 347	Differential Equations	
PHY 483	Mathematical Methods in Physics	
Any PHY course numbered 400 and above excluding seminar and independent study.		3-4
Total Credit Hours		**35-38**