

# PHYSICS, BACHELOR OF ARTS

## College of Letters & Science

From the smallest subatomic particles to atoms, molecules, stars, and galaxies, the study of physics is the study of what makes the universe work. Knowledge gained using atomic-scale microscopes and high-energy particle accelerators and nuclear reactors teaches us not only what holds the atomic nucleus together but also how proteins function and why stars shine.

## The Program

Students majoring in physics may follow a program leading to either the Bachelor of Arts or the Bachelor of Science degree. The A.B. degree provides broad coverage of classical and modern physics while permitting a broader liberal arts education. The Department of Physics & Astronomy (<https://physics.ucdavis.edu/>) prepare students who plans to enter physics as a profession and also provides excellent training for a wide variety of technical career options.

## Career Alternatives

Careers in physics and applied physics include research and development, either in universities, government laboratories, or industry; teaching in high schools, junior colleges, and universities; management and administration in industrial laboratories and in government agencies; and in production and sales in industry. A major in physics also provides a strong base for graduate-level work in such interdisciplinary areas as chemical physics, biophysics and medical physics, geophysics and environmental physics, astrophysics and astronomy, computer science, and materials science.

## Program Variance

Similar courses from other departments may be substituted for courses in the depth subject matter requirements by obtaining prior written permission from the Undergraduate Curriculum Committee Chairperson.

## Astronomy

In addition to the introductory Astronomy courses listed, upper division and graduate courses in Astronomy, Astrophysics and Cosmology are listed under Physics.

## Graduate Study

The Department of Physics & Astronomy offers programs of study and research leading to M.S. and Ph.D. degrees. For further information regarding requirements, graduate research, teaching assistantships, and research assistantships, see Physics Graduate Group (<https://physics.ucdavis.edu/graduates>).

The major requirements below are in addition to meeting University Degree Requirements (<https://catalog.ucdavis.edu/undergraduate-education/university-degree-requirements/>) & College Degree Requirements (<https://catalog.ucdavis.edu/undergraduate-education/college-degree-requirements/>); unless otherwise noted. The minimum number of units required for the Physics Bachelor of Arts is 81.

Code	Title	Units
<b>Preparatory Subject Matter</b>		
<i>Physics</i>		
Choose a series:		19-25

PHY 009A & PHY 009B & PHY 009C & PHY 009D	Classical Physics and Classical Physics and Classical Physics and Modern Physics	
PHY 009HA & PHY 009HB & PHY 009HC & PHY 009HD & PHY 009HE	Honors Physics and Honors Physics and Honors Physics and Honors Physics and Honors Physics	
PHY 080	Experimental Techniques	4
<i>Mathematics</i>		
MAT 021A	Calculus	4
MAT 021B	Calculus	4
MAT 021C	Calculus	4
MAT 021D	Vector Analysis	4
MAT 022A	Linear Algebra	3
MAT 022B	Differential Equations	3
Preparatory Subject Matter Subtotal		45-51
<b>Depth Subject Matter</b>		
<i>Physics</i>		
PHY 102	Computational Laboratory in Physics <sup>1</sup>	1
PHY 104A	Introduction to Mathematical Methods in Physics	4
PHY 105A	Classical Mechanics	4
PHY 110A	Electricity & Magnetism	4
PHY 110B	Electricity & Magnetism	4
PHY 112	Thermodynamics & Statistical Mechanics	4
PHY 115A	Foundation of Quantum Mechanics	4
PHY 122A	Advanced Laboratory in Condensed Matter Physics	4
or PHY 122B	Advanced Laboratory in Particle Physics	
Choose at least one:		4
PHY 129A	Introduction to Nuclear Physics	
PHY 130A	Elementary Particle Physics	
PHY 140A	Introduction to Solid State Physics	
PHY 151	Stellar Structure & Evolution	
PHY 152	Galactic Structure & the Interstellar Medium	
PHY 153	Extragalactic Astrophysics	
Choose at least one additional fixed-unit upper division Physics course. <sup>2</sup>		3-4
Depth Subject Matter Subtotal		36-37
<b>Total Units</b>		<b>81-88</b>

<sup>1</sup> PHY 102 waived if PHY 040 taken.

<sup>2</sup> Excluding PHY 160 (<https://ucdavis-curr.courseleaf.com/search/?P=PHY%20160>).