Physics

BACHELOR OF ARTS
REQUIREMENTS FOR THE MAJOR:
BACHELOR OF ARTS
For a description of degree requirements to be fulfilled in addition to those listed below for the major, please see “The Bachelor’s Degree” section of the catalog, pp. 67-82. The Upper Division Area B General Education requirement is met by the coursework within the Bachelor of Science degree for either option in the Physics major.
A minimum grade of C- is required for all courses with the “PHYX” prefix for the BA physics major degree.

Lower Division Core
Core courses required for all majors:
CHEM 109 (5) General Chemistry I
CHEM 110 (5) General Chemistry II
MATH 109 (4) Calculus I
MATH 110 (4) Calculus II
MATH 210 (4) Calculus III
MATH 241 (3) Elements of Linear Algebra
PHYX 109 (4) General Physics A: Mechanics
PHYX 210 (4) General Physics B: Thermodynamics, Waves & Optics
PHYX 211 (4) General Physics C: Electricity & Magnetism

Upper Division Core
Core courses required for all majors:
MATH 311 (2) Vector Calculus
MATH 332 (4) Ordinary Differential Equations
PHYX 320 (3) Modern Physics
PHYX 324 (4) Analytical Mechanics
PHYX 325 (4) Thermal Physics
PHYX 340 (2) Mathematical and Computational Methods
PHYX 441 (3) Electricity & Magnetism I
PHYX 442 (3) Electricity & Magnetism II
PHYX 450 (4) Quantum Physics I
PHYX 484 (0.5) Physics Seminar I
PHYX 485 (0.5) Physics Seminar II

Astronomy Concentration
PHYX 310 (3) Spacetime & Relativity
PHYX 360 (4) Physics of Stars & Planets
PHYX 361 (4) Galaxies and Cosmology

Physics (Traditional)
PHYX 315 (3) Intro to Electronics & Electronic Instrumentation
PHYX 316 (4) Electronic Instrumentation & Control Systems
PHYX 462 (2) Senior Lab

Those students intending to enter graduate school in physics should take more courses in physics and mathematics. For example:
MATH 240 (3) Intro to Mathematical Thought
MATH 314 (3) Partial Differential Equations
MATH 343 (4) Intro to Algebraic Structures
MATH 344 (3) Linear Algebra
MATH 351 (4) Intro to Numerical Analysis
MATH 418 (3) Intro to Complex Analysis

For a description of degree requirements to be fulfilled in addition to those listed below for the major, please see “The Bachelor’s Degree” section of the catalog, pp. 67-82. A minimum grade of C- is required for all courses with the “PHYX” prefix for the BS physics major degree.

Lower Division
CHEM 109 (5) General Chemistry I
CHEM 110 (5) General Chemistry II
MATH 109 (4) Calculus I
MATH 110 (4) Calculus II
MATH 210 (4) Calculus III
MATH 241 (3) Elements of Linear Algebra

Plus one of these physics series:
- PHYX 106 (4) College Physics: Mechanics & Heat, and
- PHYX 107 (4) College Physics: Electromagnetism & Modern Physics, and
- PHYX 398 (1-3) Supplemental Work in Physics

OR
- PHYX 109 (4) General Physics A: Mechanics, and
- PHYX 210 (4) General Physics B: Thermodynamics, Waves & Optics
- PHYX 211 (4) General Physics C: Electricity & Magnetism

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Upper Division

MATH 313 (4) Ordinary Differential Equations
PHYX 304 (4) The Cosmos (recommended early in your program)
PHYX 315 (3) Intro to Electronics & Electronic Instrumentation
PHYX 320 (3) Modern Physics
PHYX 324 (4) Analytical Mechanics
PHYX 441 (3) Electricity & Magnetism I
PHYX 442 (3) Electricity & Magnetism II
Plus 12 units from the following physics courses:
PHYX 310 (3) Spacetime & Relativity
PHYX 316 (4) Electronic Instrumentation & Control Systems
PHYX 325 (4) Modern Physics
PHYX 360 (4) Physics of Stars & Planets
PHYX 420 (4) Optical Systems Design
PHYX 430 (3) Computerized Instrumentation
PHYX 450 (4) Quantum Physics I
PHYX 462 (2) Senior Lab

Lower Division

Take one of the following series of courses.
MATH 101T (3) Trigonometry, or
MATH 102 (4) Algebra & Elementary Functions
PHYX 104 (4) Descriptive Astronomy
PHYX 106 (4) College Physics: Mechanics & Heat
PHYX 107 (4) College Physics: Electromagnetism & Modern Physics
OR
MATH 109 (4) Calculus I
MATH 110 (4) Calculus II
MATH 210 (4) Calculus II
PHYX 109 (4) General Physics A: Mechanics
PHYX 210 (4) General Physics B: Thermodynamics, Waves & Optics
PHYX 211 (4) General Physics C: Electricity & Magnetism

Minor in Astronomy

A minimum grade of C- is required for all courses with the "PHYX" prefix for the physics minor degree.

Requirements for the Minors

Lower Division

Take one of the following series of courses.
MATH 101T (3) Trigonometry, or
MATH 102 (4) Algebra & Elementary Functions
PHYX 104 (4) Descriptive Astronomy
PHYX 106 (4) College Physics: Mechanics & Heat
PHYX 107 (4) College Physics: Electromagnetism & Modern Physics
OR
MATH 109 (4) Calculus I
MATH 110 (4) Calculus II
MATH 210 (4) Calculus II
PHYX 109 (4) General Physics A: Mechanics
PHYX 210 (4) General Physics B: Thermodynamics, Waves & Optics
PHYX 211 (4) General Physics C: Electricity & Magnetism

Upper Division

Take two of the following courses.
PHYX 303 (3) Life in the Universe
PHYX 304 (4) Cosmos
PHYX 310 (3) Spacetime & Relativity
PHYX 360 (4) Physics of Stars & Planets
PHYX 361 (4) Galaxies and Cosmology

Minor in Physics

A minimum grade of C- is required for all courses with the "PHYX" prefix for the physics minor degree.

Lower Division

MATH 109 (4) Calculus I
MATH 110 (4) Calculus II
MATH 210 (4) Calculus II
PHYX 109 (4) General Physics A: Mechanics
PHYX 210 (4) General Physics B: Thermodynamics, Waves & Optics
PHYX 211 (4) General Physics C: Electricity & Magnetism

Upper Division

PHYX 320 (3) Modern Physics, or
CHEM 362 (3) Physical Chemistry II
Plus 3 additional units of upper division physics courses:
PHYX 310 (3) Spacetime & Relativity
PHYX 315 (3) Intro to Electronics & Electronic Instrumentation
PHYX 324 (4) Analytical Mechanics
PHYX 325 (4) Modern Physics
PHYX 340 (2) Mathematical & Computational Methods
PHYX 420 (4) Optical Systems Design
PHYX 441 (3) Electricity & Magnetism I
PHYX 450 (4) Quantum Physics I
PHYX 495 (1-3) Selected Topics in Physics for Seniors — Undergraduate Research

‡ Course requires one or more prerequisites that are not required elsewhere in the minor. See course description for prerequisites.