

Physics and Astronomy

Degrees Offered

- Bachelor of Arts
- Bachelor of Science

Students may not earn both a B.A. and a B.S. in Physics.

Nature of the Program

There are two degree options for students in physics. The bachelor of science degree is designed for students committed to a career in research. It can be followed by graduate work in physics, chemistry, materials science, optical sciences, astrophysics, engineering, or in other physical sciences such as meteorology, oceanography, etc. Some students instead pursue positions in industry, high school teaching, or in a government laboratory immediately after completing the B.S. This degree program provides a comprehensive grounding in the fundamentals of physics and is usually accompanied by participation in one of the active research programs within the department.

The bachelor of arts degree is designed to prepare students for a career that utilizes physics preparation in conjunction with an applied emphasis. By allowing more free elective choices, it prepares a student for a career that combines a science background with subsequent professional training.

Typical career paths for this degree program include teaching, medicine, dental school, medical school, patent law, forensics, health physics, environmental engineering, science journalism, government policy, and business management.

The courses in physics provide a mix of theoretical concepts and practical examples. Each course within a degree plan builds upon the knowledge base acquired in previous courses and, together, these courses allow a student to acquire the combination of physical insight and mathematical skill needed for success in today's demanding job markets.

The department also offers introductory survey courses in physics and astronomy that are of interest to a broad range of students in the social sciences, fine arts, humanities, health sciences, and education. These courses use a minimum of mathematics to introduce the principles of physics and they provide many examples from the "real world" of the environment, energy, space, communications, transportation, and medicine.

For the B.S. degree, an Area of Emphasis is required. The Professional Preparation Area of Emphasis is the typical plan of study for graduate study in physics. Each Area of Emphasis is designed to allow some room for customization in consultation with your physics advisor within the required number of credits to degree. Recommendations for the other areas of emphasis include:

COMPUTATIONAL PHYSICS

Computational models sometimes help solve difficult problems in physics. Students in this area of emphasis learn statistical modeling and other related skills to help analyze various concepts in physics.

MEDICAL PHYSICS

Students in the Medical Physics area of emphasis learn applications of physics that can lead to an exciting range of careers in the medical field.

From researching and designing new medical equipment to helping plan radiation treatment for cancer patients, this area of physics is broad but important.

SPACE PHYSICS

Students in this area of emphasis learn skills that help address fundamental questions about our place in the universe, the history of our solar system and more. The challenges of understanding space exploration have led to fascinating expansions in technology, new industries and unprecedented relationships with other nations.

Minors

All students have the possibility of earning one or more minors; view a list of all available minors and their requirements (<http://catalog.wvu.edu/undergraduate/minors/>) here. Please note that students may not earn a minor in their major field.

FACULTY

CHAIR

- Maura McLaughlin - PhD (Cornell University)

ASSOCIATE CHAIR FOR GRADUATE STUDIES

- Alan Bristow - Ph.D. (University of Sheffield)

ASSOCIATE CHAIR FOR UNDERGRADUATE STUDIES

- Paul M. Miller - Ph.D. (West Virginia University)

PROFESSORS

- Wathiq Abdul-Razzaq - Ph.D. (University of Illinois - Chicago)
Regular Graduate Faculty, Physics Education
- Loren Anderson - Ph.D. (Boston University)
Regular Graduate Faculty, Astrophysics/Astronomy
- Alan Bristow - Ph.D. (University of Sheffield)
Regular Graduate Faculty, Experimental Condensed Matter Physics
- Paul Cassak - Ph.D. (University of Maryland)
Regular Graduate Faculty, Woodburn Fellow, Plasma Physics
- Matthew Johnson - Ph.D. (California Institute of Technology)
Regular Graduate Faculty, Experimental Condensed Matter Physics
- Mark E. Koepke - Ph.D. (University of Maryland)
Regular Graduate Faculty, Robert C. Byrd Professor, Experimental Plasma Physics
- Lian Li - Ph.D. (University of Arizona)
Regular Graduate Faculty, Robert L. Carroll Professor, Experimental Condensed Matter Physics
- Duncan R. Lorimer - Ph.D. (University of Manchester)
Regular Graduate Faculty, Eberly College Associate Dean for Research
- Maura McLaughlin - Ph.D. (Cornell University)
Regular Graduate Faculty, Eberly Distinguished Professor, Astrophysics/Astronomy
- Paul M. Miller - Ph.D. (West Virginia University)
Associate Graduate Faculty, Physics Education Research
- Sheena Murphy - Ph.D. (Cornell University)
Regular Graduate Faculty, Associate VP for Research Development
- D.J. Pisano - Ph.D. (University of Wisconsin - Madison)
Regular Graduate Faculty, Astrophysics/Astronomy
- Aldo Romero - Ph.D. (University of California - San Diego)
Regular Graduate Faculty, Eberly Distinguished Professor, Condensed Matter Theory and Computation
- Earl E. Scime - Ph.D. (University of Wisconsin - Madison)
Regular Graduate Faculty, Oleg D. Jefimenko Professor, Experimental Plasma Physics
- Tudor Stanescu - Ph.D. (University of Illinois - Urbana Champaign)
Regular Graduate Faculty, Theoretical Condensed Matter Physics
- Gay Stewart - Ph.D. (University of Illinois - Urbana Champaign)
Regular Graduate Faculty, Eberly Professor of STEM Education
- John Stewart - Ph.D. (University of Illinois - Urbana Champaign)
Regular Graduate Faculty, Physics Education Research

ASSOCIATE PROFESSORS

- Sarah Burke-Spoloar - Ph.D. (Swinburne University of Technology)
Regular Graduate Faculty, Astrophysics/Astronomy
- Edward Flagg - Ph.D. (University of Texas - Austin)
Regular Graduate Faculty, Experimental Condensed Matter Physics
- Mikel Holcomb - Ph.D. (University of California - Berkeley)
Regular Graduate Faculty, Experimental Condensed Matter Physics
- Sean McWilliams - Ph.D. (University of Maryland)
Regular Graduate Faculty, Astrophysics/Astronomy
- Weichao Tu - Ph.D. (University of Colorado - Boulder)
Regular Graduate Faculty, Space Plasma Physics

ASSISTANT PROFESSORS

- Emmanuel Fonseca - Ph.D. (University of British Columbia)
Regular Graduate Faculty, Astronomy
- Chris Fowler - Ph.D. (University of Colorado - Boulder)
Regular Graduate Faculty, Plasma Physics, Space Plasmas
- Katherine Goodrich - Ph.D. (University of Colorado - Boulder)

Regular Graduate Faculty, Space Physics

- Joonhee Lee - Ph.D. (Seoul National University)
Regular Graduate Faculty, Experimental Biophysics
- Subhasish Mandal - Ph.D. (Michigan Technological University)
Regular Graduate Faculty, Condensed Matter Theory and Simulation
- Thomas Steinberger - Ph.D. (West Virginia University)
Regular Graduate Faculty, Plasma and Space Physics
- Jason E. Ybarra - Ph.D. (University of Florida)
Director of the WVU Planetarium & Observatory

PROFESSORS EMERITI

- Larry E. Halliburton - Ph.D. (University of Missouri - Columbia)
- Arthur S. Pavlovic - Ph.D. (Columbia University)
- Mohindar S. Seehra - Ph.D. (University of Rochester)
- Richard Treat - Ph.D. (University of California – Riverside)
- H. Arthur Weldon - Ph.D. (Massachusetts Institute of Technology)

Admissions for 2026-2027

- First Time Freshmen are admitted directly to the major. For the timely completion of the degree, it is recommended that students have a minimum MATH ACT of 22, a MATH SAT of 540, or an ALEKS score of 45.
- Students transferring from another WVU major or from another institution with fewer than 24 credits and at least a 2.0 overall GPA are admitted directly to the major. For the timely completion of the degree, it is recommended that students have a minimum MATH ACT of 22, a MATH SAT of 540, or an ALEKS score of 45.
- Students transferring from another WVU major or from another institution with 24 credits or more and at least a 2.0 overall GPA must meet the following requirement prior to being admitted to the major: minimum GPA of 2.0 in math and physics courses with at least one math and physics course completed.

Major Code: 1463

Degree Progress

- By the end of their the second semester (excluding summer) in the major, at minimum, students must have completed MATH 126 with a minimum grade of C-.
- **GPA in the major:**
 - Students must have a cumulative GPA in the major requirements of 2.0 or better after completing two physics courses, or they will be placed on probation.
 - Students who do not raise their GPA in the major requirements above 2.0 after one semester on probation will be removed from the Major.
- **Repeated MATH and PHYS courses:**
 - Students not able to attain better than a D/F/W by the second attempt in a mathematics or physics course will be placed on probation.
 - A student with three grades of D/F/W in the same physics or mathematics course will be removed from the Major.