Major to Career Guide

Physics

Degree: Bachelor of Science

Introduction

Physics is a major branch of the physical sciences and involves the study of matter and energy. Physicists describe, in mathematical terms, the structure and behavior of the universe and interaction of matter and energy. They do research to increase scientific knowledge and develop new and better devices, products, and processes. They develop theories describing fundamental forces and laws of nature through observation and experimentation. Most specialize in one or more area, such as nuclear, atomic, electron, or molecular physics. Many combine physics and related fields, such as biophysics or geophysics. Many physicists teach in high schools, colleges, and universities. Select from five emphases.

The astronomy emphasis gives graduates excellent preparation for graduate school in Astronomy, Astrophysics, and Physics, and for employment in industry and research laboratories.

The Engineering emphasis of the B.S. in Physics provides practical application of the theories and methods of physics. Students take more courses in the theory of physics than they would in the typical engineering curriculum and more courses in applications related to the engineering fields than they would in the traditional physics degree.

The liberal arts emphasis focuses on the main laws and principles of physics through a basic core of physics and support courses and provides flexibility for the student by requiring a minimum emphasis courses. Students can take a variety of elective courses at the junior/senior level to tailor the program toward their future goals.

The mathematical physics emphasis, offered through the cooperation of the physics and mathematics departments, focuses on the laws, principles and mathematical foundations of physics. This emphasis is an excellent preparation for graduate school in mathematics, physics, mathematical physics or other similar programs. It is also excellent preparation for many types of positions in industry or in research laboratories.

See the Secondary Endorsement Programs Major to Career Guide for more information about the physics secondary teaching emphasis.

What are some of the job tasks?

- Conduct and explain scientific research
- Detailing
- Make critical observations
- Operate and use computers
- Problem solving
- Organize/analyze scientific data
- Supervise research projects
- Teaching university-level courses
- Writing proposals, articles and reports

What are some desirable personal qualities?

- Curiosity and imagination
- Communicate ideas clearly, written and oral
- Work independently
- Mathematical ability

Additional information

Experience acquired through cooperative education or internships can prove valuable in obtaining professional positions.

A large proportion of physicists are employed on defense-related projects. Changes in de-fense expenditures could have a major impact on the growth of jobs.

Persons with bachelor's degrees in physics are usually employed as engineers, technicians, computer specialists, or high school physics

Who hires?

- Atomic/Nuclear Labs
- Educational Institutions
- Engineering Firms
- Government Agencies
- Manufacturing/Processing Firms
- Military Agencies
- Nuclear Plants
- Patent Law Firms
- Petroleum Companies
- Professional /Technical Journals
- Research Firms
- Technical Libraries

What are some potential occupations?

- Acoustic Physicist
- Applied Researcher
- Atomic Physicist/Astronomer
- Biophysicist
- Cryogenics
- Educator
- Electronic Physicist
- Environmental Analyst
- Health Physicist/Geophysicist
- Laboratory Technician
- Mechanical Physicist Nuclear Physicist
- Optical Physicist
- Patent Lawyer
- Photogrammetrist
- Physicist
- Product Tester
- Radiographer
- Research Assistant
- Science Editor
- Professor