



What can I do with a degree in ...

# Physics

*Some areas of specialization follow. Most students specialize at the graduate level.*

The Department of Physics offers a spectrum of courses reflective of both the integral character of physics in the liberal arts curriculum and its essential role in engineering and technology, and which recognize that the discipline of physics is fundamental to the understanding of all natural phenomena. The courses offered have been designed to:

- Assist students in satisfying the general education requirement;
- Support the preparation of students majoring in biology, chemistry, computer science, mathematics, and engineering; and
- Prepare students for graduate study in physics.

Although the Department has a multipurpose role in the curriculum of the College, the primary objective is to prepare students for graduate study and ultimately successful careers in physics. The Department recognizes and accepts its responsibility to address the under representation of African-Americans in science and engineering. Historically, this has been and remains a foremost responsibility in our program.

## Job Types

### ACOUSTICAL PHYSICS

Development  
Testing  
Consulting  
Administration  
Education

## Where to find them

Colleges and universities  
Military  
Government laboratories  
Nonprofit research centers  
Industry e.g., electronics, building design, medical instrumentation, communications, engineering, noise pollution, petroleum, sound recording, film production

## Ways to Prepare

- Supplement program with courses in engineering, environmental science, urban planning, remote sensing, physiology, performing arts, audio broadcasting, speech communication, film production, or other areas of interest.
- Seek internship experience in your specialty area.
- Stay abreast of federal, state, and local environmental regulations for the environmental impact positions.
- Become familiar with technologies used to measure/monitor noise levels.
- Obtain a graduate degree for additional opportunities in industry and education.

The Department offers programs of study in physics, applied physics, and a dual degree engineering program. The majors in physics and applied physics lead to the bachelor of science degree in these disciplines and the dual degree engineering program leads to a bachelor of science degree in an engineering field and a bachelors degree from Morehouse in a field dependent on the choice made by the student. Although the focus of the physics and the applied physics programs is preparation for graduate study in these fields, these programs provide excellent preparation for engineering.

## Job Types

### ASTRONOMY

Research  
Consulting  
Writing  
Public Relations  
Education

## Where to find them

Observatories  
Laboratories  
Planetariums  
Science museums  
Nonprofit foundations  
Colleges and universities  
Industry e.g., aerospace, scientific supply, computer software, remote sensing, communications  
Federal government: National Aeronautics and Space Administration, National Oceanic and Atmospheric Administration, Federal Aviation Administration, U.S. Naval Observatory, U.S. Naval Research Laboratory

## Ways to Prepare

- Obtain experience through part-time or voluntary position in a planetarium, observatory, or science museum.
- Cultivate broad knowledge of astronomy and speaking skills for jobs working with the public.
- Develop strong writing skills for preparing scientific reports.
- Seek undergraduate research opportunities with professors in the field.
- Develop a specialty area of expertise such as remote sensing, instrumentation, computer applications, etc.
- Obtain a Ph.D. for teaching and advanced research positions.

## Job Types

### ASTROPHYSICS

Basic and Applied Research  
Development  
Consulting  
Administration

## Where to Find Them

Large companies  
Government agencies  
Staffing and employment services  
Large non-profit organizations including hospitals and educational institutions

## Ways to Prepare

- Gain relevant experience in human resources by completing an internship.
- Earn a minor in business or supplement curriculum with business courses.
- Seek leadership positions in student organizations.
- Develop strong computer skills.
- Earn an MBA or a graduate degree in human resources to attain higher level positions.

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## Job Types

### **BASIC AND APPLIED RESEARCH**

Development  
Consulting  
Administration

## Where to Find Them

Colleges and universities  
Medical and dental schools  
Government laboratories  
Nonprofit research centers Industry e.g.,  
biotechnology, environment, pharmaceuticals,  
food science, toxicology  
Hospitals

## Ways to Prepare

- Biophysics is considered an interdisciplinary field at the undergraduate level; most students prepare to enter by majoring in physics, chemistry, or mathematics with supplementary courses in biology or by majoring in biology, biochemistry or molecular biology with supplementary courses in chemistry, physics, and mathematics.
- Plan to specialize in an area such as experimental biophysics or computational biophysics and choose courses accordingly.
- Seek research experience through work with a professor or internships.
- Earn a bachelor's degree for most technician positions.
- Obtain advanced degree for higher-level positions in industry in academia.

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## Job Types

### **CHEMICAL PHYSICS**

Basic and Applied Research  
Administration

## Where to Find Them

Colleges and universities  
Government laboratories  
Government agencies  
Industry

## Ways to Prepare

- Take courses in physics, chemistry, and mathematics for graduate school preparation in this interdisciplinary field.
- Seek undergraduate research experience to develop laboratory and computer skills.
- Gain research experience in both physics and chemistry.
- Become familiar with the various forms of spectroscopy.
- Obtain advanced degree for more opportunities in industry, research, or education.

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## Job Types

### **CONDENSED MATTER**

Basic and Applied Research  
Development  
Consulting  
Administration

## Where to Find Them

Government laboratories  
Nonprofit research centers  
Colleges and universities  
Electronics industry e.g., microprocessors,  
magnetic imaging, communications, automobile,  
navigation/guidance systems  
Government agencies e.g., National Aeronautics  
and Space Administration, Department of  
Defense, Department of Energy

## **CONDENSED MATTER (cont'd)**

### **Ways to Prepare**

- Develop strong mathematical, chemistry, and computer science skills.
- Seek research experience through internships or by assisting faculty with projects.
- Acquire advanced degree for opportunities in industry, research, or education.
- Become familiar with various forms of characterization techniques such as optical and electron spectroscopy and neutron scattering.

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### **Job Types**

#### **ENGINEERING PHYSICS**

Engineering (Process and Testing)  
Quality Control  
Research  
Development  
Instrumentation  
Consulting

### **Where to Find Them**

Colleges and universities  
Government laboratories  
Government agencies e.g., Department of Commerce, Department of Defense  
Engineering firms  
Manufacturing and processing firms  
Industry e.g. high technology, chemical, aerospace, agriculture, energy, fuel, computer, transportation  
Hospitals

### **Ways to Prepare**

- Choose a major in engineering physics or supplement physics major with engineering minor.
- Seek internship or co-op experience in area of interest.
- Develop strong oral and written communication skills.
- Complete applicable certification or license through professional organizations.
- Pursue advanced degree in engineering, engineering physics, or physics for increased opportunities.

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### **Job Types**

#### **GEOPHYSICS**

Basic and Applied Research  
Development  
Environmental Consulting  
Law  
Administration

### **Where to Find Them**

Colleges and universities  
Nonprofit research centers  
Government e.g., State and Federal Geological Survey, Army Map Service, Naval Oceanographic Office  
Government laboratories  
Military  
Industry e.g., petroleum, mining, hydro geology  
Consulting firms  
Law firms

### **Ways to Prepare**

- Specialize in geophysics at the undergraduate level or supplement physics degree with geology major or minor.
- Develop solid computer, mathematics, chemistry, engineering, and physics knowledge.
- Seek experience with national labs or industry researching specializations of interest.
- Take business classes for increased marketability in advanced prospecting positions (risk analysis for drilling, mining, exploration).
- Maintain good physical condition and be open to travel.

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## Job Types

### **MEDICAL/HEALTH PHYSICS**

Basic and Applied Research  
Development  
Clinical Service  
Consulting  
Administration  
Monitoring  
Enforcement

## Where to Find Them

Colleges and universities  
Government laboratories  
Government agencies e.g., Department of Defense, Department of Energy, Nuclear Regulatory Commission, Department of Health and Human Services  
Nonprofit research centers  
Industry e.g., medical instrumentation, nuclear power, nuclear accelerator, food sterilization, petroleum  
Environmental firms  
Hospitals, clinics, medical centers

## Ways to Prepare

- Gain experience with air and water testing techniques and analysis and radiation detection instruments.
- Develop strong communication skills for training radiation workers and members of the general public and for collaborating with physicians in healthcare settings.
- Maintain current knowledge of government standards and regulations.
- Learn medical uses of radiation for work in the healthcare industry.
- Seek certification from the National Registry of Radiation Protection Technologists for some positions.
- Complete a master's degree and certification by the American Board of Health Physics (ABHP) for health physicist positions.
- Earn a Ph.D. and certification by the American Board of Health Physics (ABHP) for top university teaching, research, and administrative positions.
- Gain experience at a hospital or clinic to prepare for work in healthcare settings; clinical residency training may be required.

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## Job Types

### **NUCLEAR PHYSICS**

Basic and Applied Research  
Development  
Consulting  
Instrumentation  
Administration  
Law  
Quality Control  
Operations and Maintenance

## Where to Find Them

Colleges and universities  
Military  
Industry e.g., security/weapons, nuclear accelerators, nuclear reactors, nuclear instrumentation, radioisotope products, transportation, healthcare, environmental protection, food irradiation  
Government laboratories and research centers  
Government agencies e.g., Department of Defense, Department of Energy

## Ways to Prepare

- Acquire a strong mathematics, computer science, and chemistry background.
  - Choose a theoretical or experimental track.
  - Seek internship experience in your specialty area.
  - Pursue master's degree or Ph.D. for advanced positions in industry.
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## Job Types

### **OPTICAL PHYSICS**

Basic and Applied Research  
Development  
Consulting  
Administration

## Where to Find Them

Colleges and universities  
Government laboratories  
Nonprofit research centers  
Industry e.g., medical scanners, eyeglasses, binoculars, microscopes, lasers, holography, display technologies, x-ray, ultraviolet spectra, fiber optics  
Federal agencies e.g., NASA, Department of Energy, Department of Defense

## Ways to Prepare

- Gain experience in the optics field through internships or research with professors.
- Supplement program with courses in electricity, magnetism, quantum mechanics, and electronics.
- Obtain a master's degree for positions in industry.
- Understand lasing and optical media.

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## Job Types

### **PARTICLE/HIGH ENERGY PHYSICS**

Basic and Applied Research  
Development  
Consulting  
Instrumentation  
Administration  
Operations and Maintenance

## Where to Find Them

Government laboratories  
Nonprofit research centers  
Colleges and universities

## Ways to Prepare

- Acquire a strong mathematics, computer science, and chemistry background.
- Choose a theoretical or experimental track.
- Seek internship experience in your specialty area.
- Pursue Ph.D. for advanced positions in academia.

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## Job Types

### **SCIENCE EDUCATION**

Teaching  
Computer Software Development  
Educational Research  
Writing and Editing  
Library and Information Sciences

## Where to Find Them

Public school systems, K-12  
Private schools, K-12  
Publishing companies: books, magazines, videos  
Software developers  
Libraries

## Ways to Prepare

- Develop excellent communication skills, verbal and written.
- Gain experience working with age group of interest through volunteering and tutoring.
- Become skilled in the use of computers and laboratory equipment.
- Maintain current knowledge of state and national legislation regarding teacher license.
- Acquire appropriate state teacher certification for K-12 teaching opportunities.
- Seek advanced degree required for specialists, education administration, college teaching, and other professional positions.

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## ADDITIONAL INFORMATION

- Physicists are interested in solving complex, technical problems.
- Visit government laboratories or research centers to learn more about opportunities in the field. Schedule informational interviews to learn about the profession and specific career paths.
- Join relevant professional associations. Attend meetings and stay up-to-date on research/publications.
- Acquire excellent oral and written communication skills.
- Gain experience using scientific instruments and equipment. Computer skills are critical.
- Participate in summer research institutes. Submit research to local poster competitions or research symposiums.
- A willingness to relocate is helpful due to limited opportunities in specialized areas.
- A bachelor's degree will qualify for positions as research assistants, high-level technicians, or computer specialists, as well as nontechnical work in publishing or sales.
- An undergraduate degree also provides a solid background for pursuing advanced degrees in other employment areas such as law, business, or accounting.
- A graduate degree and post-graduate experience will allow for more responsibility and advancement in the field of physics.
- An earned doctorate is required for college or university teaching, advanced research, and administrative positions.
- A bachelor's degree and state teacher certification are required for K-12 teaching opportunities.
- Become familiar with government job application process for positions in federal, state, or local government.

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*The field of physics is constantly changing, and the information listed above does not exhaust possible career options. Be sure to speak with your department chair or academic advisor for further guidance on course selections, as well as career planning.*