# PHYSICS

## What can I do with this degree?

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<tr>
<th>AREAS</th>
<th>EMPLOYERS</th>
<th>STRATEGIES</th>
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<tr>
<td><strong>ASTRONOMY</strong></td>
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<tr>
<td>Teaching</td>
<td>Colleges and universities</td>
<td>Acquire excellent verbal and written communication skills.</td>
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<tr>
<td>Research</td>
<td>Observatories</td>
<td>Get involved in a research project.</td>
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<tr>
<td>Writing</td>
<td>Planetariums</td>
<td>Develop a speciality area of expertise and experience.</td>
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<td></td>
<td>Science museums</td>
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<td>Nonprofit foundations</td>
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<td></td>
<td>Industry e.g., aerospace, scientific supply, mass media</td>
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<td></td>
<td>Federal government</td>
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<td></td>
<td>National Aeronautics and Space Administration</td>
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<td></td>
<td>Smithsonian Astrophysical Observatory</td>
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<td>U.S. Naval Observatory</td>
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<td>U.S. Naval Research Laboratory</td>
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<td><strong>ACOUSTICAL PHYSICS</strong></td>
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<tr>
<td>Basic and Applied Research</td>
<td>Colleges and universities</td>
<td>Supplement program with courses in psychology,</td>
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<tr>
<td>Development</td>
<td>Government laboratories</td>
<td>physiology, communications, political science,</td>
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<tr>
<td>Teaching</td>
<td>Nonprofit research centers</td>
<td>and sociology.</td>
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<tr>
<td>Consulting</td>
<td>Industry e.g., electronics, building design,</td>
<td>Obtain a graduate degree in physics for opportunities</td>
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<tr>
<td>Administration</td>
<td>medical instrumentation, communications, engineering, noise pollution,</td>
<td>in industry.</td>
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<tr>
<td>Testing</td>
<td>sound recording, film production</td>
<td>Maintain an interest in music, the arts and</td>
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<td>humanities.</td>
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<td><strong>ASTROPHYSICS</strong></td>
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<tr>
<td>Teaching</td>
<td>Government laboratories</td>
<td>Obtain experience through part-time or voluntary</td>
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<td>Consulting</td>
<td>Research centers</td>
<td>position in a planetarium, observatory or science museum.</td>
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<td>Administration</td>
<td>Airports</td>
<td>Complete an internship with a research organization or</td>
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<tr>
<td>Research</td>
<td>Colleges and universities</td>
<td>related industry.</td>
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<tr>
<td>Design</td>
<td>Commercial industry</td>
<td>Participate in research with scholars in the field.</td>
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<td>Astronautics</td>
<td>Space industry</td>
<td>Contact the American Astronomical Society for more information.</td>
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<td><strong>BIOPHYSICS</strong>&lt;br&gt;Basic and Applied Research&lt;br&gt;Development&lt;br&gt;Teaching&lt;br&gt;Consulting&lt;br&gt;Administration</td>
<td>Colleges and universities&lt;br&gt;Government laboratories&lt;br&gt;Nonprofit research centers&lt;br&gt;Industry e.g., biotechnology, environment, pharmaceuticals&lt;br&gt;Hospitals</td>
<td>Acquire information about state licensure required for various types of technicians working in medical settings. Gain experience as a laboratory assistant or hospital orderly. Volunteer at a hospital or clinic.</td>
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<td><strong>FLUID AND PLASMA PHYSICS</strong>&lt;br&gt;Basic and Applied Research&lt;br&gt;Development&lt;br&gt;Teaching&lt;br&gt;Consulting&lt;br&gt;Administration</td>
<td>Colleges and universities&lt;br&gt;Government laboratories&lt;br&gt;Government agencies&lt;br&gt;Nonprofit research centers&lt;br&gt;Industry e.g., automobile, jet engine, space vehicle design, controlled fusion device design</td>
<td>Obtain a graduate degree (master's or doctorate) for opportunities in industry or research.</td>
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<td><strong>GEOPHYSICS</strong>&lt;br&gt;Basic and Applied Research&lt;br&gt;Development&lt;br&gt;Teaching&lt;br&gt;Consulting&lt;br&gt;Administration&lt;br&gt;Exploration</td>
<td>Colleges and universities&lt;br&gt;Nonprofit research centers&lt;br&gt;Federal government e.g., Coast and Geological Survey, U.S. Geological Survey, Army Map Service, Naval Oceanographic Office&lt;br&gt;Industry e.g., petroleum, mining, exploration&lt;br&gt;Consulting firms</td>
<td>Specialize in geophysics or minor in geology. Develop good background in mathematics, chemistry, engineering, and physics. Maintain good physical condition.</td>
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<td><strong>HEALTH PHYSICS</strong>&lt;br&gt;Basic and Applied Research&lt;br&gt;Development&lt;br&gt;Teaching&lt;br&gt;Consulting&lt;br&gt;Administration&lt;br&gt;Monitoring/Inspection</td>
<td>Colleges and universities&lt;br&gt;Government laboratories&lt;br&gt;Government agencies e.g., Department of Defense, Department of Energy, Department of Public Health Service&lt;br&gt;Nonprofit research centers&lt;br&gt;Industry e.g., health physics instrumentation, nuclear power, nuclear weapons, radioisotope products, nuclear accelerators, nuclear reactors&lt;br&gt;Environmental firms&lt;br&gt;Hospitals</td>
<td>Earn a Ph.D. and certification by the American Board of Health Physics (ABHP) for top university teaching, research and administrative positions. Complete a master's degree and certification by the ABHP for professional health physicists positions. Specialize in health physics and obtain technician certification from the National Registry of Radiation Protection. Acquire knowledge of government standards and regulations.</td>
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| MEDICAL PHYSICS | Basic and Applied Research  
Development  
Teaching  
Consulting  
Administration  | Colleges and universities  
Medical schools  
Hospitals  
Industry e.g., medical instrumentation  
Government laboratories  
Nonprofit research centers  
Government agencies  | Gain experience working in a hospital.  
Develop a research specialty in a medical or health related area. |
| NUCLEAR PHYSICS | Basic and Applied Research  
Development  
Teaching  
Consulting  
Administration  
Law  
Quality Control  
Operations and Maintenance  | Colleges and universities  
Military  
Industry e.g., nuclear weapons, nuclear accelerators, nuclear reactors, nuclear instrumentation, radioisotope products  
Government laboratories and research centers  
Government agencies e.g., Department of Defense, Department of Energy  | A master's degree is preferred for positions in industry.  
Develop excellent laboratory skills.  
Acquire a strong mathematics and chemistry background. |
| OPTICAL PHYSICS | Basic and Applied Research  
Development  
Teaching  
Consulting  
Administration  | 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  | Obtain a master's degree for positions in industry.  
Supplement program with courses in electricity, magnetism, quantum mechanics, and electronics.  
Get involved in an independent optics project during senior year. |
| SCIENCE EDUCATION | Teaching  
Computer Software Development  
Educational Research  
Writing and Editing  
Library and Information Sciences  | Public school systems, K-12  
Private schools, K-12  
Publishing companies: books, magazines, videos  
Software developers  
Libraries  | Gain experience working with young people through volunteering and tutoring.  
Work with after school programs and summer camps.  
Acquire appropriate state teacher certification for K-12 teaching opportunities.  
Visit schools and observe classrooms.  
Create a portfolio of science experiments and activities.  
Become skilled in the use of computers.  
Earn a graduate degree in information science. |
### AREAS

**TECHNICAL**
- Engineering (Process and Testing)
- Quality Control
- Industrial Hygiene
- Design Development
- Technical Writing
- Computer Technology
- Research

**SOLID STATE PHYSICS**
- Basic and Applied Research
- Development
- Consulting
- Teaching
- Administration

### EMPLOYERS

**TECHNICAL**
- Research and development firms
- Mining and petroleum companies
- Hospitals
- Engineering firms
- Professional and technical journals
- Government laboratories
- Manufacturing and processing firms
- Atomic and nuclear labs
- Government agencies e.g., Department of Commerce, Department of Defense
- Television and radio stations
- Weather bureaus

**SOLID STATE PHYSICS**
- Government laboratories
- Nonprofit research centers
- Colleges and universities
- Electronics industry e.g., communications, automobile, computer, navigation/guidance systems
- Government agencies e.g., National Aeronautics and Space Administration, Department of Defense

### STRATEGIES

**TECHNICAL**
- Gain experience through internships or co-ops.
- Complete applicable certification or licensure through professional organizations.
- Gain knowledge about the field through informational interviews with professionals.
- Develop work habits that are systematic, precise, and patient.
- Develop a strong computer background.
- Gain experience using scientific instruments and equipment.
- Pursue a graduate degree in engineering.

**SOLID STATE PHYSICS**
- Obtain experience working with electronics and computers.
- Request applicable job listings from the American Institute of Physics.

### GENERAL INFORMATION

- 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, accounting, or medicine.
- Be aware that expertise and experience in a speciality area are usually required for employment opportunities directly related to physics.
- 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.
- Some industries such as the manufacturers of electrical devices will train in the speciality of the firm.
- A bachelor’s degree and state teacher certification are required for K-12 teaching opportunities.
- Visit government laboratories or research centers. Talk with a physicist about his/her profession and career path.
- Join relevant professional associations. Attend their meetings and read their publications.
- Acquire excellent oral and written communication skills.
- Gain experience with tools, electronics, and machinery.
- Become familiar with government job application process for positions in federal, state, or local government.