

What can I do with this degree?

PHYSICS

http://www.ltu.edu/career_services/index.asp

ASTRONOMY

Areas:

- Teaching
- Research
- Writing

Employers:

- Colleges and universities
- Observatories / Planetariums
- Science museums
- Nonprofit foundations
- Industry e.g., aerospace, scientific supply, mass media
- Federal government: NASA, Smithsonian Astrophysical Observatory, U.S. Naval Observatory, U.S. Naval Research Laboratory

Strategies:

- Acquire excellent **verbal and written communication** skills. Get involved in a **research** project. Develop a **specialty area** of expertise and experience.

ASTROPHYSICS

Areas:

- Teaching
- Consulting
- Administration
- Research
- Design
- Astronautics

Employers:

- Government laboratories
- Research centers
- Airports
- Colleges and universities
- Commercial industry
- Space industry / NASA
- Observatories / Planetariums
- Military

Strategies:

- Obtain experience through part-time or voluntary position in a **planetarium**, **observatory** or **science museum**. Complete an **internship** with a research organization or related industry. Participate in **research** with scholars in the field.
- Contact the **American Astronomical Society** for more information.

BIOPHYSICS

Areas:

- Basic and Applied Research
- Development
- Teaching
- Consulting
- Administration

Employers:

- Colleges and universities
- Government laboratories
- Nonprofit research centers
- Industry e.g., biotechnology, environment, pharmaceuticals
- Hospitals

Strategies:

- 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.

HEALTH PHYSICS

Areas:

- Basic and Applied Research
- Development
- Teaching
- Consulting
- Administration
- Monitoring/ Inspection

Employers:

- Colleges and universities
- Government laboratories
- Government agencies e.g., Department of Defense, Department of Energy, Department of Public Health Service
- Nonprofit research centers
- Industry e.g., health physics instrumentation, nuclear power, nuclear weapons, radioisotope products, nuclear accelerators, nuclear reactors
- Environmental firms
- Hospitals

Strategies:

- 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.

MEDICAL PHYSICS

Areas:

- Basic and Applied Research
- Development
- Teaching
- Consulting
- Administration

Employers:

- Colleges and universities
- Medical schools
- Hospitals
- Industry e.g., medical instrumentation
- Government laboratories
- Nonprofit research centers
- Government agencies

Strategies:

- Gain experience working in a **hospital**. Develop a **research** specialty in a medical or health related area.

OPTICAL PHYSICS

Areas:

- Basic and Applied Research
- Development
- Teaching
- Consulting
- Administration

Employers:

- 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

Strategies:

- 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.

NUCLEAR PHYSICS

Areas:

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

Employers:

- 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

Strategies:

- A **master's degree** is preferred for positions in industry. Develop excellent **laboratory skills**. Acquire also a strong **mathematics and chemistry background**.

FLUID AND PLASMA PHYSICS

Areas:

- Basic and Applied Research
- Development
- Teaching
- Consulting
- Administration

Employers:

- Colleges and universities
- Government laboratories
- Government agencies
- Nonprofit research centers
- Industry e.g., automobile, jet engine, space vehicle design, controlled fusion device design

Strategies:

- Obtain a **graduate degree** (master's or doctorate) for opportunities in industry or research.

ACOUSTICAL PHYSICS

Areas:

- Basic and Applied Research
- Development
- Teaching
- Consulting
- Administration
- Testing

Employers:

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

Strategies:

- **Supplement** program with courses in psychology, physiology, communications, political science, and sociology. Obtain a **graduate degree** in physics for opportunities in industry. Maintain an **interest** in music, the arts and humanities.

GEOPHYSICS

Areas:

- Basic and Applied Research
- Development
- Teaching
- Consulting
- Administration
- Exploration

Employers:

- Colleges and universities
- Nonprofit research centers
- Federal government e.g., Coast and Geological Survey, U.S. Geological Survey, Army Map Service, Naval Oceanographic Office
- Industry e.g., petroleum, mining, exploration
- Consulting firms

Strategies:

- Specialize in **geophysics or minor in geology**. Develop good background in mathematics, chemistry, engineering, and physics. Maintain good physical condition.

SCIENCE EDUCATION

Areas:

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

Employers:

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

Strategies:

- 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.

SOLID STATE PHYSICS

Areas:

- Basic and Applied Research
- Development
- Consulting
- Teaching
- Administration

Employers:

- Government laboratories
- Nonprofit research centers
- Colleges and universities
- Electronics industry e.g., communications, automobile, computer, navigation/guidance systems
- Government agencies e.g., NASA, Department of Defense

Strategies:

- Obtain experience working with electronics and computers. Request applicable job listings from the [American Institute of Physics](#).

TECHNICAL

Areas:

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

Employers:

- 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

Strategies:

- 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](#).

GENERAL INFORMATION

- A **bachelor's degree** will qualify for positions as research assistants, high level technicians, or computer specialists, as well as non-technical 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 specialty 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 specialty of the firm.

GENERAL INFORMATION

- 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.