What can I do with a major in...

Physics

ACTIVITIES PHYSICS MAJORS DO:
Physicists explore and identify the basic principles governing the structure and behavior of matter, the generation and transfer of energy, and the interaction of matter and energy. Some physicists use these principles in theoretical areas such as the nature of time and the origin of the universe. Others work in more practical areas such as the development of materials, electronic or optical devices, and medical equipment. Physicists design and perform experiments with lasers, cyclotrons, telescopes, mass spectrometers, and other equipment. For instance, lasers are used in surgery, microwave devices function in ovens, and measuring instruments can analyze blood or the chemical content of foods. Physicists also find ways to apply mathematics and physical laws and theories to problems in nuclear energy, electronics, optics, materials, communications, aerospace technology, navigation equipment, and medical instrumentation. Many physicists work in research and development. Some do basic research to increase scientific knowledge or applied research to build on basic knowledge. For example, knowledge gained through basic research in solid-state physics led to the development of transistors and then integrated circuits used in computers. A small number of physicists work in inspection, testing, quality control, and other production-related jobs in industry. Physicists generally specialize in one of the following areas: acoustics, astronomy, astrophysics, atmospheric physics, biophysics, chemical physics, cryogenics, electromagnetism, energy, environmental physics, fluid mechanics, geophysics, medical physics, metallurgy, nuclear physics, optical physics, plasma physics, rheology, solid state physics, or vacuum physics. Research in physics often requires a Ph.D.

INDUSTRIES PHYSICS MAJORS WORK IN (SAMPLE LISTING):
- Petroleum/mining
- Telecommunications
- Government agencies
- Consulting
- Engineering consulting
- Research and development
- Observatories
- Automotive
- Optics/electronics
- Nuclear plants
- Information technology
- Materials supply
- Educational institutions
- Biomedical
- Aerospace/aeronautical

EMPLOYERS WHO HIRE PHYSICS MAJORS (SAMPLE LISTING):
- 3M
- Alliant Techsystems
- Applied Materials
- D.E. Shaw Research
- Bose Corp.
- Epic Systems
- ExxonMobil
- Starkey Hearing Technologies
- Graco, Inc.
- Intel Corp.
- General Electric
- NAVAIR Weapons Division
- NASA
- Black River Systems Co.
- Seagate Technology
- MIT Lincoln Laboratory
- IBM
- Microsoft
- Schlumberger
- Garmin International
- Polar Semiconductor, LLC

TYPES OF POSITIONS FOR PHYSICS MAJORS (SAMPLE LISTING):
- **Physical scientist**: Conducts research, testing, evaluation, and analysis related to the identification and evaluation of products and features such as counterfeit deterrent security features for Federal Reserve Notes. Specifically, physical scientists advise on and administer scientific work in the investigation and application of optical/light principles.
- **Field test engineer**: Performs electro-optical (EO) or infrared (IR) measurements, both on site and at field test sites as part of a small team. Field test engineers develop/upgrade instrumentation and software for control and analysis, document test procedures and experimental setups, and analyze and document the results of the tests and measurements.
- **Thin film deposition engineer**: Conducts product development on thin film deposition using vacuum systems. Duties include operation and maintenance of a vacuum system; designing and constructing part of the system as needed; analysis of the deposited thin film; and designing of experiments, analyzing results, and reporting.
- **Rheologists**: Applies physics to the study of the deformation and flow of matter. For instance, rheologists apply the principles behind the observation in the differences in the flow of ketchup from a bottle before and after shaking the bottle.

**Some of these positions may require an advanced degree.**
USEFUL WEBSITES FOR PHYSICS MAJORS:

Department of Physics  physics.umn.edu
National Academy of Sciences  nas.edu
Physics and Astronomy  phylslink.com
Science Careers  sciencecareers.org
National Space Science and Technology Institute  nssti.org
Careers in Physics  aps.org/careers
Physics.org  physics.org
Careers Using Physics  spsnational.org/cup
Physics Today  physicstoday.org/jobs
Sciencejobs.org  sciencejobs.org

PROFESSIONAL ORGANIZATIONS:

American Institute of Physics  aip.org
Institute of Physics  iop.org
American Association for the Advancement of Science  aaas.org
American Society for Testing and Materials  astm.org
American Association of Physicists in Medicine  aapm.org
Radiological Society of North America  rsna.org
Laser Institute of America  lia.org
Microscopy Society of America  microscopy.org
Optical Society of America  osa.org
American Association of Physics Teachers  aapt.org

*Additional job/internship search websites and resources can be found at cse.umn.edu/career.

Information on this page was compiled from the Occupational Outlook Handbook, the Encyclopedia of Careers and Vocational Guidance, University of Minnesota departmental websites, and student-reported data.