APPLIED PHYSICS /ENGINEERING

What can I do with this Major?

AREAS	EMPLOYERS	STRATEGIES
Astronomy Teaching Research Writing	Colleges and universities Observatories Planetariums Science museums Nonprofit foundations Industry e.g., aerospace, scientific supply, mass media Federal government National Aeronautics and Space Administration Smithsonian Astrophysical Observatory U.S. Naval Observatory U.S. Naval Research Laboratory	-Acquire excellent verbal and written communication skills. -Get involved in a research project. -Develop a specialty area of expertise and experience. -For more information about salary, job outlook and general descriptions: http://www.bls.gov/ooh/
Acoustical Physics Basic and Applied Research Development Teaching Consulting Administration Testing	Colleges and universities Government laboratories Nonprofit research centers Industry e.g., electronics, building design, medical instrumentation, communications, engineering, noise pollution, sound recording, film production	-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. -For more information about salary, job outlook and general descriptions: http://www.bls.gov/ooh/
Astrophysics Teaching Consulting Administration Research Design Astronautics	Government laboratories Research centers Airports Colleges and universities Commercial industry Space industry National Aeronautics and Space Administration Observatories Planetariums Military	-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. -For more information about salary, job outlook and general descriptions: http://www.bls.gov/ooh/

Biophysics Basic and Applied Research Development Teaching Consulting Administration	Colleges and universities Government laboratories Nonprofit research centers Industry e.g., biotechnology, environment, pharmaceuticals Hospitals	-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. -For more information about salary, job outlook and general descriptions: http://www.bls.gov/ooh/
Fluid and Plasma Physics Basic and Applied Research Development Teaching Consulting Administration	Colleges and universities Government laboratories Government agencies Nonprofit research centers Industry e.g., automobile, jet engine, space vehicle design, controlled fusion device design	-Obtain a graduate degree (master's or doctorate) for opportunities in industry or research. -For more information about salary, job outlook and general descriptions: http://www.bls.gov/ooh/
Geophysics Basic and Applied Research Development Teaching Consulting Administration Exploration	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	-Specialize in geophysics or minor in geology. -Develop good background in mathematics, chemistry, engineering, and physics. -Maintain good physical condition. -For more information about salary, job outlook and general descriptions: http://www.bls.gov/ooh/
Health Physics Basic and Applied Research Development Teaching Consulting Administration Monitoring/Inspection	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	-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. -For more information about salary, job outlook and general descriptions: http://www.bls.gov/ooh/
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. -For more information about salary, job outlook and general descriptions: http://www.bls.gov/ooh/

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. -For more information about salary, job outlook and general descriptions: http://www.bls.gov/ooh/
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. -For more information about salary, job outlook and general descriptions: http://www.bls.gov/ooh/
Solid State Physics Basic and Applied Research Development Consulting Teaching Administration	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	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. -For more information about salary, job outlook and general descriptions: http://www.bls.gov/ooh/
Aerospace Propulsion Fluid Mechanics Thermodynamics Structures Celestial Mechanics Acoustics Guidance and Control	Aircraft, guided missile, and space vehicle industries Communications equipment manufacturers Commercial airlines Federal government departments: Defense National Aeronautics and Space Administration (NASA) Business and engineering firms	*Discipline uses cutting edge technology to deal with challenges of aeronautics, space, mass transportation, environmental pollution, and medical science.* AEROSPACE -Keep abreast of status of federal funding for defense and space programs. -Seek co-op opportunities. -Develop effective verbal and written communication skills. -Learn to work well within a team. -For more information about salary, job outlook and general descriptions: http://www.bls.gov/ooh/

Materials Science and Engineering Metallurgy Ceramics Plastics/Polymers Composites Research Extractive Process Applications Management Sales Service Consulting	Materials producing companies Manufacturing companies including automobiles, appliances, electronics, aerospace equipment, machinery, medicine Service companies including airlines, railroads, and utilities Consulting firms Government agencies: Department of Defense National Aeronautics Space Administration (NASA) Research institutes Publishers	*Studies properties of various types of materials and how they are made and behave under different conditions.* -Many positions require a graduate degree. -Some areas benefited by additional study in business administration, medicine, management and/or law. -Develop good communication skills. -Gain laboratory and research experience as an undergraduate -For more information about salary, job outlook and general descriptions: http://www.bls.gov/ooh/
Mechanical Mechanical Power Generation Internal Combustion Engines Jet Engines Steam Power Plants Rockets Energy Utilization and Conservation Thermal/Fluids Thermodynamics Environmental Control Refrigeration Instrumentation and Control Machine Sciences Mechanical Design Manufacturing and Production Robotics Operation and Maintenance	Transportation Automotive industry, aerospace industry, military laboratories Utilities Steam driven electric power stations Equipment Design Plants Nuclear power stations Electronics industry Petro-Chemical Drilling & production, plant operations Manufacturing Consumer products, chemical products, farm equipment, industrial equipment, paper and wood products, textile equipment Consulting engineering firms	*Takes broad outlook on solving complex problems. Involves design, development and production. Keeps pace with technology. Acts as an interface between society and technology.* -Obtain related experience through internships or co-op. -Take additional courses in area(s) of interest. -Develop strong interpersonal and communication skills. -For more information about salary, job outlook and general descriptions: http://www.bls.gov/ooh/
Engineering Science and Mechanics Engineering Mechanics Biomedical Engineering Computational Mechanics Engineering Materials	Industry Manufacturing Research Organizations	*Interdisciplinary program with broad training in engineering science, mathematics, and physical or biological science.* -For more information about salary, job outlook and general descriptions: http://www.bls.gov/ooh/

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 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.
-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.

-Related work experience obtained through co-op, internships, part-time or summer jobs, or regular employment is extremely beneficial.
-Develop computer expertise within field.
-Engineers need to think in scientific and mathematical terms, have ability to study data, sort out important facts, solve problems, and be logical thinkers. Creativity is useful.
-Other helpful traits include intellectual curiosity, technical aptitude, perseverance, ability to communicate and work well with others, a commitment to teamwork, and a basic understanding of the economic and environmental context in which engineering is practiced.
-All states and the District of Columbia require registration of engineers whose work may affect the life, health, or safety of the public.
-Professional or technical societies confer certification in some areas.
-Most fields offer overseas opportunities with businesses or government agencies.
-Because of rapid changes in most engineering fields, both continued education and keeping abreast of new developments are very important.
-Most states require an EIT (Engineer-In-Training) test before taking a state examination to become a Professional Engineer (PE).
-Search the Internet for additional information about individual disciplines.
-For more information on your major visit: http://www.onetonline.org/