ENGINEERING

What can I do with this degree?

AREAS	EMPLOYERS	DESCRIPTIONS/STRATEGIES
ANY DISCIPLINE Production Sales and Marketing Management Consulting Research and Development Teaching Law	Industry Business Federal, state and local government Colleges and universities	Obtain related experience through co-op or internships for business/industry-related career. MBA degree provides best opportunities in technical management. Obtain Ph.D. for optimal teaching and research careers. Develop strong verbal and written communication skills. Learn federal, state, and local government job application procedures.
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.*** Keep abreast of status of federal funding for defense and space programs. Seek co-op opportunities. Develop effective verbal and written communication skills. Acquire team work skills.
AGRICULTURAL Natural Resources - Soil and Water Conservation International Consulting Environmental Control Agricultural Structures Power and Machinery Electronic Systems Food Engineering Engineering Technology	Technological agricultural industries Land grant universities: Experimental farm stations Research laboratories Consulting firms Equipment design, testing and manufacturing firms Equipment and food industries including processing, packaging and storing Quality control for food, feed, fiber, etc. Biotechnology research firms Foreign Service	***A broad, basic engineering discipline with close relationship to the environment, food production and agricultural productivity.*** Participate in internships; consider co-op opportunities. Master computer skills. Learn a foreign language for work in Foreign Service. Develop strong math and problem solving skills.

AREAS	EMPLOYERS	DESCRIPTIONS/STRATEGIES
BIOMEDICAL		
Bioengineering Design Development Manufacturing Medical Engineering Instrumentation Materials Diagnostic/Therapeutic Devices Artificial Organs Medical Equipment Chemical Engineering Rehabilitation Engineering Bio-environmental Engineering	Manufacturers of medical and surgical devices Hospitals and healthcare facilities Federal government: Regulatory agencies Veteran's Administration National Institutes of Health National Aeronautics and Space Administration (NASA) Industry Research facilities of educational and medical institutions	***Discipline combines engineering and human anatomy to develop and maintain medical and healthcare systems and equipment.*** Develop team work skills. Good background for medical school. Many positions will require graduate or professional degrees.
CHEMICAL		
Administration Design and Construction Project Engineering Control Systems Field Engineering Operations/Production Environmental and Waste Management Development Design	Independent research institutes Consulting organizations Chemical industry including: Agricultural chemicals Plastics Industrial chemicals Petroleum Pharmaceutical Cosmetic Food processing Atomic energy development Environmental Federal government including: Department of Energy Environmental Protection Agency Manufacturing plants including automotive, air plane, paper, microelectronics, textiles, metals, rubber, food and beverage	***Combines science of chemistry with discipline of engineering to solve problems and develop efficiency.*** Develop exceptional interpersonal skills. Acquire technical work experience during college years.

AREAS	EMPLOYERS	DESCRIPTIONS/STRATEGIES
CIVIL		
Structural Urban and Community Planning Construction Environmental Water Resources Transportation and Pipeline Geotechnical Photogrammetry, Surveying and Mapping Materials	Construction industry Engineering or architectural firms Utility companies Oil companies Telecommunications businesses Manufacturing companies Consulting firms Railroads	***Broad discipline of "doers" providing service to the community through development and improvement. Works extensively with other professionals involved with the com - munity. Provides opportunity to work out - doors.*** Learn to work well within a team. Develop strong communication and interpersonal skills. Develop physical stamina for outdoor work. Get experience in organizing and directing workers and materials. Ability to visualize objects in three dimensions helpful. Demand has remained steady due to broad nature of discipline. States may require licensing/registration.
ELECTRICAL/ELECTRONIC		
Power Electronics Power Systems Communications Electronics Control Systems Digital Signal Processing Microelectronics Image Processing & Robotics Computer Engineering Plasma Engineering Computer Vision	Manufacturing firms and industry including: Aeronautical/Aerospace Automotive Business machines Professional and scientific equipment Consumer products Chemical and petrochemical Computers Construction Defense Electric utilities Electronics Environmental Food and beverage Glass, ceramics and metals Machine tools	***A field in touch with a wide and growing range of applications such as the "information highway," exploration of outer space, and a revolution in medical diagnosis and treatment.*** Develop effective verbal and written communication skills. Get experience in working as part of a team. Acquire capacity for details. Develop interpersonal skills. Get involved in research.

AREAS	EMPLOYERS	DESCRIPTIONS/STRATEGIES
	Electrical/Electronic, Continued Mining and metallurgy Nuclear Oceanography Pulp and paper Textiles Transportation Water and wastewater Public utilities Federal government including: Armed forces National Aeronautics and Space Administration (NASA) National Institutes of Health Bureau of Standards Department of Defense Various commissions Consulting firms Free-lance consulting	
INDUSTRIAL Operations Research Applied Behavioral Science Systems Manufacturing Management	Manufacturing industries Accounting firms Retail distribution organizations Banks and finance organizations Hospitals and healthcare organizations Educational and public service agencies Transportation industries Construction industries Public utilities Electrical and electronics machinery industries Consulting firms	***Discipline links management and operations by improving productivity through a "big picture" approach; serves human needs and works with people.*** Take courses in psychology, sociology and anthropology. Earn MBA or Ph.D. for advancement in management/ administration.

AREAS	EMPLOYERS	DESCRIPTIONS/STRATEGIES
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.*** Earn graduate degree(s) for many positions due to laboratory environment. Some areas benefited by additional study in business administration, medicine, management and/or law. Develop good communication skills.
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 Plant operation and maintenance and 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. Take additional courses in area(s) of interest. Develop interpersonal skills.

AREAS	EMPLOYERS	DESCRIPTIONS/STRATEGIES
ENVIRONMENTAL Design Planning Operations Administration Regulations	Private industry and businesses involved with air pollution control, industrial hygiene, radiation protection, hazardous waste management, toxic materials control, water supply, storm water and wastewater management, solid waste disposal, public health and land management Private engineering consulting firms Construction firms Research firms Testing laboratories International organizations, particularly Eastern Europe	***Discipline plays vital role in reducing toxicity and pollution of water, ground and air for a better quality of life for all living things.*** Master's degree considered a good investment. Foreign language ability beneficial for international work.
NUCLEAR Environment and Pollution Health Space Exploration Consumer and Industrial Power Food Supply Transportation Water Supply	Electric and gas utility companies Guided missile and space vehicle companies Engineering consulting firms Business services including medical industry Manufacturers of nuclear power equipment Research facilities Military services Defense manufacturers	***Discipline studies basic components of neutrons, protons, electrons and all matter; deals with inanimate substances.***
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.***

GENERAL INFORMATION

- Bachelor's degree provides wide range of career opportunities in industry, business and government.
- Graduate degrees offer more opportunities for career advancement in business.
- Bachelor's degree is good background for pursuing technical graduate degrees as well as professional degrees in Business Administration, Medicine and Law.
- Related work experience obtained through co-op, internships, part-time or summer jobs, or regular employment extremely beneficial.
- Develop computer expertise within your field.
- Engineers need to think in scientific and mathematical terms; have ability to study data, sort out important facts and solve problems, and be logical thinkers; creativity is useful.
- Develop excellent verbal and written communications skills including presentation and technical report writing.
- 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.
- Join related professional organizations.
- Helpful traits include intellectual curiosity; technical aptitude; ability in mathematics and science; perseverance; willingness to think, work hard and accept responsibility; ability to communicate and work with others with a commitment to teamwork; interest in solving problems, and a basic understanding of the economic and environmental context in which engineering is practiced.
- Most fields offer overseas opportunities through organizations, consulting or government.
- Because of rapid changes in most engineering fields, continued education and keeping abreast of issues is very important.
- Most require an EIT (Engineer-In-Training) test before taking a state examination to become a Professional Engineer (PE).
- Check the World Wide Web for information about separate disciplines.

Prepared by the Career Planning staff at Career Services of The University of Tennessee, Knoxville. (1998, Revised 1999)