

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 community. Provides opportunity to work outdoors.

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 Internet for information about individual disciplines.