

ENGINEERING

What can I do with this degree?

AREAS

EMPLOYERS

DESCRIPTIONS/STRATEGIES

ANY ENGINEERING 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.
Learn to work well within a team.

BIOSYSTEMS ENGINEERING

Natural Resources
 Soil and Water Conservation
International Consulting
Environmental Control
Agricultural Structures
Power and Machinery
Electronic Systems
Food Engineering
Genetic 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 a close relationship to the environment, food production, and agricultural productivity.

Participate in internship or co-op programs.
Acquire strong computer skills.
Learn a foreign language for work in foreign service.
Develop strong math and problem solving skills.

| AREAS | EMPLOYERS | DESCRIPTIONS/STRATEGIES |
|---|--|--|
| <p>BIOMEDICAL</p> <p>Bioengineering Design Development Manufacturing</p> <p>Medical Engineering Instrumentation Materials Diagnostic/Therapeutic Devices Artificial Organs Medical Equipment</p> <p>Rehabilitation Engineering Bio-environmental Engineering</p> | <p>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)</p> <p>Industry Research facilities of educational and medical institutions</p> | <p><i>Discipline combines engineering and human anatomy to develop and maintain medical and healthcare systems and equipment.</i></p> <p>Develop strong team work skills. Many positions require a graduate or professional degree. Serves as a good background for medical school.</p> |

CHEMICAL

Administration
Design and Construction
 Project Engineering
 Control Systems
 Field Engineering
 Process 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
State and federal government agencies

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 is helpful.
Demand has remained steady due to broad nature of discipline.
States may require licensing or registration.

ELECTRICAL/COMPUTER

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 high speed and wireless communication, exploration of outer space, and a revolution in medical diagnosis and treatment.

Develop effective verbal and written communication skills.
Gain experience in team work.
Acquire capacity for details.
Develop interpersonal skills.
Obtain research experience.

AREAS

EMPLOYERS

DESCRIPTIONS/STRATEGIES

Electrical/Computer, 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

Information Engineering

Computer Systems Design and Development

Manufacturing industries

Accounting firms

Retail distribution organizations

Banks and financial institutions

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 to learn more about people and how they behave.

Earn an MBA for advancement in management or 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.

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.

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.

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

Discipline plays vital role in reducing toxicity and pollution of water, ground and air for a better quality of life for all living things.

Consider a master's degree for advancement.
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.
- Bachelor's degree is good background for pursuing technical graduate degrees as well as professional degrees in Business Administration, Medicine or Law.
- 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.
- 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.
- 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.