ENGINEERING

What can I do with this degree?

AREAS

EMPLOYERS

DESCRIPTIONS/STRATEGIES

ANY ENGINEERING DISCIPLINE

Production Sales and Marketing Management Consulting Research and Development 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

Teaching

Law

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.

EMPLOYERS

DESCRIPTIONS/STRATEGIES

BIOMEDICAL

Bioengineering

Design

Development

Manufacturing

Medical Engineering

Instrumentation

Materials

Diagnostic/Therapeutic Devices

Artificial Organs

Medical Equipment

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 strong team work skills.

Many positions require a graduate or professional degree.

Serves as a good background for medical school.

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.

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 an anna anna anna anna an

Obtain research experience.

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.

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.

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.

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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.