What Can I Do With A Major In Engineering?

Any Engineering Discipline
Areas
Production
Sales and Marketing
Management
Consulting
Research and Development
Teaching
Law

Employers
Industry
Business
Federal, state, and local government
Colleges and universities

Strategies & Information
- 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
Areas
Propulsion
Fluid Mechanics
Thermodynamics
Structures
Celestial Mechanics
Acoustics
Guidance and Control
Employers
Aircraft, guided missile, and space vehicle industries
Communications equipment manufacturers
Commercial airlines
Federal government departments: Dept. of Defense (DoD), National Aeronautics and Space Administration (NASA)
Business and engineering firms

Strategies & Information
- 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
Areas
Natural Resources: Soil and water conservation
International Consulting
Environmental Control
Agricultural Structures
Power and Machinery
Electronic Systems
Food Engineering
Genetic Engineering
Engineering Technology

Employers
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

Strategies & Information
- 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.

Biomedical
Areas
Bioengineering: Design, development, manufacturing
Medical Engineering: Instrumentation, materials, diagnostic/therapeutic devices, artificial organs, medical equipment
Rehabilitation Engineering
Bio-environmental Engineering

Employers
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

Strategies & Information
- 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 Areas
Administration: Design and construction, project engineering, control systems, field engineering, process engineering
Operations/Production
Environmental and Waste Management: Development, design

Employers
Independent research institutes
Consulting organizations
Chemical industry: Agricultural chemicals, plastics, industrial chemicals, petroleum, pharmaceutical, cosmetic, food processing, atomic energy development, environmental
Federal government: Department of Energy, Environmental Protection Agency
Manufacturing plants: automotive, airplane, paper, microelectronics, textiles, metals, rubber, food, and beverage

Strategies & Information
- 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.

Civil Areas
Structural
Urban and Community Planning
Construction
Environmental
Water Resources
Transportation and Pipeline
Geotechnical
Photogrammetry, Surveying and Mapping
Materials

Employers
Construction industry
Engineering or architectural firms

Utility companies
Oil companies
Telecommunications businesses
Manufacturing companies
Consulting firms
Railroads
State and federal government agencies

Strategies & Information
- 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 Areas
Power Electronics
Power Systems
Communications
Electronics
Control Systems
Digital Signal Processing
Microelectronics
Image Processing & Robotics
Computer Engineering
Plasma Engineering
Computer Vision
Employers
Manufacturing firms and industry: 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, Mining and metallurgy, Nuclear, Oceanography, Pulp and paper, Textiles, Transportation, Water and wastewater
Public utilities
Federal government: 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

Strategies & Information
- 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.

Industrial
Areas
Operations Research
Applied Behavioral Science Systems
Manufacturing Management
Information Engineering
Computer Systems Design and Development

Employers
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

Strategies & Information
- 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.

Materials Science & Engineering
Areas
Metallurgy
Ceramics
Plastics/Polymers
Composites
Research
Extractive
Process
Applications
Management
Sales
Service
Consulting

Employers
Materials producing companies
Manufacturing companies: 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

Strategies & Information
- 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 Areas
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

Employers
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

Strategies & Information
- 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.

Environmental Areas
Design
Planning
Operations
Administration
Regulations

Employers
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

Strategies & Information
- 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
Areas
Environment and Pollution
Health
Space Exploration
Consumer and Industrial Power
Food Supply
Transportation
Water Supply

Employers
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

Strategies & Information
- Discipline studies basic components of neutrons, protons, electrons and all matter; deals with inanimate substances.

General Information and Strategies
- 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.

Engineering Science and Mechanics
Areas
Engineering Mechanics
Biomedical Engineering
Computational Mechanics
Engineering Materials

Employers
Industry
Manufacturing
Research organizations

Strategies & Information
- Interdisciplinary program with broad training in engineering science, mathematics, and physical or biological science.
**Major Exploration**
University of Delaware  
http://www.udel.edu/CSC/etm.html

Rutgers, The State University of New Jersey  
http://careerservices.rutgers.edu/CareerHandouts.shtml

**Career Exploration**
Sloan Foundation Careers in Science, Technology, Engineering and Mathematics  
www.careercornerstone.org/

Discover Engineering  
www.discoverengineering.org

Engineering Jobs with the Federal Government  
http://www.makingthedifference.org/federalcareers/engineering.shtml

Explosives Engineering  
www.explosives.org

Professional Science Masters  
www.sciencemasters.com

**Job Postings**
SMC Student Job Search - www.stmarys-ca.edu/studentjobs

Engineer Jobs  
www.engineerjobs.com

PhDs.org - http://jobs.phds.org/engineering

**Professional Associations**
Junior Engineering Technical Society (JETS)  
www.jets.org

National Society of Professional Engineers  
www.nspe.org

Biomedical Engineering Society  
www.bmes.org

International Society of Explosives Engineers  
www.isee.org

American Society of Mechanical Engineers  
www.asme.org

American Institute of Aeronautics and Astronautics  
www.aiaa.org

The Institute of Electrical and Electronic Engineering  
www.ieee.org

American Nuclear Society  
www.new.ans.org

The American Institute of Chemical Engineers  
www.aiche.org

American Academy of Environmental Engineers  
www.aaee.net

The Institute of Industrial Engineers  
www.iienet2.org

American Society of Agricultural and Biological Engineers  
www.asabe.org

Society of Women Engineers  
www.swe.org

National Academy of Engineering  
www.nae.edu

Theta Tau Professional Engineering Fraternity  
www.thetatau.org
Occupational Outlook Information
Engineers
http://stats.bls.gov/oco/ocos027.htm

Engineering and Natural Sciences Managers
http://stats.bls.gov/oco/ocos009.htm

Computer Software Engineers
http://stats.bls.gov/oco/ocos303.htm

Chemists and Materials Scientists
http://stats.bls.gov/oco/ocos049.htm

The Career Center
Br. Urban Gregory Hall
925.631.4600
www.stmarys-ca.edu/careercenter

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