Career-Related Services

Career Counseling
Graduate School Planning
Career Resource Library
Career Assessments
Internship Planning
Credentials Services

Hours

Monday - Friday
8 am - 5 pm
Engineering
Career Options for Engineering Majors

This booklet contains specific information about majoring in engineering at The University of Texas at Austin, as well as career opportunities related to this major. The careers listed typically require a bachelor’s degree, and special certification or training requirements are noted. Please use this booklet as an idea generator, rather than as a comprehensive list of all career options for engineering majors. The career descriptions were obtained from the Center for Strategic Advising & Career Counseling (CSA&CC) library resources and career websites (see listing of sources on last page).

For engineering majors, there are many career options that require a master’s or doctoral degree but do not require any particular undergraduate degree. Examples of these include law, international affairs, museum administration, library and information studies, hospital administration, and many more. For careers requiring graduate education, please visit our library or speak to a career counselor.

The CSA&CC offers many other services and resources to help you with your career planning. These include:

- Career Counseling
- Career Assessment
- Career Information Library
- Internship Information
- Graduate School Planning Assistance

Visit our website at utexas.edu/ugs/csacc or call (512) 232-8400 for more information
MAJORING IN ENGINEERING AT
THE UNIVERSITY OF TEXAS AT AUSTIN

Departmental Website: www.engr.utexas.edu
Campus Location: ECJ 10.310
Phone Number: 471-1166

DESCRIPTION OF MAJOR
Engineering is the discipline and profession of applying scientific knowledge and utilizing natural laws and physical resources in order to design and implement materials, structures, machines, devices, systems, and processes that realize a desired objective and meet specified criteria.

AREAS OF STUDY
Aerospace Engineering
- Atmosphere Flight
- Space Flight

Architectural Engineering
- Structures
- Building Environmental Systems
- Construction Materials
- Dual Degree program with Architecture

Biomedical Engineering
- Biomedical Imaging and Instrumentation
- Cell and Bimolecular Engineering
- Computation Biomedical Engineering

Chemical Engineering
- Process Analysis and Control
- Materials Engineering
- Electronic Materials Engineering
- Environmental Engineering
- Process Engineering
- Product Engineering
- Biomedical Engineering and Premedical/Predental
- Biotechnology
Civil Engineering
- Construction Eng. And Project Management
- Construction Materials
- Environmental Engineering
- Geotechnical Engineering
- Structures
- Transportation
- Water Resources

Electrical and Computing Engineering
Electrical Engineering Technical Areas:
- Communications, Signal Processing, Networks and Systems
- Electronics and Integrated Circuits
- Energy Systems and Renewable Energy
- Fields, Waves, and Electromagnetic Systems

Computer Engineering Technical Areas:
- Computer Architecture and Embedded Systems
- Software Engineering and Design

Geosystems Engineering and Hydrogeology

Mechanical Engineering
- Biomechanical Engineering
- Dynamics and Control
- Manufacturing and Design
- Materials Engineering
- Nuclear and Radiation Engineering
- Operations Research and Industrial Engineering
- Thermal/Fluid Systems Engineering

Petroleum Engineering

EXAMPLES OF COURSES
ASE 366L Applied Orbital Mechanics
Selected topics in satellite motion and satellite applications, orbital coordinate systems, time, rendezvous and intercept, interplanetary trajectories, perturbing forces and perturbed trajectories.
BME 339 Biochemical Engineering
Restricted to biomedical engineering majors. Microorganisms in chemical and biochemical synthesis; genetic manipulation of cells by classical and recombinant DNA techniques. Enzyme technology; design of bioreactors and microbial fermentations; separations of biological products

CHE 363 Separation Processes and Mass Transfer
Design and analysis of equilibrium and mass transfer based on separations such as absorption, chromatography, crystallization, distillation, extraction, and membrane-based processes.

CE 376 Airport Design
Factors influencing the location, design, and construction of airports, including lighting, terminal facilities, noise-level control, aircraft control, airspace utilization, and automobile parking.

ARE 371 Energy Simulation in Building Design
Fundamentals of building energy simulations, analytical models for heat transfer in buildings, general numerical methods for solving equations from the analytical models, use of energy simulation tools in building design analysis, and parametric analyses used to study various operational parameters that affect energy use in buildings.

EE 325K Antennas and Wireless Propagation
Solutions of time-varying Maxwell’s equations with applications to antennas and wireless propagation; antenna theory and design, array synthesis; electromagnetic wave propagation, scattering, and diffraction; numerical methods for solving Maxwell’s equations.

ME 337C Introduction to Nuclear Power Systems
Radioactivity, nuclear interactions: fission and fusion, fission reactors, nuclear power systems, nuclear power safety

PGE 331 Fundamentals of Reservoir Engineering
Classification of subsurface reservoirs by type and recovery mechanism; reserve estimates based on volumetric, material balance and decline curve techniques; transient fluid flow theory applied to predicting production rates; introduction to displacement processes.
PGE 364 Natural Gas Engineering
Production, transportation, and storage of gas; metering and gauging; performance of wells; estimation of gas reserves; prevention of waste and utilization of natural gas.

Skills gained by Engineering Majors
Evaluating data and problem solving
Analytical reasoning, technical and spatial abilities
Researching and conducting experiments
Ability to work with others and independently

Overview Of Engineering Career Options

An engineering career provides an opportunity to apply math and science to solve real-world problems. This pamphlet will provide examples of careers illustrating the wide variety of roles, work settings and fields of specialty available to job seekers with engineering backgrounds. Professional licensure and graduate education in engineering and other professional fields can open up further professional opportunities.

While specific engineering fields offer their own focus areas, which are detailed in the following section, engineers also have general career opportunities such as the ones described below.

Analytical
Use mathematical models to analyze engineering product designs

Consultant
Offer consulting services to individuals and organizations; provide advice or solutions to engineering issues and problems

Design
Conceptualize something that has not existed before and use knowledge of materials, processes, systems and nature to adapt the concept to machines, equipment, structures, production methods, and government regulations
Development
Coordinate development of new products from product design to full product production

Facilities
Plan, design, construct, operate, maintain and renovate facilities as well as their systems and equipment

Field Service
Install, maintain, and repair products and systems at customer service sites

Forensic
Provide expert evaluation and opinions on technical issues related to legal matters; conduct investigations and tests

Manager
Oversee technical operations on a daily basis; plan, direct, and coordinate work activities of employees

Production
Create products according to the quantity requested at the quality specified and demanded by customers

Project
Manage and coordinate engineering projects that may include engineers from other disciplines, technicians, and support staff

Regulatory Affairs
Ensure that companies are in compliance with applicable laws, regulations, and guidelines relating to development, testing, manufacturing, and marketing practices

Research
Conduct pure research in university settings to find out why something occurs in nature or the man-made world, or conduct applied research in industrial settings find a way to accomplish a specific objective that can become a marketable product or service
Sales
Provide technical assistance to customers about products or services

Test
Carry out tests and evaluations on devices, products, processes, or systems

**Career Opportunities in Specific Engineering Fields**

**Aerospace Engineering**
Aerospace engineers work in all phases of research and development in aeronautics (aircraft) or astronautics (spacecraft). They research, design, develop, test, and manufacture aircraft, spacecraft, rockets, and missile systems and their engines, parts, components, and systems. They also assist with the design and implementation of space missions. Some of their tasks include selecting the appropriate launch vehicle, scheduling the launch time, analyzing and plotting missile trajectories and spacecraft routes, and determining which equipment and personnel are the best to complete the mission. Aerospace engineers also assist in other engineering fields, such as architectural engineering when analyzing the impact of wind on buildings or biomedical engineering when researching new designs for artificial hearts. Some of the focus areas within aerospace engineering are listed below.

**Acoustics**
Analyze the production and behavior of sounds, such as internal machine noise and sonic booms, and the effects of these sounds on the surroundings

**Celestial Mechanics**
Determine the paths of rockets and planets

**Fluid Mechanics**
Work with the motion of gases and liquids and with the effects of the motion on bodies in the medium to determine a vehicle’s shape and configuration
Guidance and Control
Develop systems that automate the control, maneuverability, and path of a space vehicle so that it can fulfill its objectives

Propulsion
Analyze matter as it flows through various devices such as combustion chambers, diffusers, nozzles, and turbochargers

Structures
Determine whether frameworks are strong enough to withstand loads applied to them and stiff enough to avoid excessive deformation and deflection

Thermodynamics
Study the thermal balance within vehicles, thermal effects produced by high-speed reentry into the atmosphere, and environmental control systems

SAMPLE CAREERS IN AEROSPACE ENGINEERING
Avionics Engineer
Design, test, produce and install electronics and electro-mechanical and computer systems in aircraft, spacecraft, missiles and rockets. Ensure federal aviation regulation compliance. Develop software to recognize in-flight errors or failures.

Flight Test Engineer
Conduct flight tests and evaluations of aircraft characteristics, performance, and systems. Work with test pilots to perform tests in varied weather conditions and locations. Interpret all data recorded during flight tests and write technical reports. Write procedures manuals for test pilots and ensure safety by reviewing evacuation plans and crew members’ roles before testing.

NASA Engineer
Conduct basic or applied research in aeronautics, space or other areas. Apply scientific knowledge to design new or improved space vehicles, instruments, devices, and products. Develop ways to apply NASA inventions to industries such as transportation, food, manufacturing, and firefighting.
ARCHITECTURAL ENGINEERING
Architectural engineers integrate all aspects of building performance with the building’s architectural requirements. They typically work on projects alongside architects and civil, electrical, environmental, and mechanical engineers. Generally, the work of architectural engineers focuses on four areas:

Building Environmental Systems Engineering
Design the environment of the building: thermal comfort, moisture control and energy efficiency, indoor air quality, illumination, and electrical systems

Construction Engineering and Project Management
Combine the technical education of engineering with the financial, legal, and administrative skills of business management to oversee methods and materials for construction, cost estimating, and planning and scheduling of construction

Construction Materials
Focus on the properties and behavior of the principal structural materials, such as concrete, steel, wood and masonry, along with the architectural materials used to complete the building

Structural Engineering
Design and analyze buildings for strength, serviceability and cost-effectiveness in resisting vertical forces due to gravity, and lateral forces due to wind or earthquake

SAMPLE CAREERS IN ARCHITECTURAL ENGINEERING
Architectural Engineer
Develop designs and build prototypes for the construction market. Adapt design materials to enhance and optimize both their performance and aesthetic attributes. Fabricate basic prototypes for field-testing and customer sampling. Design and test prototypes to validate performance attributes and durability.
Engineer (Architectural/Structural)
Design, detail, draft, and prepare specifications for architectural and structural building projects; manage assignments including coordination of architectural, civil, mechanical, and electrical disciplines and sub-consultants; field inspections, site visits, and preparation of reports; and client interaction as required for projects.

Structural Engineer
Use experience/knowledge in steel, concrete, wood and masonry for industrial, commercial and education building types to do structural building design, studies, reports and mentoring.

BIOMEDICAL ENGINEERING
Biomedical engineers apply knowledge of engineering and human anatomy to the development and maintenance of systems and equipment that assist medical and other healthcare professionals in diagnosing and treating patients. People who are drawn to biomedical engineering enjoy serving the public, working with living systems, and taking a people-oriented approach to engineering. Biomedical engineering is a rapidly changing field where new technology is designed and fabricated on a continual basis. Nine focus areas are generally recognized within the field of biomedical engineering.

Bioinstrumentation
Create devices used in diagnosis and treatment of disease

Biomaterials
Research, identify, and manipulate properties and behavior of living tissue and artificial materials for use in implant materials to ensure that they will not cause health risks and that they will remain mechanically strong for years of use within living bodies

Biomechanics
Apply statics, dynamics, fluids, solids, thermodynamics, and continuum mechanics to the study of motion, material deformation, and flow of fluids within the body.
Cellular, Tissue and Genetics
Use knowledge of anatomy, biochemistry, and mechanics of cellular and subcellular structures to understand disease and intervene at specific sites

Clinical
Purchase advanced medical instruments for hospitals and work with medical teams to adapt the instruments to specific needs

Medical Imaging
Use knowledge of sound, radiation, and magnetism to design and develop equipment that generates images for disease diagnosis

Orthopedics
Apply engineering and computational mechanics to understand the function of bones, joints, and muscles in the design of artificial joint replacements

Rehabilitation
Design and develop prosthetics and other assistive devices that address sitting, positioning, mobility and communication

Systems Physiology
Use computer modeling to study the function of living organisms across the spectrum from bacteria to humans

SAMPLE CAREERS IN BIOMEDICAL ENGINEERING
Bioengineering/ Surgery Faculty
Develop an independent research program aligned with the goal of developing artificial organs. Teach in the Bioengineering graduate program.

Program Director, Advanced Technologies and Surgery Branch, National Institutes of Health
Work for a national governmental agency in a collaborative, team-based environment, and make a major contribution to the future development of innovative technologies and surgical practices for the diagnosis, prevention, and treatment of cardiovascular diseases.
Systems Engineer IV
Work on an engineering team that has developed a medical device/ instrument utilized by labs and hospitals in the processing of the company’s diagnostics that incorporates robotics, automation, and systems integration. Plan, develop and implement reliability programs, modeling and analysis, statistical analysis and reliability testing.

CHEMICAL ENGINEERING
Chemical engineers take raw materials and turn them into new technologies and everyday products, which they evaluate for practicality and economic viability. They combine the science of chemistry with the discipline of engineering to develop more efficient ways of producing petrochemicals, artificial organs, and other products. Specialties within chemical engineering cover a wide range of roles, including research and development, design and construction, operations and production, technical sales, and environmental and waste management.

Design and Construction (Project Engineers)
Develop proposals for chemical manufacturing facilities that outline capital and operating costs and anticipated profitability, and prepare detailed specifications, drawings and schedules once proposals are accepted. Select and size equipment for optimal production, and design computerized control systems that address quality, efficiency and safety considerations.

Environmental and Waste Management
Recover usable materials from waste products and reduce pollution caused by the manufacturing process. Design waste storage and treatment facilities and pollution-control strategies for plant operations.

Operations and Production
Ensure that a manufacturing facility operates safely and economically and meets customer needs regarding quality and quantity.
Research and Development
Research: develop technology to improve existing products or explore new product possibilities. Product development: work directly on improving existing products or developing new products. Process research and development: develop methods to change raw materials into finished products. Package development: design packaging that addresses health, product quality, safety and environmental concerns.

Technical Sales
Introduce new products to customers and assess why some products are more commercially viable than others. Relate information about customer satisfaction to engineers in other areas, such as research and development.

SAMPLE CAREERS IN CHEMICAL ENGINEERING
Biochemical engineer
Research, develop, design, or operate the biological processing used in the production of chemicals, foods, medicines, and other products. Use computers to simulate processes, products, and manufacturing plants. Monitor environmental impact of production.

Chemical process engineer
Research, develop, design or operate the chemical processing of petroleum and petroleum products. Examples of projects include increasing yield from petroleum fields, developing new products from recycled waste byproducts, and creating new refining processes and systems.

Food engineer
Research, develop, design, or operate the chemical processing of food and food products. Conduct tests to control variables such as pressure and temperature, implement safety procedures, and design production processes that maximize efficiency.

CIVIL ENGINEERING
Civil engineers design and build infrastructure to develop and improve the quality of life for communities. They typically work as part of an interdisciplinary team made up of other engineers,
scientists, contractors, project owners, architects, bankers, lawyers, and government officials. Civil engineers generally work in one of five areas of focus:

**Environmental**
Work to control environmental pollution and manage various aspects of water resources from designing water treatment and distribution systems to wastewater collection, treatment facilities and containment of hazardous wastes

**Geotechnical**
Make measurements of the earth’s surface using satellite and other imagery to locate and design engineering projects. Analyze the properties of soil and rock in relation to structures, pavements, and underground facilities. Design and construct dams, levees, building foundations, offshore platforms, and tunnels

**Structural**
Analyze and design structures, such as stadiums, skyscrapers, offshore oil structures, space platforms, amusement park rides, bridges, office buildings, and homes to ensure that they safely perform their purpose

**Transportation and Pipeline**
Design and maintain streets, highways, mass transit systems, railroads airports, ports and harbors to ensure safe and efficient movement of people, goods, and materials. Design and maintain pipelines to ensure a steady, reliable flow of gas, oil, and other commodities

**Urban Planning and Construction**
Analyze information to help coordinate community projects and turn facility designs into reality by combining knowledge of construction methods and equipment with principles of financing, planning, and managing

**SAMPLE CAREERS IN CIVIL ENGINEERING**

**CIVIL BRIDGE ENGINEER**
Design bridge/transportation projects, which may include search and analysis, traffic flow, street and highway design, road/storm/ sewer drainage, street design, signage, striping & grading.
Hydrogeologist
Conduct site investigations, hydro-geologic investigations, and interpretations, boring /well logging, well monitoring, well design and groundwater monitoring. Must be familiar with state water regulatory agency requirements.

Resident Engineer
Serve as the focal point for on-site activities and be responsible for the monitoring, inspection, and documentation of the construction activities of public works projects, including drainage structures, waste water systems, transportation systems, capital improvements, water supply and distribution systems, to ensure compliance with applicable laws, ordinances, standards, plans, and specifications.

COMPUTER ENGINEERING
Computer engineers design, develop, manufacture, install, and test computer equipment and software, using advanced communications or multimedia equipment. Computer engineers typically specialize in one of the three areas listed below.

Computer hardware or electronics
Research, design, develop, and test computer hardware and supervise the manufacture and installation of computer systems.

Computer information science
Design the arrangement of input and output data for databases.

Computer systems
Software: make computer chips function to produce a desired result.
Network: install and manage computer networks, solve problems and plan new information technology (IT) projects.
SAMPLE CAREERS IN COMPUTER ENGINEERING

Computer Systems Engineer
Work with government personnel to establish and execute system requirements for research laboratories using facility-specific and test article-specific requirements. Perform system administrator functions and maintain relationships with clients through reports and presentations, along with less formal communications.

Intermediate Computer Engineer
Provide engineering support to the Agency IP Address Management (IPAM) Design and Migration teams. Assist with developing, presenting, and executing test plans, migration plans, and operational/migration readiness reviews in the migration of systems to a consolidated IPAM service.

Statistics Engineer/ Human Computer Interaction
Create and maintain a future statistics intranet. Be the ground-breaker who defines its infrastructure, working with all levels of company including board members, product engineers, and business leads.

ELECTRICAL ENGINEERING
Electrical engineers design, develop, test and supervise the manufacture of electrical and electronic equipment. They work with electric utilities on generating, controlling and transmitting power. Electrical engineers also work with electric motors, machinery controls, lighting, and wiring in automobiles, aircraft, radar and navigation systems, and broadcast and communication systems. Electrical engineering has more than 30 recognized specializations. The four most common specialties are listed below.

Communications
Control Systems
Analyze and design automatic regulators, guidance systems, numerical control of machines, computer control of industrial processes, and robotics to identify system stability, system performance criteria, and optimization

Electronics
Design circuits, components, equipment, and computer programs, and produce electronic devices toward the goals of improving the safety of travel navigation or the effectiveness of bionic replacements of body parts or the enjoyment of consumer and home electronics

Power
Work with power generation, transmission, distribution, application or a combination of these tasks toward the goal of efficiently converting static forms of energy, such as waterpower, solar power, fossil fuels, and chemical agents, into usable electric power

SAMPLE CAREERS IN ELECTRICAL ENGINEERING

Electrical Engineer
Direct, review, coordinate, and approve electrical engineering activities. Recognize long-term facility needs and design projects to fulfill those needs. Propose prospective budgets based on engineering knowledge to fund foreseeable maintenance and other special projects. Serve as the decision maker on suggested design changes or implementations.

Electrical Engineer/Electronics Engineer/ Computer Scientist
Integrate, ensure interoperability, troubleshoot, test, train and oversee the installation and implementation of tactical and non-tactical information management technology used by the U.S. Navy for deployment onboard various subsurface, surface, shore and air platforms worldwide to complete its operational missions.
Telecommunications Engineer
Develop design and engineering specifications for client telecommunications network, including analog and digital, microwave radio, fiber optic systems, leased circuits, two-way radio (both conventional and trunked), voice networks and Wide Area Networks (WANs). Work with users to research and recommend telecommunications options. Develop short term and long term plans to meet client telecommunication needs.

ENVIRONMENTAL ENGINEERING
Environmental engineers use the principles of biology, chemistry and engineering to reduce pollutants and toxins in the air, water, and ground. Environmental engineering provides an expanded focus on what was previously called sanitation engineering, a sub-discipline of civil engineering. Focus areas within environmental engineering include air pollution control, industrial hygiene, radiation protection, hazardous waste management, recycling, toxic materials control, water supply, wastewater management, storm water management, solid waste disposal, public health, and land management. Three of the focus areas are described below.

Air quality
Plan and oversee analytical and evaluation studies to identify pollution problems, determine control methods, and assess the reliability of pollution control systems. Ensure that industries comply with regulations and advise about appropriate enforcement as an expert witness before courts, advisory boards and commissions

Waste management
Design landfills and other waste management facilities. Create new waste management technologies and devise and implement new waste collection programs. Address public concerns, inspect sites, and oversee emergency cleanup work and remediation. Conduct environmental studies and serve as an expert witness before government commissions and review boards
Wastewater
Evaluate the impact of sewage discharge on groundwater, rivers, lakes, marshlands and oceans. Research water treatment technologies. Review local community needs, develop improvements to existing systems, and design new technologies and equipment. Oversee construction and operation of facilities. Test facilities for compliance with government regulations and health and safety standards.

SAMPLE CAREERS IN ENVIRONMENTAL ENGINEERING
Entry-level Environmental Engineer
Work for a consulting company. Compile data for project reports, collect and compile field data as required, assist in proposal efforts as directed, document technical data for management review, provide other entry level duties as assigned, assist with preparation of labor/material estimates and design packages for clients.

Environmental Engineer
Work in the remediation field, assisting with design calculations, bid packages, and specifications for remedial technologies. Handle operation and maintenance of field remediation systems. Collect environmental samples and oversee field investigations. Prepare industrial compliance documents and plans. Manage laboratory data and report preparation.

Environmental Engineer (Principal Engineer)
Work in the nuclear power industry, managing teams that develop environmental regulatory strategies, permits, licenses, environmental reports, and impact statements. Plan, schedule, and conduct assignments. Evaluate and solve complex environmental engineering and regulatory problems that require use of innovative methods or resolution of conflicting objectives.

INDUSTRIAL, MANUFACTURING AND SYSTEMS ENGINEERING
Industrial, manufacturing and systems engineers employ their knowledge of engineering, organizational behavior and the sciences to plan, design, and control production and service
systems toward the goal of improving productivity, quality, and efficiency. They find the right combination of human resources, natural resources, and man-made structures and equipment to optimize productivity. Two focus areas within this field are logistics and supply chain management.

**Logistics**
Cut costs, improve service, and boost profitability by taking a systems approach to getting goods and services to the marketplace in a timely, cost-effective manner

**Supply chain management**
Integrate the processes of supplies purchasing, overall company organization, and turning raw materials into products that satisfy customers

**SAMPLE CAREERS IN INDUSTRIAL, MANUFACTURING AND SYSTEMS ENGINEERING**

**INDUSTRIAL ENGINEER**
Design, improve, and install work methods and procedures that help organizations increase their efficiency and cut costs. Create unique systems that involve people, information, equipment, energy, and materials. Use a flexible approach to integrate knowledge of math, statistics, and human behavior.

**Manufacturing engineer**
Develop, design, install, and monitor all the systems involved in the manufacturing process. Help companies maximize efficiency while shortening product development times and respond to customer needs to ensure product variety, quality, and fair pricing. Develop safe working conditions for manufacturing employees.

**Systems engineer**
Define, develop and consolidate entire systems from conception to operation, including systems that involve people, facilities, data, services, machines, and methodologies. Use an interdisciplinary, collaborative approach to address the technical and business needs of clients. Plan project details such as cost, schedule, and social issues that may arise as well as the testing, manufacture, and disposal of a system.
MATERIALS ENGINEERING
Materials engineers test materials to make sure that they will not fail and endanger public safety. They improve the performance of existing materials and invent new materials to meet new needs. Materials engineering is comprised of four general focus areas.

Ceramics
Work with nonmetallic, inorganic materials produced from raw materials to create new products or new applications of existing products for space transportation, medicine, communication, utilities, electronics, and semiconductor industries.

Materials Science
Combine principles of metallurgy, ceramics and polymer chemistry to produce new composite materials or make existing materials more useful for military and transportation industry needs. Includes development of nanotechnology applications.

Metallurgical
Develop, manage and control processes for separating and concentrating minerals. Remove metals from ores, concentrates, and scrap. Make metals and alloys into useful products. Control properties of metals and alloys. Join metals together efficiently while maintaining joint integrity.

Plastics
Develop, convert and apply plastics to markets, such as packaging and construction, transportation, consumer and institutional products, furniture and furnishings, electrical and electronic components, adhesives, and inks and coatings.

SAMPLE CAREERS IN MATERIALS ENGINEERING
Materials & Process Engineer - Analytical Lab Chemist
Collaboratively problem-solve with technicians and engineers as a member of a materials test lab. Prepare and test samples of organic materials for the purposes of qualification, failure analysis, process improvements, special projects and engineering development. Create documentation and calibrate and ensure upkeep of equipment.
Senior Component Application Engineer
Develop, identify, evaluate, and recommend new components or materials and manufacturers for new product requirements and improvement of existing manufacturing process yields in the defense communications field. Mentor application engineers in this capacity.

Senior Consultative Metallurgist

MECHANICAL ENGINEERING
Mechanical engineers design, develop and produce devices for consumers, along with tools needed by other engineers, in areas such as power generation, energy conversion, machine design, manufacturing and automation, and control of engineering systems, among other areas of focus. Mechanical engineers fill a wide range of roles, including research, development, design, testing, manufacturing, operation and maintenance, marketing and sales, and administration, toward the following goals:

- Using energy from natural sources and converting it economically into other forms of energy
- Designing and fabricating machines to assist human work
- Processing materials into useful products
- Educating and training specialists and technicians on the use and maintenance of mechanical systems
- Connecting society with technology

At The University of Texas at Austin, the focus areas for mechanical engineering include acoustics, biomechanical engineering, dynamic systems and control, engineering computer graphics, manufacturing and design, materials engineering, nuclear and radiation engineering, operations research and industrial engineering, and thermal/fluid systems. Most of these focus areas are described earlier in the other specialized
engineer fields.

SAMPLE CAREERS IN MECHANICAL ENGINEERING

Automotive Engineer
Develop, design, manufacture and test automobiles and other vehicles. Work to maximize vehicle efficiency, reliability, safety, and performance. Test engine electrical systems, create design drawings, analyze vehicle structure and engine failure, and develop modified component designs.

Robotics Engineer
Research, design, and produce robots. Design robotic controls, create testing methods and processes, test scale models, and observe robot performance in varied conditions. Recommend design changes, estimate project costs, write technical reports, and coordinate designs with technical artists and drafters. Collaborate with team members to resolve problems and provide technical assistance.

Roller-Coaster Engineer
Plan, design, test and maintain roller-coaster rides. Conduct laboratory research to learn about materials and mechanical systems and use results to build virtual or actual prototypes. Select machinery, equipment, and facilities for manufacturing process that will ensure safety and efficiency. Develop methods for testing and ensure that all systems comply with customer specifications.

PETROLEUM ENGINEERING
Petroleum engineers implement technologies to efficiently and thoroughly search for and retrieve oil and natural gas with increasing emphasis on environmental concerns. Five focus areas are associated with petroleum engineering.

Drilling
Work with geologists and other specialists to design the drilling apparatus and support operations to extract fossil fuel
Environmental
Specialize in environmental regulations and environmental protection

Production
Develop processes to retrieve the oil and natural gas in an efficient and cost-effective manner using water, steam, gas, and chemical injection, computer-controlled drilling and fracturing

Research and development
Develop new technology to more completely recover and lower the cost of retrieval of fossil fuels

Reservoir
Use computer models to simulate the petroleum reserve and the performance of different techniques of recovery for cost-benefit analysis to justify recovery efforts

SAMPLE CAREERS IN PETROLEUM ENGINEERING

LEAD DRILLING ENGINEER
Design development drilling programs from concept through drilling for projects are located in the U.S. and overseas. Supervise other drilling engineers. Travel overseas several weeks per year.

Reservoir Engineer
Identify, evaluate technical and economic merits, recommend and activate oil and gas investment opportunities.

Senior Planning Analyst –Reservoir Engineering
Coordinate preparation of annual budgets and re-forecasts for the Gulf of Mexico and Offshore California assets.
SOURCES


Dice, The Career Hub for Tech Insiders: www.dice.com/jobsearch

Biomedical Engineering Society: www.bmes.org.

Career Builder: www.careerbuilder.com/jobseeker/jobs

Engineering Geniuses, International Electrical Engineers Job Openings: www.engineeringsolutions.com

Materials Engineering Jobs: www.materialsjobs.com

Shive-Hattery Architecture, Engineering: www.shive-hattery.com/engring.htm

Society of Petroleum Engineers, Gulf Coast Section: www.spegcs.org/en/jobs/search.asp

UT Graduate Studies in Architectural Engineering: www.ce.utexas.edu/dept/area/arch

UT Mechanical Engineering Department: www.me.utexas.edu/undergrad/areas.php

USAJobs, Working for America: www.jobsearch.usajobs.gov

© Center for Strategic Advising & Career Counseling, UT Austin