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ENGINEERING OFFERS MORE CAREER OPTIONS THAN ANY OTHER DISCIPLINE. IT'S A PROFESSION THAT CAN TAKE YOU FROM THE DEPTHS OF THE OCEAN TO THE FAR REACHES OF OUTER SPACE, FROM WITHIN THE MICROSCOPIC STRUCTURES OF THE HUMAN CELL TO THE TOP OF THE TALLEST SKYSCRAPERS. THESE ARE SOME OF THE MOST POPULAR ENGINEERING FIELDS:

AEROSPACE ENGINEERING

The intellectual descendants of the Wright brothers, aerospace engineers design and develop some of the world's most marvelous machines. Commercial airplanes, military fighter jets, and space telescopes are all brainchildren of aerospace engineers. But aerospace technology has plenty of earthbound applications, too—aiding in the design of race cars and golf balls.

AGRICULTURAL ENGINEERING

Cooks aren't the only people behind tasty meals—we can also give agricultural engineers plenty of thanks for our daily bread. They devise ways to make sure crops get the proper nutrients to grow efficiently, design machines that harvest crops, and figure out environmentally friendly ways to get rid of agricultural waste. You won't always find an agricultural engineer down on the farm though; many work in labs where they experiment with promising indoor farming techniques such as hydroponics—the science of growing plants in fluids without dirt.

ARCHITECTURAL ENGINEERING

Working alongside architects, architectural engineers help make a building a place to live, work, or play. They work on engineered systems like the structure, lighting, or ventilation of a building, and they also focus on safety, cost, and construction methods that are most appropriate. For example, as the U.S. population grows in the Southwest, more and more architectural engineers are investigating new ways to build on land where there is only sand and sagebrush.

BIOENGINEERING/ BIOMEDICAL ENGINEERING

Bioengineering brings engineering design and technology into the fields of biology and medicine. Bioengineers often work with biologists and medical doctors to develop medical instruments, artificial organs, and prosthetic devices. But bioengineering also has applications beyond the medical realm, often crossing over into agricultural and environmental engineering.

CHEMICAL ENGINEERING

Chemical engineers take raw materials and turn them into the products that we use every day. This means that they are crucial to producing pharmaceuticals, soft drinks, and even make-up. Many chemical engineers work with petroleum and plastics, although both of these are the subject of independent disciplines. The term "environmental engineering" also applies to certain areas of chemical engineering, such as pollution control.

CIVIL ENGINEERING

Working in one of the largest branches of engineering, civil engineers deal with buildings, bridges, dams, roads, and other structures. They plan, design, and supervise the construction of facilities such as high-rise buildings, airports, water treatment centers, and sanitation plants. In the near future, civil engineers will design the special rail beds for the magnetic levitation trains of tomorrow. And in the distant future of sci-fi speculation, it will be civil engineers who make Mars a hospitable habitat for humans.

COMPUTER/SOFTWARE ENGINEERING

Computer engineers deal with all aspects of computer systems including design, construction, and operation. Consequently, computer engineers can specialize in digital systems, operating systems, computer networks, software, and hardware. And because corporations put logic devices in everything—cars, toasters, telephones—computer engineers are rarely at a loss for work. But computer engineers also work within other engineering subdisciplines. For example, computer engineers might team up with civil engineers to design the software for a computer simulation that will test stress points in a bridge before it is built.

ELECTRICAL ENGINEERING

If you can switch it on, chances are that an electrical engineer had something to do with it. Electrical engineers are the big movers and shakers of the energy world—literally. They take energy from fuel cells, hydroelectric plants, turbines, and solar panels and move it to homes, factories, and businesses. Electrical engineers also move information from place to place. We can thank them for television, satellite transmissions, and cellphones.

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ENVIRONMENTAL ENGINEERING

People often say that they are concerned with the environment, but environmental engineers are the people who prevent environmental damage and fix existing problems. They assist with the development of water distribution systems, recycling methods, sewage treatment plants, and other pollution prevention and control systems. Environmental engineers constantly seek new ways to reduce air pollution and the use of pesticides, and keep society both modern and earth-friendly.

ENGINEERING MANAGEMENT

To say that engineering managers manage is a bit of an understatement. What they do is administer large technical engineering and research projects and budgets. They specialize in planning, organizing, allocating resources, and directing and controlling activities that have a technological component. Engineering managers are distinguished from other managers by the fact that they posses both an ability to apply engineering principles and a skill in organizing and directing technical projects and people in technical jobs.

INDUSTRIAL ENGINEERING

Industrial engineers organize the people, information, energy, materials, and machines involved in the production process. They make things work better, more safely, and more economically. Industrial engineers often work in manufacturing—dealing with design and management, quality control, and the human factors of engineering. But many industrial engineers are promoted to management systems because their training makes them ideal for dealing with operations, business planning, financial analysis, and project management.

MECHANICAL ENGINEERING

Mechanical engineers design and develop everything you think of as a machine—from supersonic fighter jets to toasters to bicycles. And mechanical engineering often influences products that aren't necessarily machines—shoes, light bulbs, and even doors. Many mechanical engineers work in the areas of air conditioning and refrigeration, automotives, manufacturing, welding, and robotics. But others cross over into other engineering disciplines, working on everything from artificial organs to massive manufacturing machines.

MATERIALS ENGINEERING

Materials engineers work with stuff like plastics, metal, and ceramics, or, more accurately, they make this stuff work for us. They develop, change, and use different processes to turn raw materials into useful substances with desirable properties. They also create strong new materials that resist corrosion. Teams of materials engineers created the U.S. Air Force's "stealth" technology that makes a fighter plane's surface nearly invisible to radar. Subdisciplines of materials engineering include metallurgical engineering, which deals only with metals, and ceramic engineering, which involves utilizing clay in modern electronic components.

MINING ENGINEERING

Mining engineers are the people who figure out how to get valuable resources out of the ground. Along with geologists, they locate, remove, and appraise minerals they find in the earth. Mining engineers also lay out the mines, supervise their construction, figure out how the materials will be moved out of the mine, and how to return the area to its natural state, eventually. Mineral and mining engineers need to know how to safely and economically mine the natural wealth underground without destroying the land above or disrupting the people that live on it.

NUCLEAR ENGINEERING

By harnessing and using one of the most powerful energy sources known, nuclear engineers research and develop methods and instruments that use nuclear energy and radiation to benefit humanity. They can work at nuclear power plants with nuclear fuel and deal with the safe disposal of nuclear waste. Some nuclear engineers specialize in the development of nuclear power sources for long-distance spacecraft; others find industrial and medical uses for radioactive materials, such as equipment to diagnose and treat medical problems.

PETROLEUM ENGINEERING

SYSTEMS ENGINEERING

Today's engineering advances usually rely on more than just one discipline, and it's the systems engineer's job to bring all those pieces together and make them work harmoniously, while still meeting performance and cost goals, and keeping on schedule. While not generally specialists in one particular field, systems engineers are well versed in all technical areas so they can effectively fulfill their role as a "team captain."