Careers in Engineering, Geology and Geophysics

the facts

APEGGA

The Association of Professional Engineers, Geologists and Geophysicists of Alberta

Engineers, geologists and geophysicists are professionals who work with **ideas**, technology, information and people. They **invent**, design, propose, **communicate** and develop new processes and **technologies.** Their work provides them with a high level of responsibility, **variety** and **creativity.**

What skills do you need to be an engineer, geologist or geophysicist?

Do you like science and math? These subjects are an essential part of engineering, geology and geophysics. If you enjoy them, chances are you would enjoy being an engineer, geologist or geophysicist.

Are you naturally curious? A problem solver? Do you like coming up with new ideas and trying them out, or finding new ways of getting a job done? Do you want to know why or how? Are you able to work and share your ideas with others? Good communication skills are an important tool in the work of an engineer, geologist or geophysicist.

Engineering, geology and geophysics are interesting careers that will give you the satisfaction of finding, inventing or making things that benefit people, the community and the environment.

What do engineers, geologists and geophysicists do?

They use their imagination, creativity and expertise to create new and improved products, solve problems and improve the world we live in.

Engineers use their imagination, creativity and expertise to create new and improved products, solve problems and improve the world we live in. They take ideas and turn them into reality. They work on ways to make the world better and help people have healthier and safer lives. Engineers design things we use everyday from cars to airplanes, computers to VCRs, toys to toothbrushes and artificial limbs to kitchen appliances. In fact, what engineers do affects our lives every day often without us even realizing it.

Geologists and Geophysicists are earth scientists. They help us understand our planet. They find and assist in the development of resources like water, petroleum, natural gas and minerals which are important because much of what we make, use or wear comes from mineral or energy resources. Earth scientists investigate natural earth processes and phenomena like the erosion of rocks caused by wind and rain, earthquakes, volcanoes and landslides. They study fossils, explore space and investigate the ocean floor. Geologists and geophysicists help solve problems such as waste disposal and water pollution.

A Career With A Future

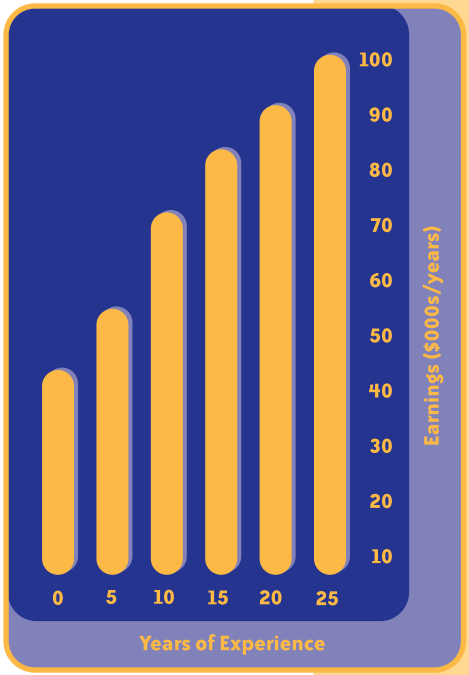
You could be involved in challenging opportunities and providing solutions for the future! You could become CEO of a company, manager, supervisor, specialist or generalist. Careers in engineering, geology or geophysics are innovative and exciting. Men and women who are bright, knowledgeable and creative are needed for these jobs.

Employment Opportunities

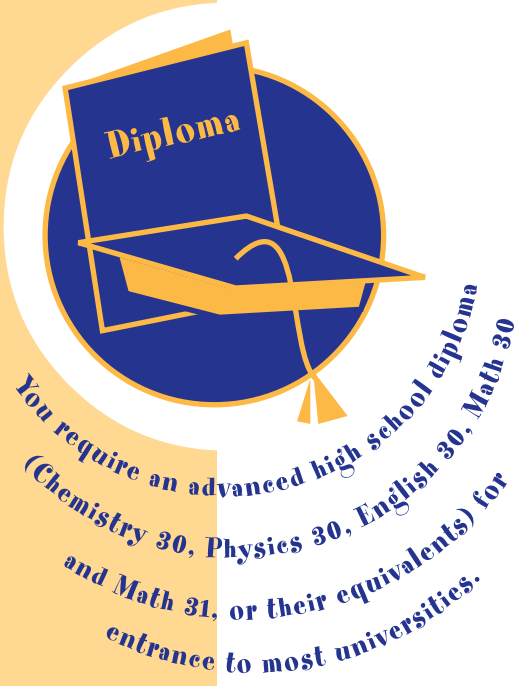
What engineers, geologists and geophysicists design, build and find impacts our daily lives. Technology is advancing at a rapid rate. Highly skilled, qualified professionals are needed to meet these advances now and make our world a better place to live in.

Let's Talk $$$

Salaries for new graduates range between $40,000 and $44,000. As engineers, geologists and geophysicists gain experience, they become more valuable to employers. Their compensation rises with experience and the value of their contribution.



*Figures taken from the 1999 APEGGA Salary Survey



Education

- **A** degree in engineering, geology or geophysics normally requires four years of university education. A five-year degree, which includes the equivalent of one year of paid, supervised work experience is also available at some universities. (i.e. Co-Op Program at the University of Alberta/Internship Program at the University of Calgary)
- You require an advanced high school diploma (Chemistry 30, Physics 30, English 30, Math 30 and Math 31, or their equivalents) for entrance to most universities.
- Entrance requirements vary slightly between universities, so you should contact the appropriate university department for information on student quotas and average required marks.

Scholarships and Awards

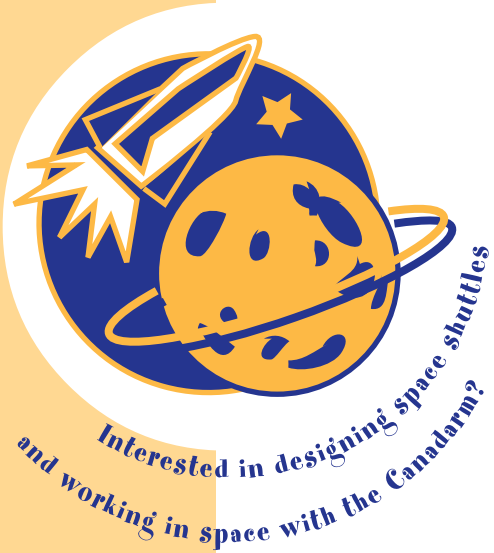
Scholarship information is available on the APEGGA Web site at www.apegga.org/science. Visit university Web sites or contact the university registrar's office for information. You may be able to obtain scholarship and awards information from your school office.

Work Atmosphere

As a professional, you have considerable control over what you do and where you work. With a degree in engineering, geology or geophysics your career possibilities are endless. Engineers, geologists and geophysicists work in a variety of settings. You may find yourself in a research lab, at an oil refinery, in a manufacturing plant or a high tech facility. You could be on a construction site, a ship, or a drilling platform in the ocean. You may be in a field crew on a mountain top, in the jungle or at the northern tundra. You may be surrounded by massive equipment at a plant site or have little more than a rock, hammer and a notebook in a remote region. Or, you may find yourself in a corporate setting – in an office or executive meeting room. Wherever you work, it is important to enjoy what you are doing.

Engineers, geologists and geophysicists work in a variety of settings.

Which type of engineering, Geology or Geophysics is for you?



It isn't necessary for you to decide right away which area you would like to specialize in. In most cases, you have until the second year of university to consider the alternatives.

Investigate jobs available to graduates of engineering, geology and geophysics.

Interested in designing space shuttles and working in space with the Canadarm? Maybe **aerospace engineering** is the field for you.

Designing and producing stronger and more durable materials from metals, ceramics and polymers to satisfy society's changing and ever-expanding demands is the job of a **metallurgical and minerals engineer.**

Ever wondered how things like bubble gum, cosmetics, hair colouring, polymers, synthetic fibres, better farming fertilizers and cleaner fuels for cars are made? Or, if you're interested in how hazardous waste is safely treated and disposed of, then you may want to study **chemical engineering.**

Fibre optic systems, computers, electronic and communications systems, generating electricity and special effects used in movies, television, music videos and concerts are just a few of the things developed by **computer and electrical engineers.**

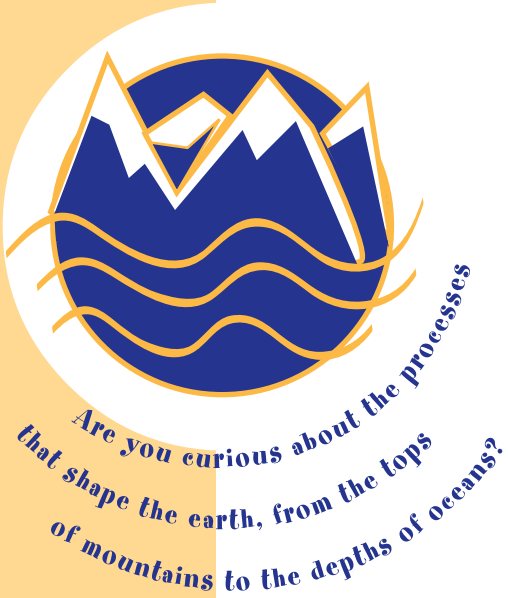
Want to help with the design and manufacture of just about anything that moves or has moving parts – like airplanes, cars, toys, robots, elevators and air conditioners? Give some thought to a career in **mechanical engineering.**

Designing land management alternatives, drainage and irrigation systems, food processing plants and mobility devices to improve athletic performance are activities of **biosystems engineers.**

Interested in planning, designing and supervising the construction of towers, buildings, airports, water systems, dams, highways and bridges? Perhaps **civil engineering** is the field for you.

Are you interested in the challenging work of supplying our critical oil and natural gas needs? **Petroleum engineers** design and operate the complex drilling and production operations which maximize recovery of these vital substances from thousands of feet beneath the earth's surface. They also lead efforts to make the use of Alberta's vast heavy oil resources more economical.

Geological and geotechnical engineers contribute to the design and construction of reservoirs, bridges, pipelines, canals, sewers, highways,



buildings, tunnels and mines by providing expert advice on how rock and soil properties affect these structures.

Using physics and math to study the earth's interior. Developing advanced equipment used to search for mineral deposits or oil and gas located deep within the earth. Studying the movements of continents and the evolution of the oceans, evaluating geothermal energy sources and detecting earthquakes. If these activities interest you, consider a career as a **geophysicist.** There are many different fields of geophysics careers to choose from, including seismology, marine geophysics, environmental geophysics, remote sensing and petrophysics.

Are you curious about the processes that shape the earth, from the tops of mountains to the depths of oceans? Is finding new mineral sources vital to the development of all nations important to you? How about exploring the movements of the crust of the earth and probing the centre of the planet? Does studying past life forms of fossils preserved in rock interest you? This research helps us understand the environment of the past, rates of evolution and ancient climates. It assists in determining how to manage our water supplies, energy sources and waste concerns. Studying and assisting in the prediction of natural hazards and disasters like earthquakes, volcanic eruptions, land slides, floods and tidal waves is just part of the work of a geologist. Economic geology, glacial geology, paleontology, soil sciences and mineral geology are just a few of the areas of practice open to **geologists.**

Want more information?

Talk about it. Your school counsellors or teachers can help. Discuss your career plans with your parents. Attend school career events as well. Talk to professional engineers, geologists or geophysicists about what they do.

Investigate. Examine university calendars. Attend university open houses. Contact the Registrar or Faculty you're interested in to discuss prerequisites and courses required to complete a degree.

Check it out. Visit your school or public library to learn more about these professions. Visit university and other related Web sites. Visit the APEGGA Outreach Web site at www.apegga.org/science

Contact APEGGA at one of the offices listed on this page. Request other career publications. Ask a member of the Outreach Program to talk to you or other students at your school about careers in engineering, geology and geophysics.

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