

A woman with dark hair, smiling broadly, is shown from the chest up. She is wearing a reddish-brown top. Her hands are raised to her face, framing the sun which is shining brightly behind her, creating a lens flare effect. The background is a field of golden-brown grass under a clear sky.

**We  
see  
more.**

**Turn the ideas of today  
into the realities of  
tomorrow**



Professional  
Engineers and Geoscientists

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**Professional Engineers  
and Geoscientists**

# Who we are.

**Professional Engineers  
and Geoscientists are  
men and women who  
use the principles of  
science to turn ideas  
into reality. They are  
involved in every facet  
of our daily lives ...  
the cars we drive and  
roads we travel, the  
houses we grow up  
in and schools we  
learn in, the natural  
resources we use and  
the environment  
we affect, the  
communication  
networks that connect  
us to the world.**







**Professional Engineers and Geoscientists**

**We see more.**



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Professional engineers share in a heritage that spans more than 4,000 years, from the great pyramids of Egypt to the modern miracle of the Internet.

Professional geoscientists have inherited a curiosity about our planet – its fossils, gems, minerals, and geologic phenomena – that goes back more than 2,300 years.

Today, we depend on engineers and geoscientists to build safety into our homes, schools, offices, factories, and mines.

To ensure we have clean drinking water on tap, efficient treatment of wastewater, and electricity at the flick of a switch.

To find new sources of oil, gas, and water. To improve our quality of life and enhance our range of opportunities, all while protecting the environment.

# Is there an Engineer or Geoscientist in you?

**Do you like to know how things work?**

**Are you interested in why earthquakes and volcanic eruptions happen?**

**Do you have a knack for math and science, enjoy problem solving, work well as part of a team?**

**Well then, you've got the makings of an engineer or geoscientist.**

**Read on, and discover the exciting world of career possibilities in professional engineering and geoscience!**

A young man and woman are standing in a library, looking at a book together. The man is on the left, wearing a black t-shirt with white text, and the woman is on the right, wearing a patterned top. They are both smiling. The background shows bookshelves and a sign that says "LARGE PRINT".

**Do you  
see more  
in your future?**

## The world of possibilities.

There's an incredible range of career opportunities in professional engineering and geoscience. You can choose from many disciplines, each of which offers unique benefits. Different disciplines often have different working environments. Are you an outdoor person or an office type? Do you like to work with computers or people? Do you prefer research or sales?

## Shape your future ... and the world's too.

The many careers available in engineering and geoscience give you the opportunity to shape your future according to your interests. You can play a role in shaping the future of the world.

In a time of increasing technology, the role of professional engineers and geoscientists is changing. As an engineer or geoscientist, you'll work as part of a team that may include computer experts, scientists, architects, technicians, and other engineers and geoscientists. You may also work with developers, contractors, financial consultants, marketing specialists, and government officials.

Your potential job markets are diverse and exciting. Mining, transportation, communications, resource exploration and refining, aeronautics, manufacturing, industry, agriculture, environment, construction, sales, education ... there's a world of possibilities in professional engineering and geoscience waiting for you!

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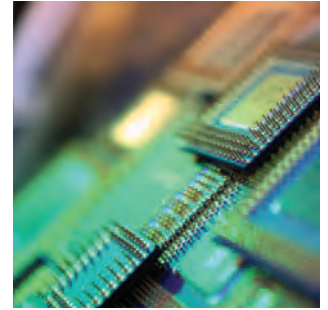
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# Careers in Engineering



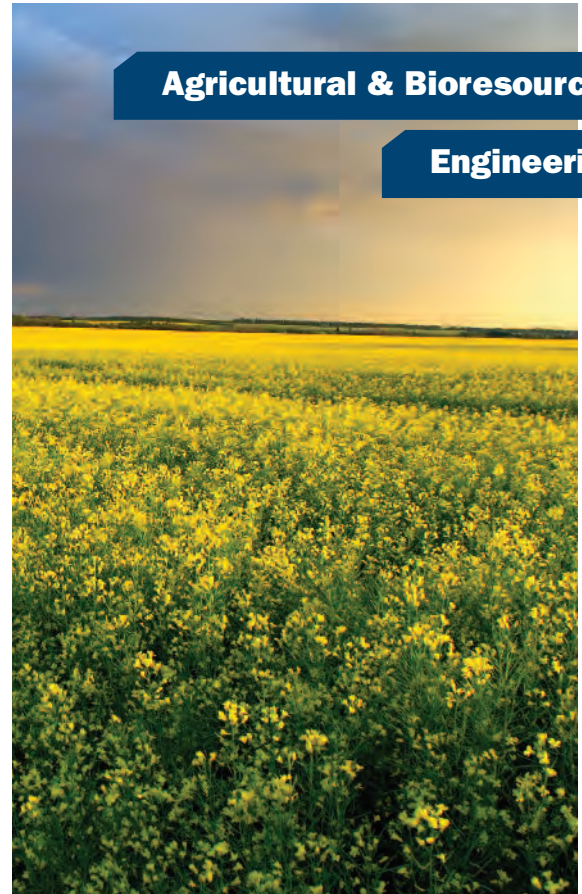
# Help feed the world.

Our world is growing – rapidly. By 2025, the world population is expected to soar from 6 billion to over 8 billion people. A healthy future depends on being able to produce enough food for everyone and protect the environment we live in. That makes Agricultural and Bioresource Engineers absolutely vital.

Agricultural and Bioresource Engineering integrates applied biological sciences with engineering science and design. Specialists in this area find solutions to issues involving plants, animals, and the natural environment. Working on teams and as independent consultants, Agricultural and Bioresource Engineers use their unique expertise in the agricultural and food sectors, in value added processing to generate biomaterials and biofuels, as well as in other resource industries such as forestry and mining.

**Agricultural & Bioresources**

**Engineering**



## Your Career Choices

As an Agricultural and Bioresource Engineer, you could be involved in the development of more efficient machines to seed, harvest and process crops, or in improving environmental controls for housing animals. You might work on irrigation projects, find better ways to preserve foods, and help increase crop yields. You could develop more efficient processes for making common products such as flour, tea, and cooking oil. You can help find ways to sustain our natural resources by preventing soil erosion and conserving water systems. There are exciting opportunities be here at home and in developing countries.

## **Help our natural resources last longer.**

Supplies of some of our most important natural resources – oil, natural gas, wood, forests, even water in some areas – are dwindling. With the global population growing, pressure on remaining supplies is increasing. And our environment is being affected by the ways in which we mine, process, use, and dispose of spent resources.

Chemical Engineers are at the forefront of helping to solve many of these critical problems. They apply their expertise in many areas, from developing alternative sources of fuel, to better ways to clean and filter water. So can you.

### **What Your Future Holds**

As a Chemical Engineer, you could work in petrochemical or biotechnology industries, or in natural resource mining and management. You might be involved in the development of new medicines, revolutionary new building materials, environmentally friendly food packaging, safer automobile tires, and much more. There are a lot of options. Just combine your interests with your skills and you'll find the one that's right for you.



# Build bridges to the future.

If you grew up building sand castles, tree houses, and snow forts – and making them bigger and better than everyone around you – you’re a natural Civil Engineer. Civil Engineers design, build, and operate the structures that make up our cities and towns: office buildings, hospitals, schools, hotels, and more. They are responsible for our transportation systems, including highways, streets, railways, and airports. And they design and maintain the municipal infrastructure we all depend on.

Civil Engineers are also stewards of the environment. They use their skills to design and manage secure storage facilities for domestic, industrial, and resource-generated wastes. They are responsible for water treatment systems that ensure safe water supplies and proper treatment and disposal of wastes.

Civil Engineering



## Your Career Choices

As a Civil Engineer, you can help create tomorrow’s skyline. You might get involved in mining, transportation and resource development, in designing and overseeing construction of hazardous waste storage facilities, and more. Career opportunities for Civil Engineers range from private businesses, to government departments, to your own business.

# Make computers work faster and smarter.

Computer Engineering, also called Digital Systems Engineering, has evolved over the past two decades. Today, the field involves embedding computers in machines and systems, building networks to transfer data, and finding new ways to enhance computer speed, size, and capabilities.

Computer Engineers work with embedded processors, which use real-time operating systems to control external mechanical or electrical systems such as automobile braking systems; digital signal processing, which uses special purpose computers for real-time signal processing such as digital video and music technologies; and logic gate arrays, a rapidly advancing technology used in smartphones.

## What Your Future Holds

Computer Engineers often work with computer scientists to develop new products. You have the option of working in hardware or software positions, or blending the two. Job opportunities are diverse: you could work in automotive, transportation, financial services, computer manufacturing, chemical, consumer goods, and other industries.

# Help power the future.

Ever wonder how the flick of a switch can brighten your room, power your computer, tune in global radio stations? It's really not that complicated ... if you're an electrical engineer. Electrical Engineers make the generation and use of electrical energy safe, efficient, and reliable. They're also involved in communications, computer engineering, digital signal processing, electronic materials and devices, and instrumentation.

Electrical Engineering is an integral part of our daily lives. From hospital equipment to aeronautical and automobile components, from electronic communication systems to computers, Electrical Engineers help generate a powerful future.

**Electrical Engineering**



## What Your Future Holds

Become an Electrical Engineer and you could find yourself working with a complex power system that generates electricity for a whole city. Or with something as small as a semiconductor chip in a cell phone or laptop computer. It's not the scale that matters; it's your ability.



## **Make a difference in communications.**

Our world is becoming increasingly dependent on advanced technology. Complex electronic and computer systems are now used to handle vast amounts of information and control a wide variety of processes and systems, from industry to telecommunications.

Electronic Systems Engineers design, build, and operate a broad spectrum of products and systems, including telecommunications, industrial controls, and electronic consumer products. But it's not all wires and integrated circuits, 'systems engineering' also looks at social, legal, and economic impacts.

### **Your Career Choices**

As an Electronic Systems Engineer, your career options include aviation, telecommunications, radio and television, oil industry, computer design and programming. You may work as part of a hardware or software design team, become an entrepreneurial electronics resource for small manufacturers, move into project management and oversee commissioning of electronic systems. Whatever your future, your unique skills allow you to adapt quickly to technological change.

# Reach for the moon and Mars.

The space shuttle would still be a dream if not for engineering physicists. As the name implies, Engineering Physics combines the skills of engineering and physics. It provides a bridge between pure and applied science. Putting physics to practical use is a challenging job, but the rewards match your efforts.

Engineering Physicists integrate new discoveries in physics and science into the manufacturing and technology sectors. They apply their specialized knowledge and skills in emerging areas of physics, high technology, instrumentation, and communications.

## Engineering Physics



Photo courtesy of International Space Station

## What Your Future Holds

As an Engineering Physicist, your career choices are as different as they are exciting. You could work in the communications industry, the oil industry, or nuclear engineering. You might study global changes in weather and environment patterns. You could develop new technology and products for space research, design satellite and payload packages, or get involved in building the international space station.



## Manage our impact on the environment.

Environmental Engineers combine skills from civil, chemical, geological and bioresource engineering to manage our water resources, air quality, and waste. As an Environmental Engineer, you will work to find solutions to environmental challenges associated with resource and energy development, waste management, urbanization, industry, and other aspects of our modern society. Environmental Engineers are highly trained, flexible, and well positioned to lead teams of engineering and related professionals.

### Your Career Choices

Environmental Engineers are in demand in the resource and manufacturing sectors.

You could work in a variety of settings: contracting and consulting engineering companies, non-profit organizations, and municipal, federal or provincial government agencies.



# Keep the environment safe for the future.

The expectations of society and direct pressure from industry have led to demand for unique technical abilities. As an Environmental Systems Engineer, you will work with interdisciplinary teams to solve a range of environmental problems in urban and remote areas.

Environmental Systems Engineers plan, design, and evaluate solutions for waste management, air quality management, automobile emissions, and alternative fuels, as well as the development of energy alternatives and energy conservation, transportation, and water resources supply and treatment.

## Environmental Systems Engineering



## What Your Future Holds

Environmental Systems Engineers plan, design, and manage environmental and transportation systems and conduct environmental impact and remediation studies. Your career options include environmental departments in municipal, provincial and federal governments, environmental management organizations, and engineering contracting and consulting firms.

## Geological Engineering

Photo courtesy of www.pnwec.org



## Develop resources and protect the environment.

We live in a world that is dependent on resources extracted from the Earth. Geological Engineers design and manage the processes involved in extracting these resources. They are also aware of the environmental impact and long-term sustainability of the systems they design. Whether drilling for a rural water supply, designing a spoil dump for an open pit mine, or creating a computer simulation of a contaminant plume, Geological Engineers balance the technical, economic, environmental, and social aspects of their work.

## Your Career Choices

Geological Engineers work in geotechnical and geoenvironmental areas and are often employed in the mining and petroleum industries. You have the flexibility to work in a variety of government and industry-related environments. You could find yourself working in an office in a major city or in the field at a remote mine or well site. Many Canadian-trained Geological Engineers work for international companies around the world.

# Play a part in shaping industry.

## Industrial Systems Engineering

Industry continues to fuel world economies, pushing the boundaries of innovation and productivity to new heights in western societies, and opening the door for economic growth in developing countries. Industrial Systems Engineering plays a vital role.

Industrial Systems Engineers know how to organize and effectively use the total resources of modern manufacturing and process industries – materials, energy, machinery, facilities, people, and capital. Their expertise in the nature, behaviour, control, and monitoring of systems enables them to respond to real-world engineering challenges.



## What Your Future Holds

Industrial Systems Engineers have a variety of career paths to choose from: project management, chemical and food processing, energy generation, petroleum and gas industries, automated systems, and advanced manufacturing. Whatever career goal you set, you will be a team player with many leadership opportunities.



## Mechanical Engineering



# Create a new generation of machines.

Do you like to tinker? Do you like to see what makes things work – and make them work better? Mechanical Engineers do this every day, in a wide variety of fields: aerospace, automotive, manufacturing, nanotechnology, biomedical engineering, robotics, space exploration, energy conversion, traditional and alternative energy sources, heating and ventilating, advanced lightweight and high-strength materials, and more.

Mechanical Engineers combine technical expertise with materials, machines, and economics to create new and better products. A career in Mechanical Engineering involves designing machines that manipulate energy to do useful work. Look around you. Any device that involves motion is an example of Mechanical Engineering.

## Your Career Choices

Mechanical Engineers design the machines that make our society function. You could be designing the next generation of automobiles, aircraft, artificial hearts, sports cars, or space-age materials. Whatever area of Mechanical Engineering you choose, your ideas and skills will make the world a better place.

# Develop the world's petroleum resources.

We live in an energy-hungry world. The sustainable, safe, and cost-effective production of petroleum resources is essential to our economic health. Petroleum Systems Engineers evaluate, design, and manage technologies in reservoirs, surface collections, and treatment facilities for oil and gas. This involves advanced computer utilization and automation, combined with effective communications skills. Techniques developed for the recovery of petroleum can be applied to the extraction of other important minerals. Petroleum Systems Engineers also contribute to activities such as pollution remediation and greenhouse gas control.

## Petroleum Systems Engineering



## Your Career Choices

As a Petroleum Systems Engineer, you could find yourself working close to home ... or half-way around the world. Exciting challenges await in energy-based production, oil and gas exploration, drilling and recovery, and surface treatment management.



## Build connected communities.

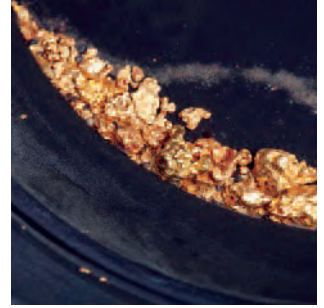
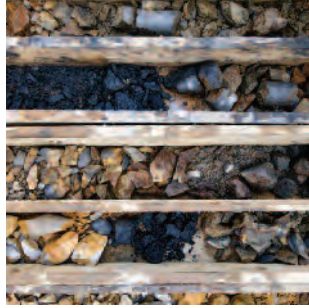
Whether browsing on the World Wide Web, instant messaging friends across the country, or taking care of business via online services, Canadians have quickly made computers and online systems a part of daily life. Behind the scenes, Software Systems Engineers help make it work.

Software Systems Engineering involves the professional construction and engineering of software systems and their lifecycle, from web transaction, to management of information, to interactive multimedia systems.

## What Your Future Holds

Career options include software development tools and testing, computer program architecture, design and management of human/computer interfaces, software process management and software design and construction.





# Careers in Geoscience



## **Explore distant worlds right here on Earth!**

It took 100 million years to raise and then erode a mountain; 1 million years to raise sea levels high enough to cover the earth's continents; and 500,000 years to produce enough lava to cover nearly a third of the continent of India. But it took only a few seconds for a 10 km meteorite to ensure the demise of dinosaurs and rise of mammals.

The history of the Earth is written in stone; the study of the Geosciences gives you the skills and knowledge you need to read this history. If you're interested in science and understanding more about planet Earth, the Geosciences are for you.

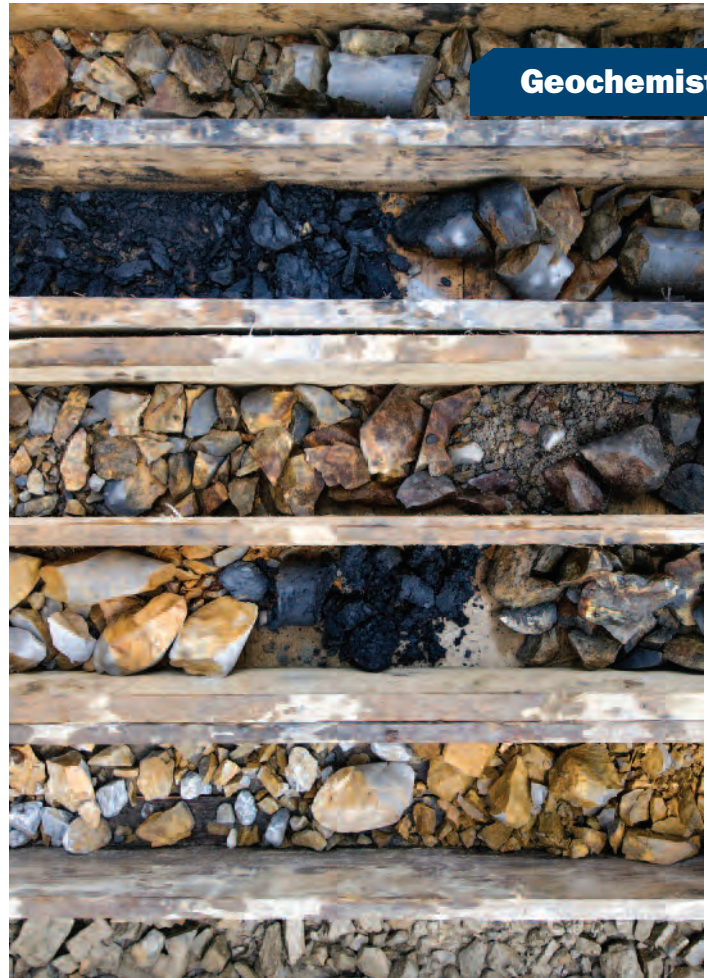
### **Your Career Choices**

You have a choice of many exciting career opportunities, including geochemistry, geophysics, geological engineering, hydrogeology, mineral exploration and mining, paleontology, petroleum geology, and quaternary geology.

# Learn the secret language of rocks.

Geochemists are geologists with a fondness for chemistry. They read the chemical messages in rocks and minerals, and use this to decipher how the earth's atmosphere, hydrosphere, and lithosphere interact, or how the earth functions as an organism.

Using natural chemical tracers in rocks and minerals, Geochemists have studied the origin of continents and ocean basins, and the chemical evolution of life on our planet. High-tech instruments enable Geochemists to determine the age of rocks and minerals, including rocks brought back from the Moon by Apollo astronauts. These rocks have stories to tell!



**Geochemistry**

## What Your Future Holds

As a Geochemist, you are ideally trained for work in all areas of the natural sciences, particularly environmental. You may be employed as a research scientist, an environmental consultant responsible for impact studies, field sampling, chemical testing and remediation, or a laboratory manager in a private, government, or university lab.



## Geophysics

Photo courtesy of www.directindustry.com



## Become the eyes and ears of geoscience.

Geophysicists use their unique skills to measure the interior properties of our planet – areas we cannot reach physically. By measuring the earth’s seismic properties and gravity, magnetic and electrical fields, Geophysicists help us “see” inside the earth.

As a Geophysicist, your skills may be used to help locate new sources of oil, gas, and minerals ... or give early warning of earthquakes and volcanic eruptions.

### Your Career Choices

Geophysicists may be employed in the mining and natural resource industries, in research laboratories, government departments and agencies, private consulting, and teaching.

# Tap the Earth to keep water on tap.

It is estimated that, excluding water in polar ice caps and glaciers, ground water accounts for over 98% of our freshwater resources. In fact, about one quarter of all Canadians and one half of all Saskatchewan people depend on ground water for drinking.

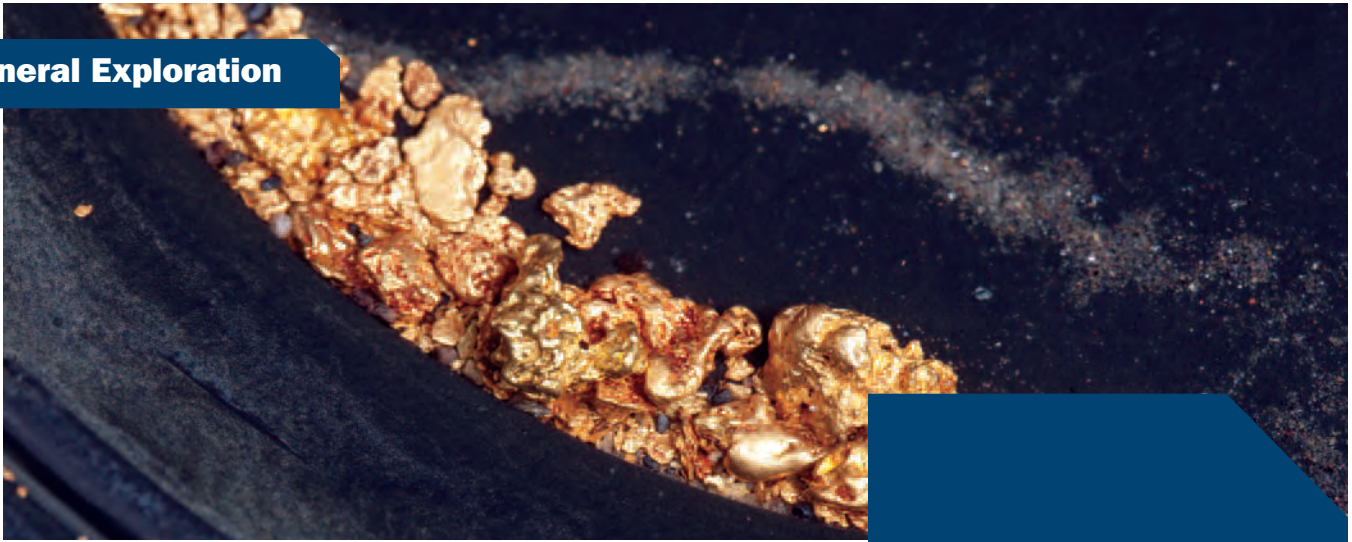
As a Hydrogeologist, you will study the occurrence and movement of ground water. You will play an important role in developing and maintaining healthy water supplies for communities and industries. You may help protect workers by controlling groundwater seepage in mines and other industries. Or you could help protect the environment through development of strategies to prevent contamination of ground water supplies.

**Hydrogeology**



## What Your Future Holds

The environmental field is one of the largest employers of Hydrogeologists, with career opportunities in environmental and water supply consulting firms, large mining and natural resource corporations, government agencies, and universities.



## Discover the glitter of gold!

Whether it's the glitter of gold in a quartz vein or a rusty weathered rock surface hinting at a large nickel deposit, Mineral Exploration Geologists use their knowledge to find new sources of minerals.

As a Mineral Exploration Geologist, you will piece together parts of an intricate puzzle to determine the potential location of mineral deposits. The pieces of your puzzle include things like magnetic or electrical anomalies, the distribution of certain rocks and ores, the ages of these rocks and ores, and any physical or chemical changes they've undergone. By recognizing and understanding these things, you will be able to identify potential new sources of useful minerals.

### Your Career Choices

As a Mineral Exploration Geologist, your primary job opportunities are with mining and mineral exploration companies in Canada or abroad, but specialization may lead you to careers in universities or government research organizations.



# Come face to face with T. Rex.

How would you like to discover the skeleton of Tyrannosaurus rex, the huge meat-eating dinosaur that roamed this land 70 million years ago? Or look down a microscope at an intricately shaped foraminifer – a microfossil only 0.3 mm in diameter? Or study 2 billion year old fossils preserved in rock? All this is possible when you pursue a career in Paleontology.

As a Paleontologist, you will study fossils, ancient life forms preserved in rock that tell us much about our planet. By comparing fossils to present day lifeforms, for example, you can study the evolution of life on our planet. Depending on your specialty, you might help interpret the geography and climate of ancient continents, or identify potential locations of oil, gas, and coal deposits.

**Paleontology**



## What Your Future Holds

Many career opportunities exist for Paleontologists in museums, universities, oil and gas companies, and government research organizations. Or you might become a dinosaur hunter who finds, prepares, and markets fossils to teaching institutions and museums.



## Help fuel our high-energy world.

Every drop of gas and oil you put in your car has to come from somewhere ... as a Petroleum Geologist, you will be directly involved in finding out where. You'll be on the forefront of exploring for new oil and gas reserves, and you'll help ensure effective extraction and use of existing reserves.

To do this, Petroleum Geologists analyze data from surface rocks, geophysical signatures from sub-surface rocks, and even data on seismic activity and pressure changes in given areas. Like a detective sifting clues, you will use this information to help determine the most likely locations to explore for new reserves of oil and gas.

### Your Career Choices

Petroleum Geologists often work as part of a team of geoscientists and engineers. Your career options include working for oil, gas and mining companies, in university or research facilities, or in government agencies.

# Unlock the future in ancient glaciers.

Just think, only a few thousand years ago most of North America was covered by large glacial ice sheets, some as much as 3 km thick! This ice is responsible for shaping much of North America's present landscape.

Quaternary Geoscientists study the age of glaciers, when ice sheets advanced and retreated over most of North America, northern Europe, and Asia. As a Quaternary Geoscientist, you will be involved in answering important questions. Why did glaciers grow and advance? Why did they melt away again? Did the earth's climate change cause them to grow? Could it happen again ... and when?

You could apply your skills to test for minerals in glacial deposits and reconstruct glacial movement to find new sources of minerals. Your understanding of the landscape would be an asset in making informed choices about land use, and your knowledge of past climate changes would help the world prepare for any future changes.

## Quaternary Geoscience



## What Your Future Holds

Quaternary Geoscientists are employed in many areas, including natural and environmental geosciences, and mineral and gravel extraction industries. You could also be a field or laboratory scientist, a private consultant to industry or government, or a university professor.



# The Future of Engineering and Geoscience ... is you.

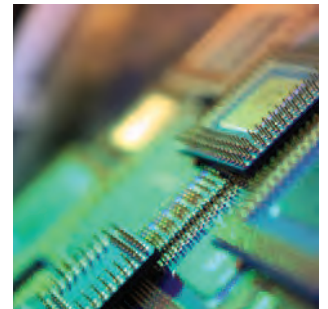
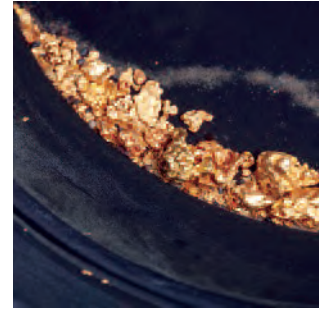
If you want to help turn the ideas of today into the realities of tomorrow, join the world of professional engineers and geoscientists. You could help ensure we have clean drinking water on tap and electricity at the flick of a switch. Make the cars we drive and the roads we travel safer. Bring enhanced computer technology and Internet communication into our homes. Find new mineral and energy resources. Provide advance warning of earthquakes, floods and volcanic eruptions, and much more.



Engineering and geoscience are about finding solutions to today's problems, whether it means probing beneath the earth's crust or pushing out into space. And the career opportunities are as unique as your interests.

Talk to your guidance counsellor about the specific high school classes you'll need to enrol in engineering or geoscience. Visit the College of Engineering and Department of Geosciences at the University of Saskatchewan, and Faculty of Engineering and Applied Science and Department of Geology at the University of Regina. Or check out online information at [www.apegs.sk.ca](http://www.apegs.sk.ca). Then get ready to shape your future!

## Professional Engineers and Geoscientists



**We see more.**



Professional Engineers and Geoscientists

**We see more.**



[www.apegs.sk.ca](http://www.apegs.sk.ca)

 **APEGs**

Tel: (306) 525-9547

Fax: (306) 525-0851

Toll Free: 1 800 500-9547

Email: [apegs@apegs.sk.ca](mailto:apegs@apegs.sk.ca)

[www.apegs.sk.ca](http://www.apegs.sk.ca)