Geologists, Geological Engineers, & Geotechnical Engineers: Alternative Careers

A guide for newcomers to British Columbia
1. Geologists, Geoscientists, Geological Engineers, & Geotechnical Engineers: Alternative Careers

Geologists & geoscientists explore and research the structure, composition and processes of the earth. Geological engineers carry out geological and geotechnical studies to assess suitability of locations for civil engineering, mining and oil & gas projects. Geotechnical engineers apply the science of soil mechanics, engineering geology and other related disciplines to engineering and environmental projects.

You may find that your international training and experience are not immediately accepted in B.C. to work in these professions. However, the professional skills you have acquired (detailed observation skills, excellent communication, interpersonal and analytical skills, strong curiosity about the earth and environment) can be used in these alternative careers:

- geological and mineral technologists and technicians (NOC 2212)
- technical sales specialist (NOC 6221)
- supervisor, mining and quarrying (NOC 8221)
- contractors and supervisors, oil & gas drilling and services (NOC 8222)
- careers in surface & subsurface mining and oil & gas drilling
Alternative Careers

Geological and Mineral Technologists and Technicians (NOC 2212)

Also look for these job titles:
- metallurgical control analyst
- mud man/mud woman - petroleum drilling
- geophysical equipment operator
- observer, seismic exploration/prospecting
- survey technician or technologist
- geological prospecting technologist

You provide technical support and services in:
- oil & gas exploration and production
- geophysics
- petroleum engineering
- mining and mining engineering
- metallurgical engineering
- environmental protection

You are employed by petroleum and mining companies, consulting geology and engineering firms, governments, educational institutions, and a variety of manufacturing, construction and utilities companies.

Duties for geological technologists include:
- conduct or direct geological or geophysical surveys and prospecting field trips
- operate and maintain geophysical survey and well logging instruments and equipment
- prepare, transcribe or analyze seismic, gravimetric, well log or other geophysical and survey data
- assist engineers and geologists in the evaluation and analysis of petroleum and mineral reservoirs
- prepare or supervise the preparation of rock, mineral or metal samples and perform physical and chemical laboratory tests
- assist in environmental audits and the development of environmental protection procedures

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supervise oil & gas well drilling activity, well completions and work-overs
may conduct or supervise studies and programs related to mine development and mining methods

**Duties for geological technicians include:**

- participate in geological or geophysical surveys, prospecting field trips and environmental audits
- operate and maintain geophysical survey and well logging instruments and equipment
- prepare notes, sketches, geological maps and cross sections
- assist in preparing, transcribing or analyzing geophysical and survey data
- assist in preparing rock, mineral or metal samples and in conducting physical and chemical laboratory tests

**Requirements:**

- **geological technologists** are usually required to complete a two to three-year college program in geological technology or a related discipline
- **geological technicians** are usually required to complete a one to two-year college program in a similar discipline
- Certification: see the Applied Science Technologists & Technicians of British Columbia ASTTBC ([www.asttbc.org](http://www.asttbc.org)) for possible certification as a Geological or Geotechnical Applied Science Technologist (AScT) or Certified Technician (CTech).
  - if your education included college-level physics, chemistry or biology, and calculus, statistics or other math specialties and you are able to research and write comprehensive reports and to exercise the essentials of Project Management, you may be eligible for professional recognition as an Applied Science Technologist
  - if you have at least one year of post-secondary technology-based education, install, commission and maintain complex technical equipment and/or assist with the planning and design of technical systems, you may be eligible for registration as a Certified Technician, CTech
Certification: ASTTBC Internationally Trained Professionals:
www.itpbc.com/

Provisional Membership for Internationally Trained Professionals:
www.asttbc.org/registration/itp/

Registration Requirements:
www.asttbc.org/registration/technologists/how_to_apply.php

Technology Disciplines, including geotechnical / geological
www.asttbc.org/registration/technologists/disciplines.php

Note: some employers may accept certification as a geological technologist or technician for positions posted as gas or petroleum technologist or technician.

Skills:
- ability to communicate technical information clearly
- interest in hands-on, methodical work in a laboratory setting
- strong analytical and observational skills
- problem-solving skills

Wages:
- median hourly wage: $24.85
www.workbc.ca/Job-Seekers/Career-Profiles/2212
Technical Sales Specialist (NOC 6221)

Also look for these job titles:

- sales support specialist
- technical service sales consultant
- engineering equipment sales representative
- wholesale sales broker
- topographical equipment representative
- construction sales representative

You sell a range of technical goods and services, such as scientific and industrial products, to governments and to commercial and industrial establishments in local and international locations.

**Duties include:**

- promote sales to existing clients; identify and solicit potential clients
- assess clients' needs and resources and recommend the appropriate goods or services
- provide input into product design where goods or services are tailored to suit clients' needs
- estimate costs of installing and maintaining equipment or service
- prepare sales contracts

**Requirements:**

- usually four-year college or university program in a relevant field

**Skills:**

- track trends and changes in geology, geotechnical engineering
- listen well and be able to explain and/or sell your product
- be accountable, attentive to detail, professional and punctual

**Wages:**

- median hourly wage: $23.20

[www.workbc.ca/Job-Seekers/Career-Profiles/6221](http://www.workbc.ca/Job-Seekers/Career-Profiles/6221)
Supervisor Careers in Mining and Oil & Gas

Supervisors, mining and quarrying (NOC 8221)
You supervise and co-ordinate activities of workers in mining operations and quarries. You are employed by coal, metal and non-metallic mineral mines and quarries.

Duties:
- supervise, coordinate and schedule the activity of workers
- resolve work problems, analyse, recommend solutions and improvements
- request materials and supplies
- train workers in job duties, safety procedures and company policies
- prepare reports on production and other activities

Requirements:
- Completion of secondary school and several years of experience in the occupations you supervise

Other training and requirements may include:
- a college or university program in mining technology or mining engineering
- provincial certification for supervisor or shift boss positions

Skills:
- excellent communication and interpersonal skills
- problem solving and decision making abilities
- attention to detail and project management experience

Wages:
- median hourly wage: $41.55

https://www.workbc.ca/Job-Seekers/Career-Profiles/8221
Contractors and Supervisors, oil & gas drilling and services (NOC 8222)
You supervise and co-ordinate the activities of workers in the oil and gas drilling and service industry. You are employed by drilling and well service contracting companies and by petroleum producing companies. You may also work as an oilfield consultant and be self-employed.

**Duties:**
- supervise, coordinate and schedule the activity of workers
- train workers in job duties, safety procedures and company policies
- resolve work problems, analyse, recommend solutions and improvements
- request materials and supplies
- prepare production and other reports

**Requirements:**
- completion of secondary school
- two-year college diploma in petroleum engineering technology
- certificates in first aid, blowout prevention and well control, waste hazardous materials information system, transportation of dangerous goods or other safety and technical subjects, which are mandatory
- considerable experience in all of the junior positions leading up to this position


**Skills:**
- excellent communication and interpersonal skills
- strong leadership and organizational skills; the ability to plan and direct the work of others
- quick-thinking, observant and responsible
- physically fit; knowledge of safety procedures

**Wages:**
- median hourly wage: $32.43

[https://www.workbc.ca/Job-Seekers/Career-Profiles/8222](https://www.workbc.ca/Job-Seekers/Career-Profiles/8222)
Careers in mining and oil & gas drilling

You may wish to consider working in the mining and oil & gas industries due to the forecasted demand for skilled workers. These jobs will primarily be located in North and Northeastern BC.

British Columbia has one of the largest mining sectors in Canada. Mining is one of the highest paying industrial sectors nationwide. Attracting and retaining skilled labour to mining operations in BC remains a top challenge for BC’s mining industry. Northern BC may also need to attract a substantial number of workers in BC’s oil and gas industry to fulfill construction and operations requirements.

For detailed information on the mining and oil & gas industries in BC, see
- **Industry Profile: Mining’ and ‘Industry Profile: Oil & Gas**
  Click on ‘Career Advice’ at [http://skilledimmigrants.vpl.ca](http://skilledimmigrants.vpl.ca)

**Consider the following alternative careers:**
- Drillers and blasters – surface mining, quarrying and construction (NOC 7372)
- Oil & gas well drillers, servicers, testers and related workers (NOC 8232)
- Oil & gas well drilling and related workers and services operators (NOC 8412)
- Oil & gas drilling, servicing and related labourers (NOC 8615)
2. Employment Outlook

Geological and Mineral technologists and technicians
Employment growth is expected for geological and mineral technologists and technicians in the mining sector as a result of exploration and mining activity. British Columbia’s oil & gas and mining industries have also seen growth in recent years, with increased production and exploration activities.

For geological technologists and technicians, the unemployment rate is projected to increase from 5.5% in 2012 to 5.9% in 2017 and then decrease to 3.9% in 2022.

Geological and mineral technologists and technicians
Job Openings Outlook in BC (NOC 2212)

| % of job openings from replacement | 73% |
| % of job openings from expansion   | 27% |
| Average annual growth rate of employment (2014-2024) | 1.1% |
| Expected cumulative job openings (2014-2024) | 660 |

Source: www.workbc.ca/

Technical Sales Specialists
Job Openings Outlook in BC (NOC 6221)

| % of job openings from replacement | 72% |
| % of job openings from expansion   | 28% |
| Average annual growth rate of employment (2014-2024) | 1.3% |
| Expected cumulative job openings (2014-2024) | 4,180 |

Source: www.workbc.ca/
**Supervisors, mining and quarrying**

**Job Openings Outlook in BC (NOC 8221)**

<table>
<thead>
<tr>
<th>Percentage</th>
<th>Value</th>
</tr>
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<tbody>
<tr>
<td>% of job openings from replacement</td>
<td>100%</td>
</tr>
<tr>
<td>% of job openings from expansion</td>
<td>0%</td>
</tr>
<tr>
<td>Average annual growth rate of employment (2014-2024)</td>
<td>-0.3%</td>
</tr>
<tr>
<td>Expected cumulative job openings (2014-2024)</td>
<td>480</td>
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Source: [www.workbc.ca/](http://www.workbc.ca/)

**Contractors and Supervisors, oil & gas drilling and services**

**Job Openings Outlook in BC (NOC 8222)**

<table>
<thead>
<tr>
<th>Percentage</th>
<th>Value</th>
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<tbody>
<tr>
<td>% of job openings from replacement</td>
<td>98%</td>
</tr>
<tr>
<td>% of job openings from expansion</td>
<td>3%</td>
</tr>
<tr>
<td>Average annual growth rate of employment (2014-2024)</td>
<td>0.1%</td>
</tr>
<tr>
<td>Expected cumulative job openings (2014-2024)</td>
<td>640</td>
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Source: [www.workbc.ca/](http://www.workbc.ca/)
3. Retraining

You may want to consider upgrading your skills to increase your employment options in this field. The following courses may improve your current skill set:

**Engineering in BC - Langara**

*Introduction to Engineering in BC at Langara College:* Courses are designed to prepare internationally trained engineers, technicians and technologists with industry specific skills to gain employment in an engineering environment as well as promote strong awareness of Canadian workplace culture.


**Mineral Exploration and Mining Technology - BCIT**

Full-time, Part-time or Online Diploma program in mineral exploration and the mining industry; courses offered online and in classroom. Courses range from ‘Introduction to Prospecting & Exploring, Geology & Mineral Deposits’ to ‘Prospecting and Exploration Field School.’

[http://www.bcit.ca/study/programs/6640dipma](http://www.bcit.ca/study/programs/6640dipma)

**English for Internationally Trained Professionals - Douglas College**

Program will enhance your speaking, listening and reading skills for the Canadian workplace.

[http://www.douglascollege.ca/programs-courses/catalogue/courses/EASL/EASL0635](http://www.douglascollege.ca/programs-courses/catalogue/courses/EASL/EASL0635)

You may also wish to browse workshops and courses announced through:

- Association for Mineral Exploration BC (AMEBC),
  [http://www.amebc.ca/events/workshops](http://www.amebc.ca/events/workshops)
- Vancouver Geotechnical Society, a section of the Canadian Geotechnical Society
  [www.cgs.ca/section_vancouver.php](http://www.cgs.ca/section_vancouver.php) see: Upcoming BC Events
4. Searching for Jobs

Association for Mineral Exploration in BC (AMEBC)
http://www.amebc.ca/jobs/jobs-overview

BC Government Job Postings
https://search.employment.gov.bc.ca/cgi-bin/a/searchjobs_quick.cgi

CareerMine
www.infomine.com/careers/

Engineering Central Canada
www.engcen.ca/

Indeed.ca
www.indeed.ca

Mining Association of BC Job Board
www.mining.bc.ca/job-board

Northern Miner
www.northernminerjobs.com/

SkilledWorkers.com
www.skilledworkers.com/search_job/search.php

TechJobs.ca
www.techjobs.ca/en

Neuvoo
http://neuvoo.ca/en
5. Volunteering in the Field

Volunteering in work related to geology, geological or geotechnical engineering, oil & gas exploration or mining can help you to explore a new career and learn more about these industries in BC. You will meet new people and build a network of contacts that can lead to information on job openings and inside connections with potential employers.

**BC Parks, BC Ministry of the Environment**

http://www.env.gov.bc.ca/bcparks/volunteers/opportunities/

BC Parks is developing a website to recruit park volunteers; check sites for further updates

**BC Parks, Online Volunteer Community**

www.env.gov.bc.ca/bcparks/volunteers/network/

Links to volunteer organizations throughout BC who encourage community involvement in helping to conserve natural values

**Kamloops Exploration Group (KEG)**

www.keg.bc.ca/

Based in Kamloops, BC, approximately four hours from Vancouver. This volunteer-run, non-profit society promotes and supports the interests of mining and petroleum. KEG volunteers support educational activities including public lectures, `Ask a Geologist`, school visits, geo tours, etc.

**Lower Mainland Green Team**

www.meetup.com/the-lower-mainland-green-team

Links to municipal parks, environmental societies, naturalists, stream and river protection societies who are seeking volunteers
MineralsEd
www.mineralsed.ca/s/WaysToGetInvolved.asp
Partnership program between teachers and the BC minerals industry; MineralsEd supports teaching about minerals, mining and geoscience in the classroom. Volunteers make school visits, help with special events, develop classroom resources.

Nature Vancouver
www.naturevancouver.ca/Volunteer_Opportunities
Geology section provides field tours and self-guided tours rivers and landscapes in Metropolitan Vancouver and surrounding area

Volunteer BC
www.volunteerbc.bc.ca/
6. Helpful Resources

**Canadian Geotechnical Society (including four sections in BC)**
www.cgs.ca/

**Geological Association of Canada**
http://www.gac.ca/

**Geoscience BC**
http://www.geosciencebc.com/s/Home.asp

**Mining Association of BC**
www.mining.bc.ca/

**Industry Profile: Mining**
**Industry Profile: Oil & Gas**
Go to: http://pwp.vpl.ca/siic/career-advice

**Click on ‘Career Advice’ at** [http://skilledimmigrants.vpl.ca](http://skilledimmigrants.vpl.ca) **for help on:**
- resumes & cover letters
- getting Canadian work experience
- networking for employment
- online social networks
- Canadian workplace culture

Questions? Please ask the Information Staff in the Central Library, Vancouver Public Library or telephone 604-331-3603.

Please note that the information in this guide is also available online through the Skilled Immigrant InfoCentre website at [http://skilledimmigrants.vpl.ca/](http://skilledimmigrants.vpl.ca/).