

B.C. CAREER PATHWAYS GUIDEBOOK | EDITION 2

MINING CAREERS



Pretium Resources Bruckjack Gold Project.



**CENTRE OF
TRAINING
EXCELLENCE
IN MINING**



B.C. Career Pathways Guidebook: Mining Careers

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- Douglas College
- Northwest Community College
- University of British Columbia
- Simon Fraser University
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Introduction

The B.C. Mining Career Pathways Guidebook is an educational journal about B.C.'s mining industry, including mineral exploration and development, mining, and aggregate operations. It showcases the numerous occupations the mining industry employs and educational programs in B.C. that lead to professions in mining.

The Guidebook's educational goals are to:

- Provide an overview of industry specific diploma and degree programs in B.C.,
- Provide a comprehensive listing of additional relevant programs in B.C.,
- List prospector and assayer courses offered in B.C.,
- Be a tool for the industry to share job information with prospective employees across various communities,
- Educate the public on the types of jobs in the industry and the career pathways one can take to get there,
- Be a resource on where to find mining industry specific training and education in B.C.,
- Be an informative resource, helping a broad range of stakeholders to better understand the mining industry.

The Guidebook is an interactive publication that engages the reader in learning interesting facts about the mining industry and discovering a wide variety of occupations, career pathways and training opportunities across B.C. The guidebook profiles industry relevant public post-secondary diploma and degree programs and highlights additional training opportunities, credentialing bodies, professional and industry associations, and relevant businesses.

It is a product of collaborative efforts of the CTEM team and its partners, including businesses, industry associations, government, educational institutions, unions, and consultants.

Introducing the B.C. Centre of Training Excellence in Mining

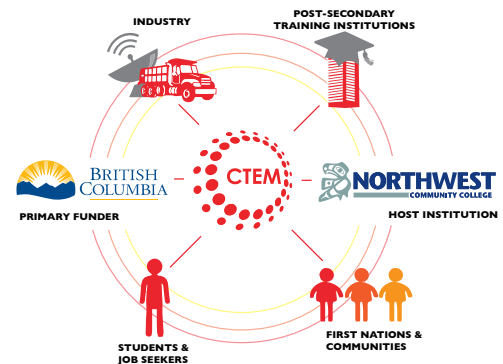
As a province wide virtual hub, the B.C. Centre of Training Excellence in Mining (CTEM) works with industry, training providers, students, job seekers and the broader community to share information about mining careers and facilitate innovative training.

CTEM was announced in November 2012 and launched on May 23, 2013 under the leadership of the British Columbia government. CTEM is hosted by Northwest Community College (NWCC) through grants from the British Columbia government and contributions from industry.

Although CTEM is a young organization, it is already seen as a leading force in facilitating and promoting mining training and related job opportunities. CTEM's initiatives and projects are designed to meet the needs of partners.

Communities across B.C. have benefited from CTEM materials, many of which are highlighted on the map at right.

For more information on CTEM please visit www.bc-ctem.ca.



**CENTRE OF
TRAINING
EXCELLENCE
IN MINING**

MINING CONNECTS BRITISH COLUMBIA

WIRING

From power grids to motherboards, copper wiring is used to conduct electricity in many modern devices.

Revenue generated by copper in B.C. (2012) was approximately **\$1.8 BILLION**

LCD DISPLAYS

Silica, an industrial mineral mined in B.C., is used as a coating material between layers of glass to prevent contamination in LCD screens.

TELEVISION

Europium, a rare earth element, is used in televisions to produce the colours red and blue, while terbium creates the green colour.

SMARTPHONES AND TABLETS

An estimated **2.9 MILLION** adults own smartphones in British Columbia.

These devices are created using a multitude of metals, including:

**GOLD • SILVER • COPPER
RARE EARTH METALS
PLATINUM • ALUMINUM**

15:1 Graphite-Lithium

BATTERIES

Graphite, mined in B.C., is a critical component of lithium-ion batteries, which power many of today's devices

SPEAKERS

Metals such as titanium and aluminum are used in headphones and speakers to produce music through their application in transducers, which convert electrical energy into sound.



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B.C.'s Exploration and Mining Industry

Mining in B.C. utilizes a fraction, less than .05%, of the land to produce minerals that provide the foundation of our lives. This section of the Guidebook provides facts on the mining industry and its products, where sites are located, the skills suggested to have successful careers, and locations of training facilities to help you get into a career. The mining industry is inclusive of geoscience, prospecting, exploring, developing, operating, reclaiming and closure. B.C. is home to many types of material such as aggregate (stone, sand and gravel), metals (copper, gold, silver, zinc, molybdenum) and coal (mostly steel making coal). Explore this section to find out more.

AN OVERVIEW OF EXPLORATION AND MINING IN B.C.

British Columbia's mining and mineral exploration industry has a colorful history and promising future. B.C. has been one of the world's major mining regions since the mid-1800s and to this day is a key international player. Part of a mountain belt rich in minerals and coal, B.C. produces and exports a significant amount of copper, gold, silver, lead, zinc, molybdenum, coal and industrial minerals every year.

Throughout the century following the Fraser River Gold Rush, most mining activities in British Columbia were underground operations. But in the early 1960s, the feasibility of open-pit production increased dramatically, and as a result, several huge copper mines opened, including Highland Valley Copper – the largest open-pit operation in Canada.

Today, with the world's largest cluster of exploration companies and mining professionals, the province is recognized as a leader in raising venture capital and as a center of excellence in mining-related fields. The province's transportation infrastructure provides ready access to world markets, and port, rail, and highway networks are expanding.

Flanked by the Pacific Ocean, British Columbia offers easy access to global markets. Mine operations benefit from tax incentives and a well-developed infrastructure, including low-cost electricity, an integrated road and rail network and large deep-water ports. Exploration benefits from an extensive geoscience database, a web-based mineral tenure system, and investment incentives such as the British Columbia Mining Exploration Tax Credit and the British Columbia Mining Flow Through Share Tax Credit.

The Ministry of Energy and Mines estimates total value of mine production for 2015 at \$6.9 billion, including coal, copper, industrial minerals, aggregate, gold, molybdenum, silver, zinc, and lead. For 2015, coal remained the highest value mine product from British Columbia, comprising about 44% of the total output, followed by copper (about 35%). At the start of 2016, mine closures reduced the number of operating metal mines to seven and operating coal mines to five.

Opportunities exist for companies to attract foreign investment using government services and staff. The province participates in international investment missions showcasing mineral and coal opportunities.

Page credits: <http://www.empr.gov.bc.ca/Mining/Geoscience/PublicationsCatalogue/InformationCirculars/Documents/2016/01>

Mining by the Numbers:

In 2015, **11** metal mines operated during at least part of the year and coal was produced at five large open pit operations (Ministry of Energy and Mines, 2016).

About **30** industrial mineral mines and over **1,000** aggregate operations are active in British Columbia (Ministry of Energy and Mines, 2016).

Gross mining revenues for the B.C. mining industry were **\$8.2 billion** in 2014 (PwC, 2015).

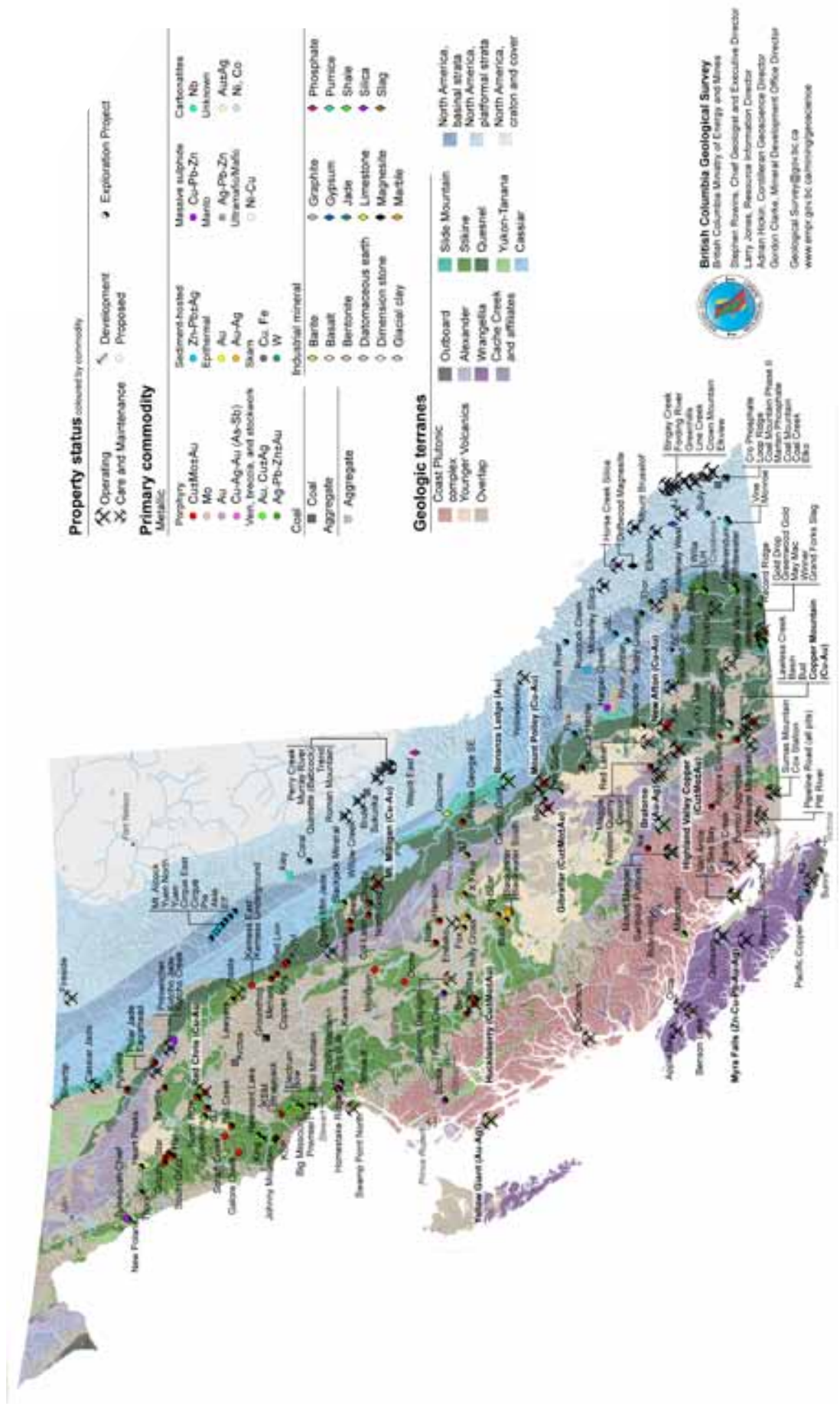
Over **30,000** people are employed in mineral exploration, mining and related sectors in B.C. (Ministry of Energy and Mines, 2015).

Hiring requirements for all mining sectors in BC, by 2022, are projected to be **16,770** workers under a baseline scenario (Task Force, 2012).

In 2014, the BC mining industry made total payments to the government and government agencies of **\$467 million** (PwC, 2015).

Vancouver is the world's leading centre of expertise for mineral exploration. Some **800** exploration companies are located in British Columbia (AME BC, 2016).

OPERATING MINES AND SELECT EXPLORATION PROJECTS IN B.C., 2015



FIVE PHASES OF MINE DEVELOPMENT: EXPLORATION TO RECLAMATION

1. Exploration

The mine lifecycle begins with the search for minerals and for answers to the questions: What is it, where is it, how big is it and what is its value? These answers are often found in the field through rock and soil sampling and on paper through mapping and modeling.



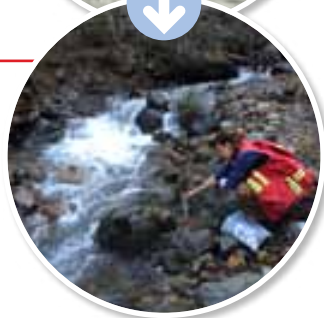
3. Construction

Once a mine project has been shown to be feasible and has received the required government approval, the company may begin construction of the infrastructure necessary for mine production.



5. Closure and Reclamation

When extraction is complete, mine facilities are dismantled and crews return the mine site to a safe, stable and reclaimed state. Measures are taken to address environmental impacts to water, vegetation and soil.



2. Assessment

If the exploration results are positive, a company may propose a mine. This proposal is then subject to both a feasibility analysis and government evaluation processes, such as environmental assessments.

4. Production

In the production phase, the mine is fully operational. Ore is extracted from underground or surface facilities, then, in the case of a metal mine, milled and processed to separate the metals from the ore.

WORKING IN MINING IN B.C.: WHAT IT'S LIKE

Exploration Sites

- Often work in more remote locations.
- More common in the summer than winter for smaller projects.
- Southern B.C.: often accessible by road.
- Northern B.C.: many sites accessed by plane or helicopter.
- Initial exploration: one to four people using nearby lodge or in tents/tent frames for days to weeks.
- Intermediate exploration: six to twenty people for weeks to months using motel accommodation where possible or onsite tent frames.
- Advanced exploration: twenty to more than fifty people for months to year round using motel accommodation or onsite trailers.
- Most exploration camps for four or more people for periods of weeks or longer have cooks producing great food, shower facilities and access to WiFi.
- Exploration personnel work a number of weeks in the field and a number off.

Mines, Quarries and Pits

- Found all over B.C., including remote locations.
- Many are accessible by road and have a nearby community that houses workers.
- Mining operations can vary widely in size from

smaller sand and gravel pits operated on a part time basis by a few people to large coal and metal mines that employ hundreds to more than a thousand people onsite with even more contractors servicing the site.

- Remote mines build onsite camps to house the workers often using trailers with a canteen, some recreational facilities, WiFi access, etc.
- Workers who live in nearby communities typically travel to mine sites daily and work 40 or more hours per week, often on shifts.
- At remote sites the workers will spend several weeks onsite and then a number off.

Office Work

- People in roles such as Executives, and senior managers in Engineering, Finance, Human Resources, Environmental Affairs, Geology, Legal, Community Affairs, etc. as well as administrative staff typically work in this environment.
- A significant portion of the mining industry work force is based in offices in large cities like Vancouver in addition to other communities.
- Some office staff will travel regularly to exploration or mine sites, while others travel as needed or rarely.
- Some exploration staff may spend much of the winter in the office.
- Office staff usually work regular 40 hour weeks while in the office.

→ Mining Industry Career Pathways

The mining industry offers more than 120 different careers from diverse fields including engineering, science, technology, trades, business, finance, administration, information technology, logistics, specialized mining labour and many more. This section of the Guidebook provides more information on the many career prospects in the industry as well as real career stories that will give you better understanding on how to achieve your unique career and employment goals in the B.C. mining industry.

ENTRY-LEVEL

EQUIPMENT
AND MACHINE
OPERATORS

TRADES




SERVICES AND
SUPPLIERS

TECHNOLOGISTS

ADVANCED
SCIENCE AND
TECHNOLOGY

MANAGEMENT

Icon Key

-  **Education/Training:** how much is required relative to other jobs?
-  **Physical difficulty:** how much physical strength and endurance will you need?
-  **Transferability:** how transferable are the skills to another industry?



ENTRY-LEVEL

Entry-level positions in the mining industry are quite diverse. The positions have become more sophisticated over the last 5-7 years due to advances in mining technology. Most positions require a high school diploma, or equivalent, and some additional training focused on workplace essential skills, equipment operations, occupational health and safety and workplace hazards.

Training for these positions, usually from 6 to 12 weeks, is offered through local colleges, schools, private trainers, and sometimes on-site. These jobs in many cases are viewed as a stepping stone and can lead to more advanced career opportunities in the industry.

EXAMPLES: ENTRY-LEVEL

Photo: NWCC.

Drill Core Technician

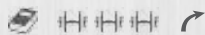
Handles and cuts/splits core in order to collect geological data from diamond drilling projects.

EDUCATION: High school diploma or equivalent, on-the-job training, or specific training.

SALARY: \$40,000 - \$65,000/yr

DEVELOPMENT PHASES:

Exploration, Production



Driller's Helper

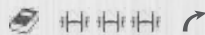
Supports diamond drilling operations through tasks such as mixing drilling fluid (mud), servicing equipment, retrieving drill cores and transporting water needed for the drill to operate.

EDUCATION: High school diploma or equivalent, on-the-job training, or specific training.

SALARY: \$52,000 - \$100,000/yr

DEVELOPMENT PHASES:

Exploration, Production



Line and Pad Cutter

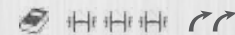
Uses chainsaws and other equipment to cut and clear lines for grids, geochemical, geophysical and geological surveys.

EDUCATION: High school diploma or equivalent, on-the-job training, or specific training.

SALARY: \$40,000 - \$68,000/yr

DEVELOPMENT PHASES

Exploration



General Labourer

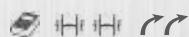
Conducts various manual labour in support of exploration and mining operations

EDUCATION: High school diploma or equivalent, on-the-job training, or specific training.

SALARY: \$38,000 - \$65,000/yr

DEVELOPMENT PHASES:

Exploration, Construction, Production, Reclamation



Surveyor's Assistant

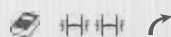
Assists land surveyors with surveying tasks, including adjusting total station equipment, clearing sight lines, positioning targets and taking manual measurements.

EDUCATION: High school diploma or equivalent, on-the-job training, or specific training.

SALARY: \$38,000 - \$50,000/yr

DEVELOPMENT PHASES:

Exploration, Construction, Production, Reclamation



*Page sources: Salary ranges on this page have been derived from MIHR and three different operating sites.

PROFILE

Wesley Keating Driller's Helper

Photo: Explore for More: British Columbia.

Wes was tired of the suit and city life and found himself searching for drilling companies online after talking with his brother who works as a helicopter pilot in the Yukon. "I grew up on Vancouver Island where these types of jobs and this type of work isn't as accessible and a lot of young people don't even know it is an option." Wes came across Hy-Tech and was impressed by how professional they were and applied as a driller's helper in April 2012. He travelled to Smithers B.C. where he undertook the Driller's Helper Course at Hy-Tech and has been working with them ever since.

The driller's helper course was two weeks, one week on the drill and one week in the classroom completing various certification such as first aid and propane certification. "I have travelled to the Tundra and I just returned from Portugal, I have seen a lot of B.C. and a lot outside of B.C.. It is a great way to see beautiful remote areas you wouldn't normally visit."

Wes' work shift is 28 days in camp followed by a 14 day break. On the drill, the helper is responsible for providing support to the driller in obtaining solid core samples. It is hard physical work where the helper must pull rods, empty full core tubes, assist in setting up and taking down the drill and anything else necessary to complete the job. "The helper pretty much does everything except run the drill!"

"I enjoy the dynamic environment working with different drillers on different projects; it is a great way to learn from a variety of people". Wes hopes to work towards becoming a driller, with a longer term goal of being a part of management. "It is a great team environment, Hy-Tech is very professional and I look forward to my future within this industry."

→ Personal Attributes/Lifestyle

- Appeals to a physically strong person who likes being outdoors.
- Work is often in remote exploration locations or can be at mine sites.
- Driller's helpers typically work long shifts; can be on night shift or weekends.
- Small teams of two to five people normally work together.

B.C. EDUCATION AND TRAINING OPPORTUNITIES FOR THIS POSITION:*

- Onsite training
- NWCC

*These programs have been selected as possible training opportunities and are not meant to represent an exhaustive list.



Sources: MiHR online at: acareerinmining.ca (2014) and BC Mining HR Task Force online at: acareerinminingbc.ca (2014)

PROFILE

Michael LeCouffe Field Assistant



Photo: Taylor Bachrach.

Michael is a field assistant for UTM Exploration Services based in Smithers, B.C. His job involves working closely with exploration geologists as they conduct field sampling in the mountains of Northwest B.C.

“The most important thing is to be there. Because of the physical demands of climbing mountains all day, you’ve got to make sure when you get home you stay well rested. The next morning comes sooner than you think,” says Michael.

With safety gear, extra clothing and lunch, Michael’s pack is already fairly heavy when he arrives at work. By the end of his 10-hour day, it can weigh over 50 pounds, filled with rock samples collected by the geologists he works with.

UTM provides its field assistants with training to familiarize them with bear safety and working around helicopters. As well, Michael highlights the importance of being conscientious when hiking through rugged mountain terrain.

“We are often walking on snow and on shale. You really have to be aware of your surroundings and recognize what you can walk on and what you should avoid. Even with good footwear, we have to constantly be aware,” says Michael.

Michael has worked in the exploration industry for eight years. Before that he worked in oil and gas exploration, silviculture and logging. “I have a resume that would make Forrest Gump blush,” he jokes.

➔ Personal Attributes/Lifestyle

- Appeals to someone that likes nature, the outdoors, and being active.
- Typically work shift rotations of several weeks on site and then time off.
- Often travel to remote sites in a helicopter.
- Can work in areas that few people have seen.

B.C. EDUCATION AND TRAINING OPPORTUNITIES FOR THIS POSITION:*

- Onsite training
- NWCC

*These programs have been selected as possible training opportunities and are not meant to represent an exhaustive list.

EQUIPMENT AND MACHINE OPERATORS

These positions involve operating heavy machinery at the heart of exploration, surface mining, quarrying, and land-clearing activities. They operate heavy equipment such as articulated haul trucks, tractor-loader-backhoes (TLB), excavators, dozers, loaders and graders to excavate, move, load and grade earth, rock, gravel or other materials.

Mining machine operators use hydraulic and motor-driven machinery to drill holes and excavate rocks, metals, and other materials. These operators may control continuous mining machines or other heavy equipment in surface or underground mines.

A high school diploma or equivalent may be required to become a mining machine operator, and on-the-job training is common. For those looking to advance their career, a college diploma or apprenticeship may lead to trades, technology or other mining occupation.

EXAMPLES: EQUIPMENT AND MACHINE OPERATORS

Heavy Equipment Operator

P.16

Operates various heavy equipment such as excavators, loaders, bulldozers, graders, skid steers and haul trucks.

EDUCATION: High school diploma, on-the-job training or specific training

SALARY: \$53,000 - \$66,000/yr*

DEVELOPMENT PHASES: Exploration, Construction, Production, Reclamation



Underground Miner

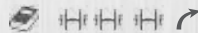
P.17

Works underground using sophisticated machines to prepare rock for drilling and blasting.

EDUCATION: High school diploma, on-the-job training. Can be certified under the Canadian Mining Certification Program.

SALARY: \$53,000 - \$66,000/yr

DEVELOPMENT PHASES Construction, Production



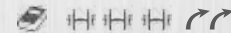
Blaster

Works closely with drillers, uses explosives to break apart coal, ore and rock in a surface or underground mine.

EDUCATION: High school diploma, WorkSafeBC Blasting Certificate

SALARY: \$53,000 - \$66,000/yr

DEVELOPMENT PHASES Construction, Production



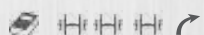
Surface Diamond Driller

Operates diamond drilling equipment to recover core samples of rock from the Earth's surface, which are analyzed to help understand ore bodies.

EDUCATION: High school diploma, on-the-job training

SALARY: \$60,000 - \$80,000/yr

DEVELOPMENT PHASES Exploration, Production



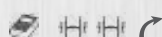
Mineral Processing Equipment Operator

Operates single-function machines that separate metal products from mineral ore in a processing plant.

EDUCATION: High school diploma, on-the-job training. Can be certified under the Canadian Mining Certification Program.

SALARY: \$59,000 - \$81,000/yr

DEVELOPMENT PHASES: Production



*Page sources: MiHR online at: acareerinmining.ca (2014). Salary ranges on this page have been derived from MiHR and three different operating sites.

PROFILE

Amy Johnson Haul Truck Driver



Photo: Explore for More: British Columbia.

Amy was introduced to the exploration and mining industry through a course she took at the Northwest Community College's School of Exploration and Mining. The Environmental Monitoring course was 2 months long and gave her a good introduction to the industry. "The course was amazing to take and I would recommend it to anyone who is looking to get into the mining industry."

After completing the course Amy applied to Huckleberry Mine with a general application. She got the opportunity to train as a haul truck driver through on-site training. Haul drivers have a specific and essential role within the mining industry. There are many different types of haul trucks used on mines sites and other construction sites. The haul truck driver will haul predominantly rock; sometimes ore to stockpiles or the crusher for processing, some waste rock to the dump or to be used in construction projects, some overburden and on some sites dry tailings.

Amy works a rotational shift of 4 days on and 4 days off and stays in camps trailers while on the mine site. Work days begin early around 5:45 am where the crew meets and tasks are delegated by the shift boss. Crew work 12 hour shifts from 6 to 6, with both a day shift and a night shift. Amy has been driving haul truck for 3 years now and still loves her job. "I get paid to play in the dirt with my friends in the most beautiful part of the valley". Amy says that her favorite part is getting to form a close relationship with the crew, "you spend so much time together that they basically become family; that makes work fun".

→ Personal Attributes/Lifestyle

- Appeals to people who have manual dexterity and enjoy handling complex machinery.
- Haul truck drivers work 40 hours a week (or longer if overtime is required); can be on night shift or weekends.
- Operators handle large trucks often with climate-controlled cabs and sophisticated controls.
- Successful drivers know their equipment and maintain a focus on safety at all times.

B.C. EDUCATION AND TRAINING OPPORTUNITIES FOR THIS POSITION:*

- Onsite training
- Interior Heavy Equipment Operator School
- Operators Training School

*These programs have been selected as possible training opportunities and are not meant to represent an exhaustive list.



Sources: MiHR online at: acareerinmining.ca (2014) and BC Mining HR Task Force online at: acareerinminingbc.ca (2014)

PROFILE

Francis Bellerose Underground Miner



Photo: Explore for More: British Columbia.

Francis Bellerose is a stope miner, also called an underground miner. He studied at the Centre de formation professionnelle in Val-d'Or during a period of eight months to obtain his Vocational School Diploma in mining. However, his training did not end there. During his employment at IAMGOLD, he completed a 120-day field training course under the supervision of a more experienced miner. "The course is an introduction to the groundwork, but it is in the mines that we learn the basics of the trade," he states.

Francis is part of a mining team which initiates the process of extracting the rock and the ore from the Earth. Stope miners work underground using sophisticated machines and equipment in order to ensure the ground is secure to drill the rock which contains the minerals and metals sought in preparation for blasting. Other members of the team are in charge of blasting and moving the rock. "To do this type of work, you need good physical endurance, resourcefulness and the ability to work alone for long periods of time. And you definitely cannot be claustrophobic," says Francis.

Francis enjoys his work because he likes to keep moving and to be physically active. According to Francis, "The 10-hour work shift is over quickly. There is always something to do and I am never bored." He also realizes that if there ever came a time when he could no longer do this job, there are other opportunities in the mines for work that is less physically demanding. Because of the diverse employment options it offers, Francis foresees a career in the mining industry.

→ Personal Attributes/Lifestyle

- Appeals to people who enjoy taking responsibility for their actions, are physically active and like to be rewarded for meeting production targets.
- Underground miners often work longer than 8 hrs a day; can be on night shift or weekends.
- Some underground mines in Canada are located in fly in, fly out remote locations.
- Underground miners often work with sophisticated equipment and as part of a team.

B.C. EDUCATION AND TRAINING OPPORTUNITIES FOR THIS POSITION:*

- Onsite training
- NIC

*These programs have been selected as possible training opportunities and are not meant to represent an exhaustive list.



Sources: MiHR online at: acareerinmining.ca (2014) and BC Mining HR Task Force online at: acareerinminingbc.ca (2014)

TRADES

These positions do not involve working directly with minerals, but they are essential to successful exploration and mining operations. Trades careers are among “high demand” occupations for the mining industry.

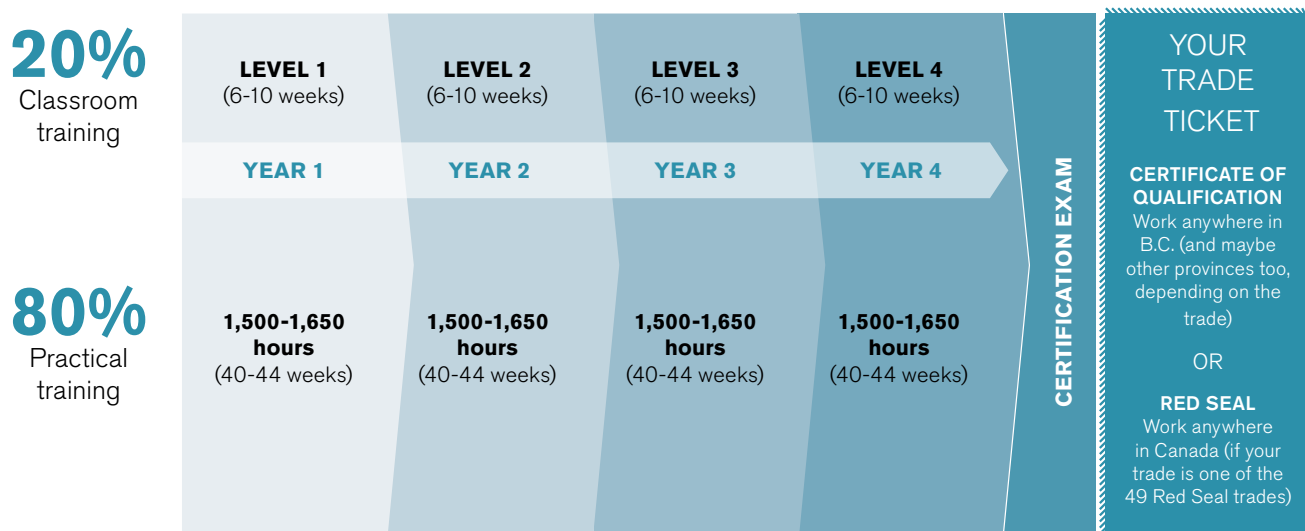
Some of the tradespeople that are essential for successful exploration and mining are electricians, heavy duty equipment technicians, machinists, millwrights, cooks and carpenters.

In order to become a tradesperson, an individual must complete apprenticeship training. Apprenticeship is a post-secondary education that takes approximately 4-5 years to complete. It consists of 80% on-the-job and 20% classroom training and requires good self-management, financial management and organizational skills.

The Trade Apprenticeship

A trade apprenticeship is how you gain the knowledge and skills you need for a career in your trade. As an apprentice, you and others training for the same trade will spend approximately six to eight weeks per year in a classroom or shop learning from an instructor. The rest of the year, you'll earn while you learn, working on a job site alongside experienced tradespeople and getting paid to do it.

Most apprenticeships take about four years to complete. Yours might be a bit longer or shorter, depending on your trade and how much you work. At the end, ITA will award you a trade credential or "ticket" that determines where you can work. Once you are certified, you can choose to specialize in a specific area of your trade, work your way up to a management position or even start your own business.



Adapted from Industry Training Authority of BC (ITA)



EXAMPLES: TRADES

Camp Cook

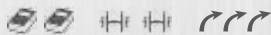
Operates a commercial kitchen in a camp setting including planning, purchasing supplies and preparing meals. Work is often seasonal.

EDUCATION: High school diploma, Trade ticket

SALARY: \$30,000 - \$40,000/yr

DEVELOPMENT PHASES:

Exploration, Construction, Production, Reclamation



P.21

Millwright

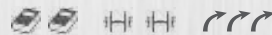
Installs, maintains and repairs stationary industrial machinery and mechanical equipment in a mine.

EDUCATION: High school diploma, Trade ticket

SALARY: \$53,000 - \$66,000/yr

DEVELOPMENT PHASES:

Construction, Production



P.22

Heavy Duty Equipment Technician

Maintains and repairs mobile heavy equipment used in exploration and mining operations.

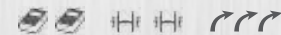
EDUCATION:

High school diploma, Trade ticket

SALARY: \$56,000 - \$85,000/yr

DEVELOPMENT PHASES:

Construction, Production



Electrician

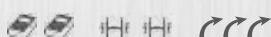
Inspects, installs, troubleshoots, repairs and services electrical equipment such as motors, generators, pumps, heavy duty machines, illumination systems, environmental regulating systems, communication systems; and associated controls.

EDUCATION: Apprenticeship

SALARY: \$45,000 - \$85,000/yr

DEVELOPMENT PHASES:

Exploration, Construction, Production



Welder

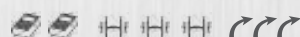
Maintains and repairs site structures and equipment in all areas of active mining, mine maintenance and processing

EDUCATION: High school diploma, Trade ticket

SALARY: \$44,000 - \$72,000/yr

DEVELOPMENT PHASES:

Exploration, Construction, Production, Reclamation



Carpenter

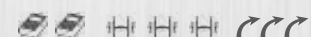
Builds and repairs wood structures. Many work for construction companies, contractors and maintenance departments while others are self-employed. Carpenter is a nationally designated trade.

EDUCATION: Apprenticeship

SALARY: \$56,000-\$72,000/yr

DEVELOPMENT PHASES:

Exploration, Construction, Production



*Page sources: MiHR online at: acareerinmining.ca (2014). Salary ranges on this page have been derived from MiHR and three different operating sites. The salary for Camp Cook is based on seasonal work.

PROFILE

Rodney Pierce Millwright



Photo: Lehigh Materials

When Rodney began his career in the mining industry, an apprenticeship was “not part of the plan.” But he knew that getting hired was the start of many possibilities. Being in British Columbia, he also is able to enjoy the scenery and the outdoor life.

Rodney started as general labourer; his company needed a millwright apprentice and Rodney took a test, passed and began his four-year apprenticeship program. Each year he went to school for seven weeks of training.

Rodney moves throughout the mine site, driving a service truck that is equipped with a portable welder, portable torches and boxes in the back for tools. Rodney’s job is to inspect and maintain all the machinery, make any repairs and make certain that the equipment is up and running before the end of the day.

For example, Rodney might work at the crushing plant with another millwright, checking the screens that separate and filter out the rock. He goes through each screen and changes out ones that are damaged or wearing out. Each day is different.

What Rodney enjoys most about mining are the people. “We’re a close-knit group and everybody gets along together.” To succeed as a millwright, he thinks a person should be comfortable working hands-on and be good with hand tools. Millwrights must be able to work in a team and independently and should also have good leadership skills. They work outdoors a lot and so need to deal with the weather.

With his apprenticeship complete, Rodney plans to continue as a millwright, knowing that his skills are transferable throughout the mining industry.

→ Personal Attributes/Lifestyle

- Appeals to people who enjoy troubleshooting and using problem-solving skills.
- Millwrights typically work 40 or more hours per week at mines and quarries; can be on night shift or weekends.
- Many work inside processing facilities including office time.
- Requires using technical training with on-site experience to ensure the best possible operation of a specific processing plant or activity.

B.C. EDUCATION AND TRAINING OPPORTUNITIES FOR THIS POSITION:*

- Visit tradeshtraining.bc
- Visit itabc.ca for more information on apprenticeship

*These programs have been selected as possible training opportunities and are not meant to represent an exhaustive list.



Sources: MiHR online at: acareerinmining.ca (2014) and BC Mining HR Task Force online at: acareerinminingbc.ca (2014)

PROFILE

Vince Aubichon Heavy Duty Mechanic



Photo: Explore for More: British Columbia.

Vince works at the Kerness Mine, a remote site one hour by air from Prince George. He works on a two-week in, two-week out rotation. While on the job, he works 12-16 hours in a shift, for 14 straight days. The schedule is intense, but also has benefits. For example, in his two weeks off, Vince is free to pursue hobbies like snowboarding!

Vince is a heavy duty mechanic apprentice and part of the mine's shovel and drill crew. He services and repairs this huge equipment; a specialized mining shovel can be larger than most houses. Maintenance work can be time consuming and quite complex. As Vince notes, "Recently, we finished a large service job. We had taken one of our shovels in half. We lifted the house (the main part of the shovel), walked the car body out from underneath it, then replaced the ring gear, rollers, and roller paths. The whole job took about a month to complete." As well, if a shovel breaks down on the job, Vince's team must get it repaired immediately.

People who like working in the outdoors, are good with their hands and like problem-solving would do well in this career. Vince believes that it also takes individuals with a certain attitude. "You have to be able to give and receive a bit of joking here and there. You come to work, we have some fun."

Vince likes where he lives and wants to stay in B.C. He has been able to advance in his career and plans to continue working in the mining industry.

(Editor's Note: Kerness South Mine where Vince worked is now closed, however a new Kerness Underground Project has been proposed)

➔ Personal Attributes/Lifestyle

- Appeals to individuals who are very hands on and like to make things work.
- Heavy duty mechanics generally work 40 hours a week; but extended hours are required for repairs to critical equipment.
- Most work is done inside maintenance buildings, but work is outside if equipment has broken down.
- Mechanics are required to lift heavy parts and tools and at times work in awkward positions.

B.C. EDUCATION AND TRAINING OPPORTUNITIES FOR THIS POSITION:*

- Visit tradeshtraining.bc
- Visit itabc.ca for more information on apprenticeship

*These programs have been selected as possible training opportunities and are not meant to represent an exhaustive list.



Sources: MiHR online at: acareerinmining.ca (2014) and BC Mining HR Task Force online at: acareerinminingbc.ca (2014)

A decorative graphic in the top right corner of the page, consisting of a cluster of overlapping circles in various shades of blue. The circles vary in size and are arranged in a roughly circular pattern, creating a modern, abstract design element.

SERVICES AND SUPPLIERS

Mining suppliers, contractors and consultants to the B.C. mining industry represent a wide range of occupations that are involved in all phases of the mining cycle. Whether you are interested in technical installations or financial services you can work for a company that serves the mining industry. You can also become a business operator or consultant who delivers appropriate services, including but not limited to technical, scientific, food and beverage, surveying, engineering and many others to the industry.

EXAMPLES: SERVICES AND SUPPLIERS

Helicopter Pilot

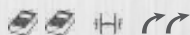
Operates helicopters used for transporting people and goods into remote exploration camps and mines.

EDUCATION: High school diploma, Pilot license

SALARY: \$32 - \$67/hr

DEVELOPMENT PHASES:

Exploration, Construction, Production, Reclamation



Trainer

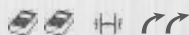
Works with new and current employees to help them learn skills and knowledge needed to safely and effectively carry out their jobs. Trainers design courses, prepare materials, including task and job aids. They may also deliver training over the Internet.

EDUCATION: College or university

SALARY: \$66,000 - \$72,000/yr

DEVELOPMENT PHASES:

Exploration, Construction, Production



Tire Service Technician

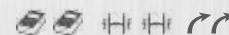
Services, repairs and maintains mobile equipment tires. Ensures equipment is in good working order by conducting daily maintenance checks and coordinating report work as required.

EDUCATION: E/M and OTR Tire Technician

SALARY: \$60,000 - \$70,000/yr

DEVELOPMENT PHASES:

Exploration, Construction, Production



Transport Truck Driver

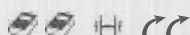
Operates heavy vehicles such as haul packs to transport goods and materials from one area to another.

EDUCATION: Class 1 Driver's License

SALARY: \$60,000-\$75,000/yr+

DEVELOPMENT PHASES:

Exploration, Construction, Production



Accountant

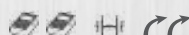
Uses accounting principles to analyze financial information and prepare reports. Tasks include project costing, invoicing, revenue recognition, setting up budgets, and providing reports to management.

EDUCATION: Degree, professional designation

SALARY: \$60,000 - \$75,000/yr

DEVELOPMENT PHASES:

Exploration, Construction, Production



First Aid Coordinator

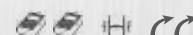
Responsible for providing prompt first aid within the scope of their training, recording signs and symptoms of injuries, and referring injured employees to further medical assistance.

EDUCATION: OFA Level 3 First Aid course, WHMIS, TDG, H2S, Bear Aware

SALARY: \$50,000 - \$62,000/yr

DEVELOPMENT PHASES:

Exploration, Construction, Production



*Page sources: MiHR online at acareerinmining.ca (2014). Salary ranges on this page have been derived from MiHR and three different operating sites.

PROFILE

Kendra Syme First Aid Coordinator



Kendra was working as a paramedic with BC ambulance when she decided to start her own company with just herself and one mobile treatment centre. Kendra now has 3 mobile treatment centres, a retail first aid supply store and is a DOT certified collection sight for drug and alcohol testing.

Kendra has supplied personnel for a variety of industries including small fly-in exploration camps and large operating mine sites which require up to a paramedic plus mobile treatment center. Kendra explains, “Each job is unique so we supply the client with the medic support that is required for their project.”

A medic working for Kendra would require a minimum of a level 3 first aid ticket and a valid driver’s license. A typical OFA level 3 first aid course takes three weeks to complete. Other tickets like: Workplace Hazardous Material Information System (WHMIS), Transportation of Dangerous Goods (TDG), Hydrogen Sulfide Training (H2S) and Bear Aware are an asset.

A two week on, two week off rotation is typical in this position. Once on the job the daily duties change from site to site; they may include paper work, light duty jobs around the work site, core handling or kitchen work. The most important role of the medic is safety so they have to be ready to respond to a call at any time.

“There are many opportunities for medics within the exploration and mining industry.” Kendra encourages her medics to excel in current training and acquire additional tickets. “These skills transfer into many other industries and once you have your paramedic ticket you can work with BC Ambulance.”

➔ Personal Attributes/Lifestyle

- Appeals to individuals who are conscious of health and safety in the work place.
- Work demands attention to detail and strong knowledge of OH&S policies and practices.
- Usually work in challenging physical environments and use a hands-on approach to managing health and safety risks.
- Communicate with diverse teams with diplomacy, tact and credibility.
- Organize and deliver first aid services in various locations and embrace challenges.

B.C. EDUCATION AND TRAINING OPPORTUNITIES FOR THIS POSITION:

- Occupational First Aid, Level 3
- Workplace Hazardous Material Information System (WHMIS)
- Transportation of Dangerous Goods (TDG)
- Hydrogen Sulfide Training (H2S)
- Bear Aware
- Other certificates as per employer requirements



Sources: MiHR online at: acareerinmining.ca (2014) and BC Mining HR Task Force online at: acareerinminingbc.ca (2014)

PROFILE

Raluca Stanescu Accountant

With her Bachelor of Commerce in hand, Raluca was first exposed to the mining industry at an environmental consulting firm where she worked closely with project managers and corporate accountants, producing progress reports, invoices and financial statements. Today, Raluca is the Corporate Accountant at PDO Solutions, a project consulting firm that works on mining and hydro projects across Canada.

“Most of my family values have been instilled in me by my parents – my mother is also an accountant and my father studied metallurgy in university. I didn’t specifically choose to be an accountant in the mining industry, however it does seem like it was meant to be!”

On a typical day at the office, Raluca manages everything from day-to-day accounting activities to preparing profitability reports on the company’s mining projects. As a Chartered Professional Accountant (CPA), her ability to improve efficiency and develop sound procedures is critical to achieving the level of financial accuracy required for reporting and decision making.

Raluca also works on projects, performing independent reviews and invoice audits during mine construction. She identifies non-compliance, errors in invoicing, potential back charges and claims made by suppliers and contractors. “There’s corporate accounting and there’s project accounting. Make sure you understand the differences! Once you do, you’ll know how to properly apply your accounting knowledge to mining.”

One of Raluca’s goals is to visit a mine site. “I would like to see, hands-on, how everything works and ties together. In the future, I see myself as a project controller or a controller of a mining company”.

→ Personal Attributes/Lifestyle

- Appeals to people who are solution-oriented, have good communication skills and demonstrate ethical behavior.
- Accountants typically work 40 hours per week but may be part time at small companies. They may have longer hours to meet deadlines, particularly, at month’s end.
- Attention to detail is a must. Ensuring that financial information is accurate helps managers make informed business decisions.
- Confidentiality is very important. An accountant must be trustworthy at all times and maintain discretion with company and client information.

B.C. EDUCATION AND TRAINING OPPORTUNITIES FOR THIS POSITION:*

- Bachelor of Business Administration (various schools), Bachelor in Economics (various schools), Bachelor of Technology in Accounting (BCIT), Chartered Professional Accountant (CPABC)

*These programs have been selected as possible training opportunities and are not meant to represent an exhaustive list.

TECHNICIANS AND TECHNOLOGISTS

The mining industry requires workers who have the technical skills necessary to operate various mining equipment and manage the industry's constant technological advances. Nearly all technical jobs within mining and mineral exploration, including engineering, geology, mineral processing, environmental assessment and surveying, require a post-secondary education. Some positions require a certificate or a diploma.

Technicians and technologists work at mine sites, exploration camps, offices and labs. Some choose technical sales, mining-related computer software development or equipment manufacturing. Experienced workers in this category can start their own consulting companies and become suppliers of specialized services.

EXAMPLES: TECHNICIANS AND TECHNOLOGISTS

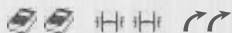
Geological Technician

Assists with field work, sampling, data entry, reporting and other tasks required to better understand geological deposits.

EDUCATION: College diploma or certificate

SALARY: \$53,000 - \$66,000/yr

DEVELOPMENT PHASES:
Exploration, Production



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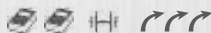
Mapping/GIS Technician

Uses computer software to map land formations, visually present geological data and inform exploration and mine development.

EDUCATION: College diploma or certificate

SALARY: \$65,000 - \$80,000/yr

DEVELOPMENT PHASES:
Exploration, Assessment, Construction, Production, Reclamation



Land Surveyor

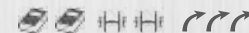
Uses surveying equipment to determine precise locations, distances, and otherwise describe land features. In a mine, surveyors plan the direction and extent of all mine workings.

EDUCATION:

College diploma or certificate, professional designation

SALARY: \$51,000 - \$80,000/yr

DEVELOPMENT PHASES:
Exploration, Construction, Production, Reclamation



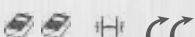
Assayer

Analyzes ores and minerals using various assay methods to test and determine their composition and value. The quality of assayer's work can have a large impact on the financial success of their employer.

EDUCATION: College diploma or certificate, BC Assayers Certification Program

SALARY: \$30,000 - \$80,000/yr

DEVELOPMENT PHASES:
Exploration, Production



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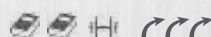
Environmental Technologist

Conducts field sampling and reporting related to air, water and soil quality to ensure requirements of regulations and permits are being met.

EDUCATION: College diploma or certificate

SALARY: \$58,000 - \$81,000/yr

DEVELOPMENT PHASES:
Exploration, Construction, Production, Reclamation



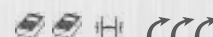
Mining Technologist

Works in the engineering, geology, surveying, blasting, environmental, mineral processing or management departments at mines; with geology crews in exploration; with engineering consulting companies; and at assay labs.

EDUCATION: Mining Technology Diploma

SALARY: \$60,000 - \$80,000/yr

DEVELOPMENT PHASES:
Exploration, Construction, Production, Reclamation



*Page sources: MiHR online at: acareerinmining.ca (2014). Salary ranges on this page have been derived from MiHR and three different operating sites. Assayer salary range provided by Elaine Woo, BCIT Assayer Certification Training program.

PROFILE

Nathan Lintner Geological Technician



Photo: Explore for More: British Columbia.

For six weeks in his job as a geological technician, Nathan Lintner took a helicopter to work every day. As he says, “I really like the fact that I rarely do the same thing for an extended period of time. I get to experience a vast portfolio of jobs and get to see a lot of country. I have travelled to B.C., Saskatchewan, Nunavut and northern Ontario, as well as seeing places in between while on lay over.”

On a typical day in the office, Nathan will assist geologists in preparing a National Instrument (NI) 43-101 report. The NI 43-101 is a strict guideline for how public Canadian companies can disclose scientific and technical information about mineral projects to potential investors. He helps compile the report or also creates figures and maps using a graphical information system (GIS) program. Scanning and printing maps is also a big part of Nathan’s job.

If he’s in the field, a typical day will start with equipment preparation. Once in the field, Nathan aids the geologist in taking samples, mapping, or just prospecting. He completes data entry at the end of the day during sampling projects, and organizes and packages the samples.

Nathan believes that people who want to be geological technicians should be outgoing and have good physical endurance, with a love of the outdoors.

Nathan is undecided about his future plans, but he plans to stay in the mining sector and is leaning towards exploration geologist or geological consultant. “I enjoy the good wages in the industry and the close knit mining community.”

➔ Personal Attributes/Lifestyle

- Appeals to those who like nature, the outdoors and science.
- Geological technicians typically work at exploration sites or mines, often with shift rotations of several weeks on site and then time off.
- Physically demanding outdoor work.
- Works side-by-side with a geologist or engineer as part of a small exploration team or larger mine workforce.

B.C. EDUCATION AND TRAINING OPPORTUNITIES FOR THIS POSITION:*

- BCIT Mineral Exploration and Mining Technology

*These programs have been selected as possible training opportunities and are not meant to represent an exhaustive list.



Sources: MiHR online at: acareerinmining.ca (2014) and BC Mining HR Task Force online at: acareerinminingbc.ca (2014)

PROFILE

David Tye Assayer

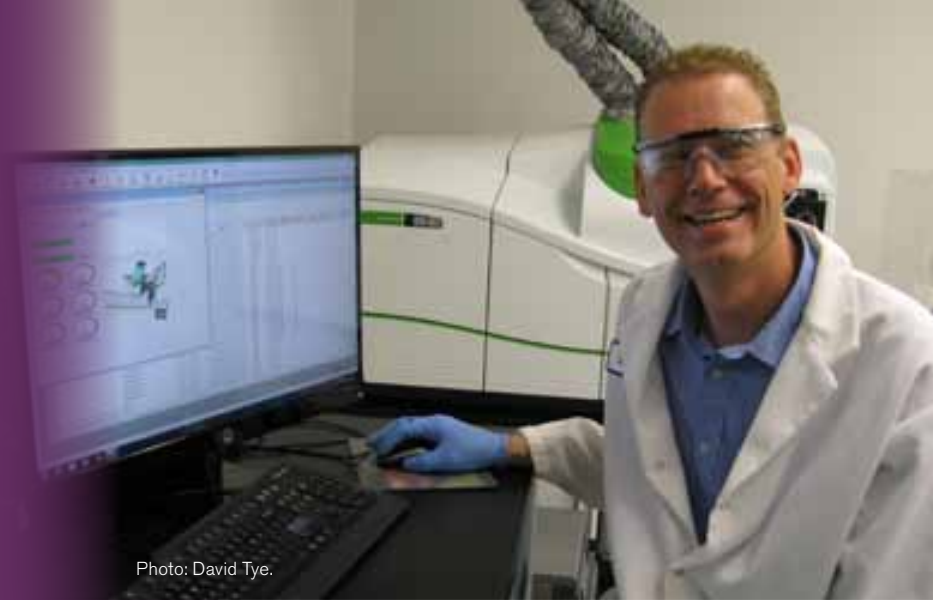


Photo: David Tye.

Assayers – also called minerals analysts, chemical laboratory technicians or fire assayers – play an important role in the mining and mineral exploration industry. They analyze ores and minerals in a lab environment using various methods to determine their composition.

David Tye had a degree in chemistry, but after working in the minerals industry for a number of years, he wanted to gain a more practical understanding of the many facets of a geochemical exploration laboratory. He signed up for BCIT's Assayer Certification Training, which provides students with an in-depth understanding of sample preparation, fire assay, wet chemistry assay and instrumental assay.

In his job as an assayer with Met-Solve Analytical in Langley, B.C., David operates instruments, develops new methods, checks analytical data, troubleshoots issues with the laboratory equipment, and reviews sample problems that can arise from their composition and analysis.

“It is a challenging and ever-changing environment, which makes the job rewarding,” says David. “One day might involve instrument repairs or maintenance, while at the same time ensuring that sample flow meets turnaround expectations. On another day, there might be a sample with a particularly complex matrix that requires additional research to extract the necessary analytical information that the client has requested.”

“I also enjoy interacting with our clients and helping them with their problems when they are looking for answers. In some cases, clients will come to you after reading a report or hearing something and you need to explain the information to help them understand.”

➔ Personal Attributes/Lifestyle

- Appeals to those who enjoy science, precision and sophisticated equipment.
- Most assayers work a typical 40-hour work week in laboratories and at mines.
- The work demands attention to detail while performing complex analytical processes.

B.C. EDUCATION AND TRAINING OPPORTUNITIES FOR THIS POSITION:*

- BCIT Assayer Certification Training

*These programs have been selected as possible training opportunities and are not meant to represent an exhaustive list.

ADVANCED SCIENCE AND TECHNOLOGY

The advanced science and technology field in mining offers numerous vocational opportunities. If you like science and technology and if you live in B.C. or are planning to move here, the mining industry can offer you exciting, interesting, challenging research and science careers. You could work as a geologist, geochemist, geophysicist, or biologist to name a few. The engineering field offers a vast variety of jobs including chemical, electrical, electronics, geological, industrial, manufacturing, mechanical, metallurgical and mining engineer. These high-paying positions require education that leads to a degree in one of the above mentioned fields and, usually, registration with a professional association and a professional certification.

EXAMPLES: ADVANCED SCIENCE AND TECHNOLOGY

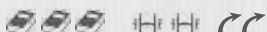
Geologist

Plays a part in all phases of exploration and mining. In exploration, they're responsible for finding new mineral sources that could become mines. On the mine site, they make sure the miners are working in the right places, and that good sampling is carried out.

EDUCATION: University degree

SALARY: \$95,000 - \$125,000/yr

DEVELOPMENT PHASES:
Exploration, Production



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Hydrogeologist

Uses knowledge of geological chemistry to understand and manage groundwater, surface water and soil systems related to mine development and reclamation.

EDUCATION: University degree

SALARY: \$95,000 - \$125,000/yr

DEVELOPMENT PHASES:
Exploration, Production, Reclamation



Geological Engineer

Conducts geological and geotechnical studies to determine the suitability of locations for new mine developments.

EDUCATION:
University degree

SALARY: \$66,000 - \$95,000/yr

DEVELOPMENT PHASES:
Construction, Production, Reclamation



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Mill Engineer

Monitors the flow of material through the mill and controls the addition of chemicals to ensure the most mineral possible is extracted from the ore. May also be responsible for on-site tests to look for improvements in the systems.

EDUCATION: University degree

SALARY: \$70,000 - \$105,000/yr

DEVELOPMENT PHASES:
Production



Metallurgical Engineer (Metallurgist)

Uses specialised knowledge of the chemical and physical properties of metals and minerals to extract them from their natural ores. Controls the process of separating metals from ore in a mineral processing plant.

EDUCATION: University degree

SALARY: \$66,000 - \$95,000/yr

DEVELOPMENT PHASES:
Production



Mine Engineer

Works with other engineers and technologists to help plan, design and build new mines. They also manage and control the activities of existing mines.

EDUCATION: University degree

SALARY: \$125,000/yr+

DEVELOPMENT PHASES:
Construction, Production



*Page sources: MiHR online at: acareerinmining.ca (2014). Salary ranges on this page have been derived from MiHR and three different operating sites.

PROFILE

Carrie Gailey Mill Engineer



Photo: Explore for More: British Columbia.

Carrie likes being an engineer because her job is always changing and she's always learning. "I have the background knowledge – my degree – but it doesn't cover every specific task. For instance, I worked on water sprays to suppress dust. I had to figure out which ones are best for that application. This was something I'd never done before. That's the job of an engineer – to figure it out."

As a mill engineer, Carrie deals with the processing of copper ore. She helps maintain or replace all the supporting systems – conveyors, crushers, machinery and equipment in the mine's mill. In the office, she does project management, for example, organizing contractors to install equipment. She also performs small structural design work and conducts research to make sure that any device she designs meets the mine's codes. Carrie also spends time in the field each day, checking, measuring and getting information from the mine.

"I like mining because it's constantly changing and you can see your progress. Even in a month's period you can see that big things have happened. For mechanical engineers there's every type of system here - mobile equipment, pumping and piping, structures, auxiliary systems, rotating machinery such as motors and shafts."

Carrie grew up in British Columbia and has lived and studied in different parts of Canada. She's thrilled to be back. "It's the most beautiful province. The weather is amazing and it has the best skiing. I can't wait till the snow flies!"

➔ Personal Attributes/Lifestyle

- Appeals to someone that enjoys ongoing learning.
- Strong problem-solving and troubleshooting skills; attention to detail and good communication skills are all necessary.
- Generally work 40 hours a week; but extended hours are required for repairs to critical equipment.
- Work inside the mill building and from their office.

B.C. EDUCATION AND TRAINING OPPORTUNITIES FOR THIS POSITION:*

- CNC Minerals Processing Operator Certificate
- Engineering degree from SFU, UBC, UVIC, or another university

*These programs have been selected as possible training opportunities and are not meant to represent an exhaustive list.



Sources: MiHR online at: acareerinmining.ca (2014) and BC Mining HR Task Force online at: acareerinminingbc.ca (2014)

PROFILE

Thomas Kolb Hydrogeologist



When a summer stint as an exploration geologist searching for the unique nickel-iron alloy awaruite came to an end, Thomas Kolb jumped at a unique opportunity working as a hydrogeologist with Hemmera. Hydrogeologists study the interactions between groundwater and the sub-surface -- particularly the pathways that water follows as it moves underground.

“After graduating, I didn't have any expectations of getting a hydrogeology job in the industry right away,” said Thomas, who holds a geology degree from UBC. “A friend put me in touch with Hemmera and suddenly I had an opportunity to jump feet first into a hydrogeology role, which is pretty cool.”

Thomas spends a lot of time in office, writing reports and modelling, but also gets out in the field where his work often focuses on hydraulic connectivity – the ease at which groundwater flows through soil and rock. This allows him to model how long it would take contaminants to travel certain distances, which is useful in better understanding the environmental impacts of mining activities. He drills holes in the ground using truck-mounted augers, studies changes in the soil profile and installs monitoring wells. At the office, he writes reports and stays up to date on government regulations. Thomas' work helps mining companies put together applications for environmental certificates and permits. He also helps companies with operating mines deal with wastewater and select remediation options.

“I love the variety. On any given day I'm working on multiple projects that have unique needs. There's always something surprising going on,” said Thomas.

➔ Personal Attributes/Lifestyle

- Appeals to those who enjoy nature and are interested in the environment and science.
- Hydrogeologists work a 40-hour work week, but extended hours are common in the field.
- Much of the work can be office-based, but fieldwork is required.
- Generate, analyze and communicate complex data in this rapidly evolving science.

B.C. EDUCATION AND TRAINING OPPORTUNITIES FOR THIS POSITION:*

- SFU, UBC, UVIC (possible graduate schools), (transfer credits may be possible from other post-secondary institutions)

*These programs have been selected as possible training opportunities and are not meant to represent an exhaustive list.



MANAGEMENT

Management professionals with the right credentials and experience are always in high demand and well paid. These positions involve supervising and managing other employees in various areas of the mining operations. This section will help you understand how to become a mine supervisor, human resources manager, community affairs or environments manager, or health and safety coordinator. These and other management positions require post-secondary education and experience working in the industry. The opportunities are limitless and start with getting a job in the industry and learning from experienced co-workers.



EXAMPLES: MANAGEMENT

Mine Superintendent

Plans, organizes, directs, controls and coordinates the production activities of a mining operation including physical and human resources. Responsible for the overall achievement of company objectives.

EDUCATION: University degree and extensive industry experience

SALARY: \$113,000 - \$205,000/yr

DEVELOPMENT PHASES:

Construction, Production, Reclamation



Mine Supervisor

Supervises and co-ordinates the activities of workers engaged in specific aspects of underground and surface mining operations and quarries (e.g. pit operations, health and safety).

EDUCATION: College diploma or university degree

SALARY: \$74,000 - \$110,400/yr

DEVELOPMENT PHASES:

Production



Human Resources Manager

Develops policy and coordinates human resources activities, including employment, compensation, labor relations, benefits and training.

EDUCATION: College diploma or university degree

SALARY: \$66,000 - \$95,000/yr

DEVELOPMENT PHASES:

Exploration, Assessment, Construction, Production, Reclamation



Environmental Manager

p.38

Manages the team that monitors environmental quality and ensures the environmental impacts of a mine's operations comply with regulations and permits.

EDUCATION: University degree

SALARY: \$87,000 - \$145,000/yr

DEVELOPMENT PHASES:

Exploration, Assessment, Construction, Production, Reclamation



Community Affairs Manager

p.37

Establishes and maintains relationships between the mining company, communities and First Nations.

EDUCATION: University degree

SALARY: \$60,000 - \$84,000/yr

DEVELOPMENT PHASES:

Exploration, Evaluation, Construction, Production, Reclamation



Health and Safety Advisor

Provides guidance, expertise and support to operations team, ensuring activities meet the company's health and safety standards. Participates in regulatory inspections and investigations to ensure compliance with regulations.

EDUCATION: University degree

SALARY: \$55,000 - \$75,000/yr

DEVELOPMENT PHASES:

Exploration, Construction, Production



*Page sources: MiHR online at: acareerinmining.ca (2014). Salary ranges for Environmental Manager and Human Resources Manager have been derived from MiHR and three different operating sites. Mine superintendent salary obtained from technology.infomine.com/reviews/MiningSalaries.

PROFILE

Monica Moretto Senior Manager, Corporate Affairs and Social Responsibility



Photo: Monica Moretto.

Born in Argentina, Monica Moretto immigrated to Canada in 2003 and was drawn to the mining industry because she felt that she could contribute to the challenges that the industry currently faces in areas related to communications and social license. She holds a communications' degree and has 18 years of experience as a journalist in radio and TV in Buenos Aires.

Monica's expertise in Latin American affairs created the right platform for her job with Pan American Silver, where she works in Corporate Affairs and Corporate Social Responsibility (CSR). She designs and publishes the company's Sustainability Report, following Global Reporting Initiative standards.

In her CSR role, Monica travels frequently to the areas where Pan American's operations are located and visits with the communities. She meets with the company's local CSR teams to evaluate each area's needs and the social plans offered to local people. She engages with NGOs and other organizations to maintain and improve the quality of the programs and explore partnerships.

"Working in CSR is a very emotional job and sometimes there are heartaches. It is all about people. Journalism is also a people career, but it doesn't have that direct contact -- the ability to shift and improve things in communities. That's something about CSR that not many careers can give you."

Monica is currently working on a Masters in Environmental Management through Royal Roads University. "There is so much going on in CSR, a lot of people are going back to get additional education so they can better understand the new requirements," she said. "Communities are more aware and are asking more questions. Opportunities in CSR are growing."

➔ Personal Attributes/Lifestyle

- Appeals to people with a strong sense of responsibility for others and the drive to see projects completed.
- Senior managers work a regular week, but do at times have extended days.
- Many are based in regional or head offices or on mine sites.
- They supervise groups of people and enjoy the opportunity to lead companies forward.

B.C. EDUCATION AND TRAINING OPPORTUNITIES FOR THIS POSITION:*

- A post-secondary degree or diploma preferable in a discipline related to the mining industry from Royal Roads, SFU, UBC, UVIC (or a combination of onsite training and experience)

*These programs have been selected as possible training opportunities and are not meant to represent an exhaustive list.

PROFILE

Marke Wong Environmental Manager



Photo: Marke Wong.

When Marke graduated from high school, his mother advised him to choose something that he loved to do but also was practical. He later earned a bachelor of science degree from the University of Victoria. He first became a Registered Professional Biologist; and now practices as an Environmental Professional.

In the 1990s, Marke got his first mining experience permitting and assessing projects for Homestake Canada, Kinross Gold Corporation and Goldcorp. He later attended graduate studies at Royal Roads University (RRU) in the Masters in Management and Environment Program.

Today, Marke works as Environmental Manager for Huckleberry Mines. In addition to supervising staff in the environment department, Marke also manages consultants and works with communities, First Nations and governments. Together, they work to find ways to minimize the impact of the mine on the surrounding environment and ensure the operation is meeting all of the requirements of its permits and government regulations.

Marke's job involves working a four-day week on site. In addition, he works some weekends as the on-site designated mine manager. His job includes frequent travel to remote areas using helicopters, float planes, boats and 4x4 vehicles.

"I really enjoy the travel and the diverse people I have the privilege to meet and work with," says Marke. "Working with others to identify practical solutions to complex issues related to the mining industry is both challenging and rewarding."

➔ Personal Attributes/Lifestyle

- Appeals to those with the ability to work with others, good communication skills and strong problem-solving skills.
- Managers work a regular week, but do at times have extended days.
- Most are based in the same location as their staff.
- Managers often start working in the mining industry at different jobs where they learn the ropes and then move up to supervise groups of employees.

B.C. EDUCATION AND TRAINING OPPORTUNITIES FOR THIS POSITION:*

- A post-secondary degree or diploma preferable in a discipline related to the mining industry from Royal Roads, SFU, UBC, UVIC (or a combination of onsite training and experience)

*These programs have been selected as possible training opportunities and are not meant to represent an exhaustive list.

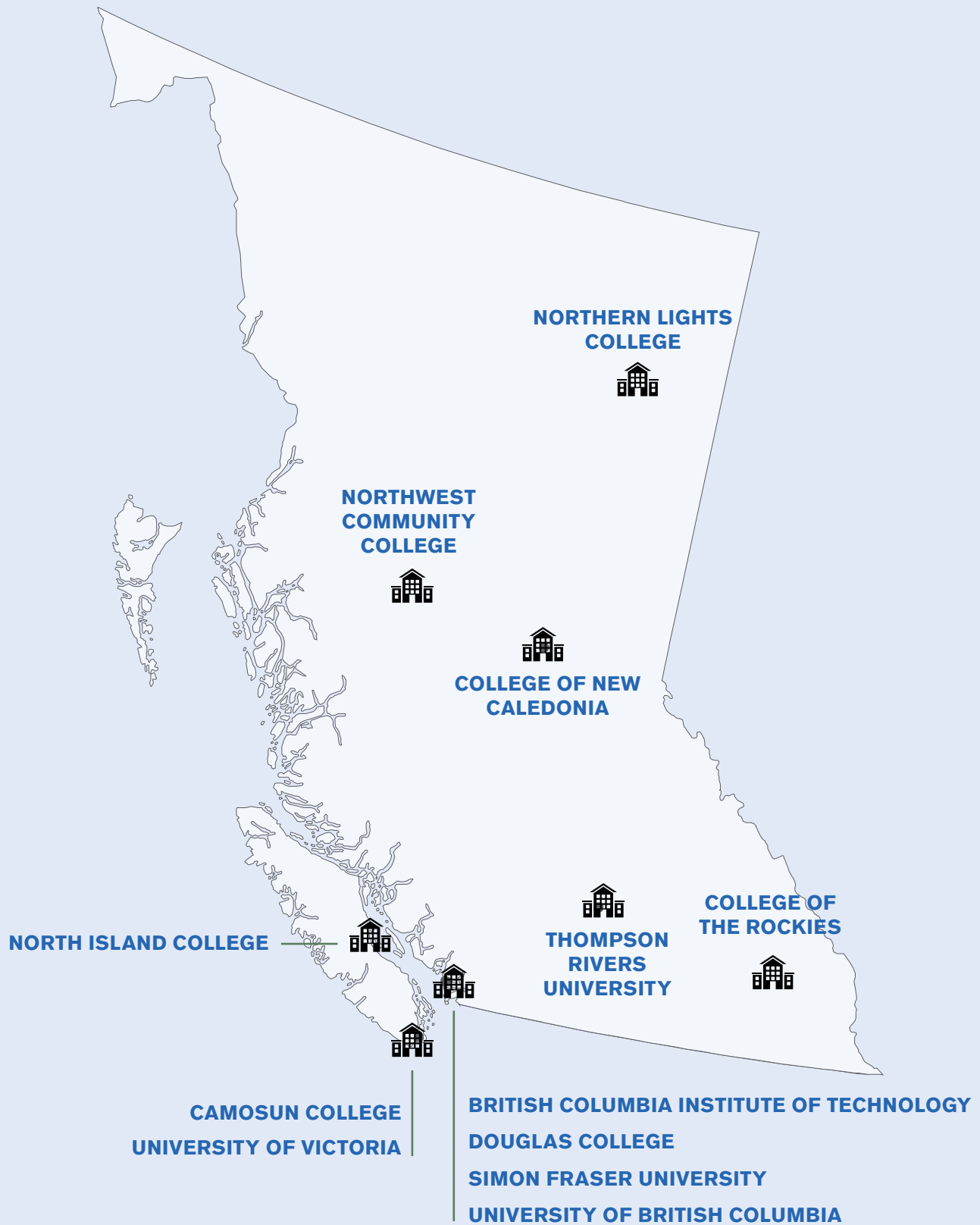


→ Mining Industry Training and Education in British Columbia **PUBLIC POST-SECONDARY INSTITUTIONS – CORE PROGRAMS**

This section provides information on core mining training programs in British Columbia that lead to industry specialized certifications, diplomas and degrees. You will learn more about mining programs across B.C. as well as review samples of courses within those programs; this will help you understand the breadth and the depth of mining training. You will be able to access relevant program links and explore programs' availability and schedules as well as directly connect with mining training departments at various colleges and universities.

B.C. MINING EDUCATION MAP

The following B.C. post-secondary institutions have core programs related to mining:





British Columbia Institute of Technology (BCIT)

MINERAL EXPLORATION AND MINING TECHNOLOGY

PROGRAM DESCRIPTION: BCIT's Mineral Exploration and Mining Technology program offers a variety of continuing education online or classroom courses for entry-level to professional workers as well as non-technical mineral industry personnel looking to better understand mineral exploration and mining fundamentals.

PROGRAM TYPE: Part-time and online courses.

SAMPLE COURSES:

- MINE 1010 - Exploration and Mining for Investment Advisors and Investors (classroom course): Provides an overview of mineral exploration and mining for those in the financial industry and for investors.
- MINE 1100 - Introduction to the Minerals Industry (online course): Introduces students to the wide scope of the minerals industry and prepares them for further courses in mining.
- MINE 1101 - Physical Geology (online course): This course appeal to aspiring earth science students as well as non-technical mineral industry personnel looking to better understand geologic fundamentals.
- MINE 1017 – Mineral Exploration Field Safety (online course): Based around AMEBC's Field Safety guidelines, this course provides an overview of the key safety issues encountered in the mineral exploration environment and is designed for both new field workers and as a refresher for seasoned explorationists.

CAMPUS LOCATION: BCIT Burnaby Campus, 3700 Willingdon Avenue, Burnaby, BC V5G 3H2

WEBSITE: bcit.ca/mining

CONTACT:

Hao Wang, Program Assistant
Phone: 604-451-7001
E-mail: Hao_Wang@bcit.ca



British Columbia Institute of Technology (BCIT)

CENTRE FOR MINE ECONOMICS AND BUSINESS

PROGRAM DESCRIPTION: The Centre for Mine Economics and Business (the “Centre”) at BCIT is a joint initiative between the Mineral Exploration and Mining Technology program in the School of Construction and the Environment and the School of Business. The goal of the Centre is to bridge the gap between the technical and business aspects of the mining industry.

PROGRAM TYPE: Students can take single or multiple courses.

SAMPLE COURSES:

- MINE 1010 Mineral Exploration and Mining for the Business and Investment Community
- MINE 1011 Behind the News Release: Understanding Mining Disclosure
- MINE 1012 Mining Law and Legal Agreements
- MINE 1013 Mining Industry Risk - Identification, Assessment and Management
- MINE 1014 Mineral Economics

CAMPUS LOCATION: BCIT Burnaby Campus, 3700 Willingdon Avenue, Burnaby, BC V5G 3H2

WEBSITE: bcit.ca/construction/cmeh

CONTACT:

Hao Wang, Program Assistant
Phone: 604-451-7001
E-mail: Hao_Wang@bcit.ca



British Columbia Institute of Technology (BCIT)

MINING AND MINERAL RESOURCE ENGINEERING

PROGRAM DESCRIPTION: The Bachelor of Mining and Mineral Resource Engineering program provides students with a flexible educational path for successful careers in the mineral resource industry both in Canada and worldwide. This degree has a strong practical focus built upon a broad foundation of engineering theory, analysis and design.

PROGRAM TYPE: Full-time Bachelor of Engineering (4 years).

SAMPLE COURSES:

- MINE 4200 Drilling, Explosives and Fragmentation
- MINE 5000 Surface Mine Design
- MINE 5005 Mineral Resource Estimation
- MINE 5100 Advanced Petrology
- MINE 6000 Underground Mine Design and Ventilation
- MINE 6005 Advanced Rock Mechanics
- MINE 6010 Computer Aided Mine Design
- MINE 6015 Cost Estimating for Mining Projects
- MINE 6020 Mining Field Methods
- MINE 6025 Mineral Processing Plant Design
- MINE 6100 Applied Structural Geology
- MINE 7000 Energy Resources
- MINE 7010 Mine Reclamation and Closure Design
- MINE 7000 Energy Resources
- MINE 7100 Exploration Project Design
- MINE 8005 Mine Management and Occupational Health
- MINE 8020 Engineering Law and Ethics

CAMPUS LOCATION: BCIT Burnaby Campus, 3700 Willingdon Avenue, Burnaby, BC V5G 3H2

WEBSITE: bcit.ca/8610beng

CONTACT:

Hao Wang, Program Assistant
Phone: 604-451-7001
E-mail: Hao_Wang@bcit.ca



Mining for greater career potential?

As one of the largest users of high-tech equipment and applications, the mining industry requires practitioners who are more than ready to keep up with these advances. Get the hands-on skills you'll need to succeed.

- Mineral Exploration and Mining Technology diploma
- Mining and Mineral Resource Engineering bachelor's degree




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**School of
Exploration & Mining**
NORTHWEST COMMUNITY COLLEGE



Camosun College (CAM)

MINING ENGINEERING BRIDGE PROGRAM

PROGRAM DESCRIPTION: Graduates of the Civil Engineering Bridge Program become highly regarded members of their third-year class at either the Vancouver campus of UBC. They bring the practical skills and hands-on experience that make them coveted by Co-op employers and respected by their professors and fellow classmates. The academic foundation of courses taught in the Bridge program prepares the students well for the rigors of Engineering at UBC.

PROGRAM TYPE: This six-month advanced diploma program starts in January, allowing subsequent entry into the third year of UBC Vancouver. Please note that this program is only open to Technology graduates from BCIT's Mining and Mineral Exploration program.

SAMPLE COURSES:

- COMP 130 Computing for Engineers
- CHEM 150 Engineering Chemistry
- ENGR 262 Analytical Methods
- MATH 250A Intermediate Calculus 1
- MATH 251 Matrix Algebra for Engineers
- ENGR 166 Geology for Engineers
- ENGR 264 Engineering Mechanics
- MATH 254 Probability and Statistics
- MATH 250B Intermediate Calculus 2
- MATH 252 Applied Differential Equations
- PHYS 295 Physics (Engineering Bridge)

CAMPUS LOCATION: Interurban campus, Victoria

WEBSITE: camosun.ca/learn/programs/engineering-bridge/what-youll-learn/mining.html

CONTACT:

Stephanie Milne, Program Assistant
Phone: 250-370-4404
Email: engbridge@camosun.bc.ca



Camosun College (CAM)

DEPARTMENT OF CHEMISTRY AND GEOSCIENCE

PROGRAM DESCRIPTION: Camosun College's Department of Chemistry & Geoscience will guide you through a journey of learning in one of several interrelated educational paths in molecular, inorganic and/or earth sciences. The department's offerings include the full set of university transfer, first and second year chemistry, engineering chemistry, geoscience, biochemistry, immunology, and biotechnology.

PROGRAM TYPE: First and second level courses in geoscience through the Department of Chemistry and Geoscience.

SAMPLE COURSES:

- GEOS 100 Physical Geology
- GEOS 110 Earth-Ocean-Atmosphere System
- GEOS 240 Sedimentary Geology
- GEOS 250 Introduction to Mineralogy
- GEOS 260 Introduction to Petrology

CAMPUS LOCATION: Interurban campus, Victoria

WEBSITE: camosun.ca/learn/calendar/current/web/geos.html

CONTACT:

Larry Lee
Phone: 250-370-3201



College of New Caledonia (CNC)

MINING INDUSTRY CERTIFICATE (MINE)

PROGRAM DESCRIPTION: CNC's MINE Industry Certificate endeavours to provide recognized industry-standard training for entry-level employment in surface mineral exploration and mining. Students graduate from the program either job-ready or prepared to pursue further technical training.

PROGRAM TYPE: Full-time, 16-week program

SAMPLE COURSES:

- MINE 110 Introduction to the Minerals Industry
- MINE 120 Exploring Mining Opportunities
- MINE 130 Mining Industry Safe Work
- MINE 140 Mining Industry Skill Certification
- MINE 150 Job Entry Operations
- MGT 154 Applied Human Relations

CAMPUS LOCATION: Burns Lake, Fort St. James, Mackenzie and Prince George campuses.

WEBSITE: cnc.bc.ca/CNC_Programs/Mining_Industry_Certificate.htm

CONTACT:

Recruitment advisor: Toll free 1-800-371-8111, ext. 5855

Admissions Prince George: Toll free 1-800-371-8111, ext. 5867



College of New Caledonia (CNC)

MINERAL PROCESSING OPERATOR CERTIFICATE (MPOC)

PROGRAM DESCRIPTION: This 16-week entry-level program addresses the need for trained Mineral Processing Operators who are responsible for processing the ore extracted from mines. Based on the National Occupational Standard for the Mineral Processing Operator, this program was developed by the Mining Industry Human Resources Council (MiHR) and is supported by local industry. It provides recognized training that meets industry standards and leads to individuals either being job-ready or prepared to pursue further technical training. The MPOC program's certificate courses focus on safe work practices as defined by the Health, Safety and Reclamation Codes for Mines in B.C. Through mine tours and field trips, the program also exposes students to entry-level positions in the mining industry.

PROGRAM TYPE: Full-time, 16-week program

SAMPLE COURSES:

- Mill Industry Safe Work Practices
- Essential Skills for Mineral Processing Operators
- Operating Tools & Equipment for Mineral Processing Operators
- Environmental Safety – Chemicals
- Mineral Processing Operations
- Applied Human Relations
- Introduction to the Minerals Industry

CAMPUS LOCATION: Fort St. James campus

WEBSITE: cnc.bc.ca/campuses/nechako_campus/nechako_programs_courses/mineral_processing_operator.htm

CONTACT:

Recruitment advisor: Toll free 1-800-371-8111, ext. 5855

Admissions Prince George: Toll free 1-800-371-8111, ext. 5867



College of the Rockies (COTR)

MINING APPRENTICESHIP PROGRAM

PROGRAM DESCRIPTION: The Mining Apprenticeship Program (MAP) is a College of the Rockies partnership with the Elk Valley Mining Industry to provide access to the Heavy Duty Mechanic and Electrical Trades through an innovative training and work placement model. MAP is the first of its kind in BC! This is a local Industry initiative and idea that we are very excited about implementing. The support from companies in the Elk Valley make this educational opportunity possible. It is an innovative way to address Trades shortages locally and to produce qualified Heavy Duty Mechanics and Electricians. Industry is excited about the potential for the program, which currently focuses on Heavy Duty Mechanics and Electricians but could be expanded to other Trades, if successful.

PROGRAM TYPE: As positions become available, the College will be indenturing additional MAP apprentices. Please watch for those public advertisement and hiring notices. [College of the Rockies Job Postings](#).

SAMPLE COURSES: N/A

CAMPUS LOCATION: Cranbrook, B.C.

WEBSITE: cotr.bc.ca/map

CONTACT:

Dr. Jack Moes, Dean of Trades and Technology

Phone: (250) 489-8224

Email: jmoes@cotr.bc.ca



Douglas College (DC)

GEOLOGICAL RESOURCES DIPLOMA PROGRAM

PROGRAM DESCRIPTION: The program focuses on geological skills used in mining and mineral exploration, with emphasis on field work. Students learn advanced geological topics in minerals and petrology, mapping, exploration and mining, and structural geology. Program courses are all transferrable to universities, so graduates can transfer to degree programs in Earth Science and related fields. Qualified students may join in second year.

PROGRAM TYPE: Full-time diploma (2 years) or part-time.

SAMPLE COURSES:

- EAES 1120: Intro. to Earth Science
- EAES1900: Resources from the Earth
- CHEM 1108: Chemistry
- ENGL1130: English
- MATH1105: Mathematics
- EAES1121: History of the Earth
- CHEM1110: Chemistry
- GEOG 2270: GIS
- MATH1110: Mathematics
- PHYS 1104: Physics
- EAES 1500: Field Methods 1
- EAES 2340: Sedimentology and Strat.
- EAES 2800: Geological Mapping 1
- EAES 2851: Geological Info. Systems
- EAES 2900: Exploration and Mining 1
- EAES 2410: Intro. to Petrology
- EAES 2550: Structural Geology
- EAES 2810: Geological Mapping 2
- EAES 2910: Exploration and Mining 2
- PHYS 1107: Physics
- EAES 2500: Field Methods 2

CAMPUS LOCATION: New Westminster and Coquitlam

WEBSITE: douglascollege.ca/programs-courses/catalogue/programs

CONTACT:

Dave Waddington

Phone: 604-527-5230

E-mail: waddingtond@douglascollege.ca and put "GRDP info" in the subject line.



**NORTH ISLAND
COLLEGE**

North Island College (NIC)

UNDERGROUND MINING ESSENTIALS

PROGRAM DESCRIPTION: The Underground Mining Essentials certificate is designed for individuals seeking to enter the mining industry. Training is designed for individuals with limited experience, who have a desire to work in the field and gain the fundamental skills to pursue entry level positions in the mining sector. Skills gained in the program are directly transferable to entry level positions in operations specific to underground mining, open pit mining, and sand/gravel quarry mining.

PROGRAM TYPE: 14 week full-time certificate.

SAMPLE COURSES:

- MIN-100 Introduction to the Mining Industry
- MIN-101 Mining Health and Safety
- MIN-102 Fundamentals of Mining Technologies
- MIN-103 Introduction to Mining Skills
- MIN-104 Emergency Mining Procedures
- MIN-105 Worksite Readiness

CAMPUS LOCATION: Campbell River

WEBSITE: nic.bc.ca/program/underground_mining_essentials_certificate

CONTACT:

Wendy R. Samaroden, Regional Training Officer
School of Continuing Education and Training
Phone: 250-923-9728; Fax: 250-923-9725
Email: wendy.samaroden@nic.bc.ca

Northwest Community College (NWCC)

SCHOOL OF EXPLORATION & MINING

PROGRAM DESCRIPTION: Since its inception in 2004, Northwest Community College's School of Exploration & Mining (SEM) has taken a leadership role in providing training for the minerals industry workforce in northern B.C. communities. In partnership with Smithers Exploration Group (SEG), SEM develops and delivers essential courses and programs targeted for the minerals industry. This means job-ready skills and employment for students. Of more than 1,300 SEM graduates, more than 70 percent have found employment or returned to school. SEM's innovative program design and delivery, strategic partnerships, and commitment to social and environmental responsibility have been recognized through several provincial, national and international awards.

PROGRAM TYPE: Courses available by semester and on-demand.

SAMPLE COURSES:

- CENRES 741 Drill Core Technician Basic Training
- CENRES 738 Surface Diamond Driller's Helper
- CENRES 711 Prospector Basic Training
- CENRES 714 Mining Exploration & Natural Resources Field Assistant
- CENRES 770 Environmental Monitor Assistant Program (EMAP)
- CENRES 743 Camp Operations
- MPO 100-199 Mineral Processing Operator Program (MPO)
- CENRES 768 Introduction to Timber Cruising
- CENRES 769 Introduction to Silviculture

CAMPUS LOCATION: Smithers

WEBSITE: nwcc.bc.ca/programs-courses/nwcc-schools/school-exploration-mining

CONTACT:

Phone: Toll Free 1-877-277-2288 ext. 5837

Northwest Community College (NWCC)

CERTIFICATE IN APPLIED EARTH AND ENVIRONMENTAL STUDIES (EES)

PROGRAM DESCRIPTION: Students have a choice of two options within the EES certificate program; Geostudies or Geosciences. The Geoscience option is recommended for students with a background in science who may wish to pursue further studies. EES is a one year (33 credit) program that emphasizes the practical application of earth and environmental studies. Hands-on curriculum includes community-based projects and field-based studies, building valuable skills and knowledge that meet employment and career needs. Students gain the academic and applied skills relevant for entry-level employment in natural resource, mining and mineral exploration, tourism, outdoor adventure and environmental industries.

PROGRAM TYPE: One Year Certificate. (This certificate program is also equivalent to year one of the two-year Associate of Science Degree with a specialization in Environmental Geosciences).

SAMPLE COURSES:

- Biol 101: Introductory Biology I: Cells, Diversity and Physiology
- Biol 102: Introductory Biology II: Genetics, Evolution and Ecology
- Biol 211: Principles of Ecology
- Engl 101 or Engl 151: Introduction to Composition or Technical Writing
- Geog 150: Physical Geography I: Biogeography, Meteorology and Climate
- Geog 160 or Geol 157: Physical Geography II: Geology, Geomorphology and Soils or Introduction to Northwest Geology
- Geog 203: Geomorphology
- Geog 204: Spatial Analysis and Geographic Information Systems (GIS)
- Geog 207: Hydrology and Soils
- Geog 210: Environments and Society
- Field Based Elective Arts Credit

CAMPUS LOCATION: Terrace

WEBSITE: <http://www.nwcc.bc.ca/program/applied-earth-environmental-studies>

CONTACT:

Gordon Weary, Coordinator | Phone: 250-635-6511 ext. 5390 | Email: gweary@nwcc.bc.ca

Northwest Community College (NWCC)

ENVIRONMENTAL GEOSCIENCE SPECIALIZATION, ASSOCIATE OF SCIENCE DEGREE

PROGRAM DESCRIPTION: Building directly on the EES Certificate program, the A.Sc. EGS program encompasses a broad range of disciplines that allow students to develop an understanding of Earth's natural systems and related processes. Fieldwork and field-based methods are an integral part of this Associate Degree. Upon completion, students are eligible to enter the third-year B.Sc. Integrated Degree program at UNBC in Terrace, or go on to complete a Bachelor's degree at the institution of their choice in Environmental Science, Geography, Geology, Biology, or a related discipline. Alternatively, students may wish to pursue employment that requires an individual with knowledge and field skills in environmental and natural sciences.

PROGRAM TYPE: Two-year Associate of Science Degree with a specialization in Environmental Geosciences.

SAMPLE COURSES:

- Biol 201 or Biol 208: Invertebrate Biology or Plant Biology
- Geog 110: People and the Environment
- English 102 or 152: Introduction to Literature or Advanced Technical Writing
- Phil 210: Environmental Ethics
- Math 101: Calculus 1: Differential Calculus
- Math 131: Introduction to Statistics
- Plus Two of the Following: Chem 101/102 or Phys 101/102 or Math 102: Introductory Chemistry I and/or II or Introduction Physics I and/or II or Calculus II: Integral Calculus
- Arts Elective: Any Field Based Arts course

CAMPUS LOCATION: Terrace, B.C.

WEBSITE: <http://www.nwcc.bc.ca/program/associate-science-degree-environmental-geoscience-specialization>

CONTACT:

Gordon Weary, Coordinator | Phone: 250-635-6511 ext. 5390 | Email: gweary@nwcc.bc.ca



SIMON FRASER UNIVERSITY
ENGAGING THE WORLD

Simon Fraser University (SFU)

DEPARTMENT OF EARTH SCIENCES, GEOLOGY STREAM

PROGRAM DESCRIPTION: First established in 1995, SFU's Department of Earth Sciences includes a traditional geology core along with teaching and research in environmental geology.

The Department's undergraduate program offers students a number of options, including a Major/Honours B.Sc. (Geology and Environmental Geoscience streams) in Earth Sciences and a Joint Major/Honours with Chemistry. The program also has a strong field component with three field schools plus numerous field trips linked to a variety of required and optional courses. Graduating students have the academic qualifications to register as professional geoscientists (P.Geo.) with the Association of Professional Engineers and Geoscientists of British Columbia.

PROGRAM TYPE: Undergraduate and graduate degree programs.

SAMPLE COURSES:

- EASC 301 Igneous Petrology
 - EASC 307 Applied Geophysics
 - EASC 311 Metamorphic Petrology
 - EASC 401 Mineral Deposits
 - EASC 404 Structural Geology II
 - EASC 413 Resource Geotechnics
- (See website for complete list of courses offered)

CAMPUS LOCATION: Burnaby

WEBSITE: sfu.ca/earth-sciences/undergraduate.html

CONTACT:

Department of Earth Sciences, Simon Fraser University
Phone: 778-782-5387; Fax: 778-782-4198
Department Manager/Academic Advisor Tarja Vaisanen
Phone: 778-782-4779; Email: tvaisane@sfu.ca



THOMPSON RIVERS
UNIVERSITY

Thompson Rivers University (TRU)

INTRODUCTION TO SURFACE, UNDERGROUND AND MINERAL PROCESSING CERTIFICATE

PROGRAM DESCRIPTION: This comprehensive six week program will introduce the students to the various types of mining: surface, underground and mineral processing. Students will learn about the history of mining, the important historic role of Aboriginal participation in mining, the economic importance, exploration and mine reclamation. Students will earn industrial recognized safety certifications required to work in industrial and heavy construction settings.

PROGRAM TYPE: Certificate (offered on a contract basis).

SAMPLE COURSES:

- Introduction to Surface, Underground and Mineral Processing
- Workplace First Aid Level 1
- Transportation Endorsement
- Respiratory Protection and Personal Protection Equipment
- Confined Spaces
- Lockout/Tagout Procedures
- H2S Alive
- Fall Protection and Restraint
- Industrial Fire Defense & Extinguisher Training
- Introduction to the Mines Act
- Communications at the Mine Site
- Introduction to Rigging
- Forklift Lift/Truck Safety Certification
- Skid Steer Certification
- Ground Disturbance
- Transportation of Dangerous Goods
- Construction Safety Training Systems
- Mine Tours

CAMPUS LOCATION: Campuses in Kamloops and Williams Lake. Regional centres in 100 Mile House, Clearwater, Barriere, Ashcroft, and Lillooet.

WEBSITE: tru.ca/williamslake/cs/ttech.html#Mining+Skills+for+an+Entry+Level+Workforce

CONTACT:

Williams Lake Campus
Phone: 250-392-8010; Email: wlcontinuingstudies@tru.ca
School of Trades and Technology
Phone: 778-471-8365; Email: trades@tru.ca



Norman B. Keevil Institute of Mining Engineering, UBC

MINING ENGINEERING PROGRAM

PROGRAM DESCRIPTION: Mining Engineering is concerned with the optimal exploitation of mineral resources while minimizing environmental impact. The discipline requires a broad knowledge of engineering and scientific subjects. The program focuses on geology, mining methods, surveying, and computer applications for mining operations and mineral explorations. Students learn hands-on science and engineering skills, and complete an industry-standard report during their final year.

PROGRAM TYPE: Full-time degree (4 years).

SAMPLE COURSES:

- CIVL 210 Soil Mechanics
- CIVL 215 Fluid Mechanics I
- EOSC 324 Mineralogy and Petrology
- MATH 253 Multivariable Calculus
- MATH 255 Differential Equations 1
- MECH 260 Mechanics of Materials
- MINE 292 Introduction to Mineral Processing
- APSC 278 Engineering Materials
- APSC 279 Engineering Materials Lab
- EECE 263 Basic Circuit Analysis
- MINE 302 Underground Mining Design
- MINE 304 Drilling and Blasting
- MINE 305 Geomechanic Fundamentals
- MINE 331 Unit Operations
- MINE 333 Flotation
- MINE 338 Process Mineralogy
- MINE 391 Mining and Environment
- MINE 395 Mineral Deposit Modelling
- MINE 396 Engineering Economics
- APSC 450 Professional Engineering Practice
- EECE 365 Applied Electronics/
Electromechanics
- MINE 402 Mine Ventilation
- MINE 404 Mine Management
- MINE 410 Surface Mining and Design
- MINE 432 Industrial Automation and Robotics
- MINE 480 Mine Waste Management
- MINE 491 Mine and Plant Feasibility
- MINE 403 Rock Mechanics Design
- MINE 482 Maintenance Engineering
- MINE 434 Processing Precious Metal Ores
- MINE 462 Coal Preparation Technology

CAMPUS LOCATION: Point Gray Campus, Vancouver

WEBSITE: mining.ubc.ca

CONTACT: Mike Schoen; Phone: 604 827-4708; E-mail: MSchoen@apsc.ubc.ca



University of British Columbia (UBC)

DEPARTMENT OF EARTH, OCEAN AND ATMOSPHERIC SCIENCE

PROGRAM DESCRIPTION: The Department of Earth, Ocean and Atmospheric Science was formed in April 1996 with the amalgamation of the old Departments of Geological Sciences, Oceanography, and the geophysics component of Geophysics and Astronomy.

The research focus of the new department extends from pure science studies of the earth's deep interior, through near-surface geological studies and environmental earth science, to the oceans and atmosphere. To realize their research objectives, UBC earth scientists draw on a broad base of knowledge from the basic sciences of chemistry, physics, biology and mathematics. An integrated approach is increasingly required to understand the complex interactions due to human impact on the earth in such problems as climate change, resource exploitation and waste disposal. One specialized group is the Mineral Deposit Research Unit (MDRU) which undertakes programs supported by the mineral exploration industry.

The Department maintains active ties with the mining and petroleum industries, consulting firms and government labs where many students find employment during summers and after graduation. The Geological Engineering Program in the Faculty of Applied Science, administered through a Board of Studies, provides undergraduates with a unique blend of earth science and applied techniques.

PROGRAM TYPE: Undergraduate and graduate degrees as well as the Geological Engineering Program.

SAMPLE COURSES: See website for a complete list of courses offered.

CAMPUS LOCATION: Vancouver

WEBSITE: eos.ubc.ca/academic/prospective-students.html

CONTACT:

Phone: 604-822-2449; Email: inquiries@eos.ubc.ca



University of British Columbia (UBC)

MDRU-MINERAL DEPOSIT RESEARCH UNIT

PROGRAM DESCRIPTION: MDRU - Mineral Deposit Research Unit is a collaborative research, education and training venture between the mining industry and UBC. The unit is one of the largest, internationally recognized research groups that are dedicated to providing graduate education and research on mineral exploration related topics. Established in 1989, MDRU is an important part of UBC's Department of Earth, Ocean and Atmospheric Sciences (EOAS). Emphasis is on graduate student training, collaborations with industry partners, and applied mineral exploration research. Our projects and training courses have a circum-Pacific focus but reach further into Eastern Europe, Asia and South America. This industry-associated global approach provides students with a well-rounded education that ensures that our graduates have the education and practical skills that are directly applicable to the international mining industry.

PROGRAM TYPE: Master of Science, and Doctor of Philosophy, Graduate Degrees as administered by EOAS.

SAMPLE COURSES: MDRU offers and contributes to several graduate courses, such as Exploration Methodologies, Mineral Deposit Mapping, as well as providing numerous short courses and workshops.

CAMPUS LOCATION: Vancouver

WEBSITE: mdru.ubc.ca

CONTACT:

Phone: 604-822-6136; Email: mdru@eos.ubc.ca



University
of Victoria

University of Victoria (UVIC)

SCHOOL OF EARTH AND OCEAN SCIENCES

PROGRAM DESCRIPTION: On the south end of Vancouver Island, the University of Victoria is perfectly situated for offering a complete education in Earth System Science. UVic has close ties with government agencies involved in the investigation of Canadian climate, coast lines, marine life, geology, and natural hazards. Students have opportunities to participate in scientific ocean cruises and to investigate the geology of the Cordilleran mountains of British Columbia. Students come from diverse backgrounds and bring a wide range of interests to bear on the study of the earth. Chemistry, physics, mathematics, biology, and geology all find a home in the School of Earth and Ocean Sciences. Program graduates enter into exciting professional careers including hydrocarbon exploration, mining, environmental studies, and research.

UVic offers all of the courses required to meet the syllabus requirements of the Professional Geoscientist (P.Geo.) designation.

PROGRAM TYPE: Degree and co-op programs, field schools, Professional Geologist registration.

SAMPLE COURSES: See website for complete listing.

CAMPUS LOCATION: Victoria

WEBSITE: uvic.ca/science/seos

CONTACT:

School of Earth and Ocean Sciences, University of Victoria

Phone: 250-721-6120

Email: seos@uvic.ca

A group of 14 people, including men and women, are standing in a line in front of a large piece of heavy machinery, likely a mining truck or loader, at a mine site. They are all wearing safety gear, including hard hats and high-visibility vests. The background shows a rocky, excavated area typical of a mine. The entire image has a blue tint.

→ Mining Industry Training and Education in British Columbia **RELATED PROGRAMS**

If you are interested in accounting, IT, human resources, logistics, occupational health and safety, scientific research, data analysis, and other fields, you can learn these vocations and apply your skills and knowledge in the mining industry. Both public and private post-secondary institutions provide training allowing you the opportunity to receive education throughout the province. This section provides a listing of related programs by post-secondary training providers. The programs listed are certificates, diplomas and undergraduate degrees that support mining companies and their operations. Visit the post-secondary training providers website to learn more the programs. The data contained in this section was generously provided by BCCAT and extracted from Education Planner (2015). The post-secondary institutions listed within this section are both public and private. The private post-secondary institutions are notes with an asterisk (*).

British Columbia Institute of Technology

CAMPUS LOCATION: Burnaby, B.C.

WEBSITE: bcit.ca

RELATED PROGRAMS:

- Accounting
- Advanced Marketing Management Certificate
- Applied Network Administration and Design Associate Certificate
- Business Administration Bachelor of Business Administration
- Business Information Technology Management Diploma of Technology
- Carpentry
- Chemical and Environmental Technology (Process Engineering Option) Diploma of Technology
- Civil Engineering
- CNC Machinist Technician Diploma of Trades Training
- Commercial Transport
- Computer Information Systems
- Computer Systems Technology
- Construction Management Bachelor of Technology
- Diesel Engine Technician Foundation Certificate of Trades Training
- Ecological Restoration Bachelor of Technology
- Electrical
- Electrical and Computer Engineering
- Environmental Engineering Technology Bachelor of Technology
- Financial Management
- Gasfitting
- Geographic Information Systems
- Heavy Duty Mechanic
- Human Resource Management
- Industrial Instrumentation
- Machinist Foundation Certificate of Trades Training
- Marketing Management

- Mechanical Engineering
- Mechanical Systems Associate Certificate
- Metal Fabricator Foundation Certificate of Trades Training
- Millwright
- Network Administration and Security Professional (NASP) Certificate
- Occupational Health and Safety Certificate
- Operations Management
- Piping Foundation Certificate of Trades Training
- Plumbing
- Power and Process Engineering Diploma
- Power Engineering (General Program) Certificate of Trades Training
- Security Systems Technician Certificate of Technical Studies
- Software Systems Developer - (Web Programmer Option) Certificate of Technology
- Steamfitting
- Steel Fabrication
- Sustainable Resource Management Diploma of Technology
- Tool and Die Maker Apprenticeship
- Trades Discovery for Women Associate Certificate
- Trades Discovery General Associate Certificate
- Welding

Camosun College

CAMPUS LOCATION: Victoria, B.C.

WEBSITE: camosun.ca

RELATED PROGRAMS:

- Applied Chemistry and Biotechnology Diploma
- Arts and Science Studies Diploma
- Associate of Science Degree (Several Options)
- Bachelor of Business Administration Degree
- Carpenter
- Civil Engineering Technology Access

Certificate

- Computer Systems
- Cook
- Electrical
- Electronics and Computer Engineering Technology Access Program
- Engineering Graphics Technician Certificate
- Environmental Technology Diploma
- Heavy Duty/Commercial Transport Mechanic Foundation Certificates
- Human Resource Management Advanced Diploma
- Mechanical Engineering
- Indigenous College Prep Certificate
- Office Administration
- Plumbing, Refrigeration & Pipe Trades Foundation Certificate
- Professional Cook
- Sheet Metal & Metal Fabrication Foundation Certificate
- Welder

Capilano University

CAMPUS LOCATION: North Vancouver, B.C.

WEBSITE: capilanou.ca

RELATED PROGRAMS:

- Applied Business Technology Certificate - Ch'nook Foundation Certificate
- Associate of Science Degree
- Bachelor of Business Administration (BBA) Degree
- Bachelor of Communication Studies Degree
- Business Administration
- Engineering (First Year) University Transfer Program
- Engineering Transition Diploma

College of New Caledonia

CAMPUS LOCATION: Prince George, B.C.

WEBSITE: cnc.bc.ca

RELATED PROGRAMS:

- Accounting and Finance Diploma
- Administrative Assistant Certificate
- Applied Science (First-Year Engineering) Certificate
- Associate of Science Degree
- Business Administration
- Carpenter
- Commercial Transport Vehicle Mechanic
- Computer/Network Electronics Technician Certificate
- Electrical Foundation-Level Certificate
- Electrician
- Excavator Training Program
- Heavy Duty Equipment Mechanic
- Heavy Equipment Operator
- Industrial Mechanic/Machinist Certificate
- Information and Communication Technology Certificate
- Machinist
- Management Diploma
- Millwright
- Natural Resources and Environmental Technology Diploma
- Office Assistant Certificate
- Pipe Trade Foundation Level
- Plumber
- Power Engineering
- Professional Cook
- Road Builder and Heavy Construction Foundation Level
- Welder

College of the Rockies

CAMPUS LOCATION: Cranbrook, B.C.

WEBSITE: cotr.bc.ca

RELATED PROGRAMS:

- Associate of Science (General/Environmental Sciences/Medical Health Sciences) Degrees
- Bachelor of Business Administration in Sustainable Business Practices Degree
- Bookkeeping Specialty Certificate
- Business Administration
- Carpenter
- Computer and Web Specialist Certificate
- Cook
- Culinary Arts Program
- Electrician
- Environmental Studies Certificate
- Heavy Duty Mechanic
- Industrial Electrician
- Industrial Warehouse Person
- Millwright
- Office Administration Certificate
- Plumbing
- Pre-Engineering Program
- Science Certificate
- Welder

Columbia College*

CAMPUS LOCATION: Vancouver, B.C.

WEBSITE: columbiacollege.ca

RELATED PROGRAMS:

- Associate of Science Degree
- Business University Transfer Program
- Communications University Transfer Program
- Computer Science University Transfer Program
- Engineering University Transfer Program
- Science University Transfer Program

Coquitlam College*

CAMPUS LOCATION: Coquitlam, B.C.

WEBSITE: coquitlamcollege.com

RELATED PROGRAMS:

- B.C. Adult High School Graduation Program
- Business Certificate
- Business Diploma
- Science Certificate
- Science Diploma

Corpus Christi College*

CAMPUS LOCATION: Vancouver, B.C.

WEBSITE: corpuschristi.ca

RELATED PROGRAMS:

- Commerce University Transfer Program

Douglas College

CAMPUS LOCATION: New Westminster, B.C.

WEBSITE: douglascollege.ca

RELATED PROGRAMS:

- Accounting
- Associate of Science Degree (Several Options)
- Bachelor of Business Administration Degree
- Business Management Diploma
- Communications Certificate
- Computer Science and Information Systems
- Diploma in Science
- Light Warehouse Training Citation
- Office Administration

Fairleigh Dickinson University*

CAMPUS LOCATION: Vancouver, B.C.

WEBSITE: fdu.edu/vancouver

RELATED PROGRAMS:

- Bachelor of Science in Business Administration Degree
- Bachelor of Science in Information Technology Degree

Fraser International College*

CAMPUS LOCATION: Burnaby, B.C.

WEBSITE: fraseric.ca

RELATED PROGRAMS:

- UTP Stage II: Business Administration Program
- UTP Stage II: Computing Science Program
- UTP Stage II: Engineering Science Program

Kwantlen Polytechnic University

CAMPUS LOCATION: Surrey, B.C.

WEBSITE: kpu.ca

RELATED PROGRAMS:

- Accounting
- Applied Science (Engineering) University Transfer Program
- Associate of Science (Several Options) Degree
- Bachelor of Business Admin. Degree
- Bachelor of Technology in Information Technology Degree
- Business Administration Diploma
- Carpentry/Building Construction
- Computer Information Systems
- Electrical
- Environmental Protection Technology Diploma
- Millwright / Industrial Mechanic
- Parts and Warehousing
- Plumbing
- Post Baccalaureate Diploma in Human Resources Management
- Public Relations Diploma
- Warehousing
- Welding

Langara College

CAMPUS LOCATION: Vancouver, B.C.

WEBSITE: langara.bc.ca

RELATED PROGRAMS:

- Accounting Diploma
- Arts & Science Engineering Certificate (UBC First-Year Transfer Program)
- Arts and Science Diploma Programs (Several Options)
- Associate of Science Degree (Several Concentrations)
- Bachelor of Business Administration Degree
- Chinook Business Diploma
- Computer Studies Diploma
- Financial Management Diploma

Nicola Valley Institute of Technology

CAMPUS LOCATION: Merritt, B.C.

WEBSITE: nvit.ca

RELATED PROGRAMS:

- Aboriginal Community Economic Development Certificate/Diploma
- Bridging to Trades Certificate
- Business Administration Diploma
- Environmental Resources Technician Certificate
- University Transfer Studies

North Island College

CAMPUS LOCATION: Campbell River, B.C.

WEBSITE: nic.bc.ca

RELATED PROGRAMS:

- Applied Business Technology
- Associate of Science Degree
- Bachelor of Business Administration Degree
- Business Administration Diploma
- Carpentry
- Construction Electrician- Apprentice

- Heavy Duty and Commercial Transport Mechanics Foundation Certificate
- Plumber
- Professional Cook
- University Transfer Studies
- Welder

Northern Lights College

CAMPUS LOCATION: Fort St. John, B.C.

WEBSITE: nlc.bc.ca

RELATED PROGRAMS:

- Applied Business Technology Certificates
- Business Management Certificate
- Carpentry
- Carpentry Foundation
- Commercial Transport Technician
- Cook Training
- Electrician
- Heavy Duty Technician
- Heavy Duty/Commercial Transport Entry Level Trades Training Certificate
- Industrial Instrumentation Mechanic
- Information and Communication Technology Certificate/Diploma
- Millwright
- Plumbing
- Power Engineering and Gas Processing Certificate
- University Arts and Science Certificate Programs
- Welding

Northwest Community College

CAMPUS LOCATION: Smithers, Terrace, B.C.

WEBSITE: nwcc.bc.ca

RELATED PROGRAMS:

- Applied Coastal Ecology Program
- Associate of Science Degree
- Business Administration Certificate

- Business Technology Online Certificate Programs
- Carpentry
- Cook
- Culinary Arts Certificate/Diploma
- Electrical (Foundation) Certificate
- Essential Skills for Work Certificate
- Heavy Duty Service Technician Level 1
- Heavy Duty/Commercial Transport Repair Mechanic (Foundation) Certificate
- Heavy Equipment Operator
- Industrial Mechanic - Millwright
- Information and Communications Technology Certificate
- Millwright/Industrial Mechanic Certificate
- Welder
- Welding Levels C, B, A (Foundation) Programs + Upgrading

Okanagan College

CAMPUS LOCATION: Kelowna, B.C.

WEBSITE: okanagan.bc.ca

RELATED PROGRAMS:

- Accounting Assistant Certificate
- Administrative Assistant Certificate
- Advanced Culinary Arts Diploma
- Associate of Science Degree
- Bachelor of Business Administration (BBA) Degree
- Bachelor of Computer Information Systems Degree
- Business Administration Diploma
- Carpenter
- Civil Engineering Technology Diploma
- Commercial Aviation Diploma
- Commercial Transport Technician
- Computer Information Systems Diploma
- Culinary Arts Certificate
- Electrician
- Engineering First-Year University Transfer

- Program
- Environmental Studies Diploma
- Geographical Information System Certificate
- Heavy Duty and Commercial Transport Mechanics Certificate
- Heavy Duty Equipment Technician
- Mechanical Engineering Technology Diploma
- Office Management Certificate
- Pathway to Professional Accounting Program
- Plumber
- Professional Cook
- Water Engineering Technology Diploma
- Welder

- Electrician
- Engineering Transfer Programs
- General Mechanics Certificate
- Geographic Information Systems Advanced Diploma
- Integrated Environmental Planning Technology Diploma
- Millwright
- Office Management Diploma
- Plant Operator Certificate
- Professional Cook
- Recreation, Fish and Wildlife Technology Diploma
- Welder

Royal Roads University

CAMPUS LOCATION: Victoria, B.C.

WEBSITE: royalroads.ca

RELATED PROGRAMS:

- Bachelor of Arts in Environmental Practice Degree
- Bachelor of Commerce in Entrepreneurial Management Degree
- Bachelor of Science in Environmental Management Degree
- Bachelor of Science in Environmental Practice Degree
- Bachelor of Science in Environmental Science Degree

Selkirk College

CAMPUS LOCATION: Castlegar and Nelson, B.C.

WEBSITE: selkirk.ca

RELATED PROGRAMS:

- Associate of Science Degree
- Bachelor of Geographic Information Systems (BGIS) Degree
- Business Administration Diploma
- Carpenter Apprentice
- Cook 1 and 2 Institution Entry
- Culinary Management Diploma

Simon Fraser University

CAMPUS LOCATION: Burnaby, B.C.

WEBSITE: sfu.ca

RELATED PROGRAMS:

- BA or BSc (Major or Honours in Computing Science) Degree
- Bachelor of Business Administration (Major or Honours) Degree
- Bachelor of Science (General Science) Degree
- Bachelor of Science (Major or Honours in Earth Sciences) Degree
- BAsc Engineering Science Degree
- Certificate in Computing Studies
- Certificate in Cultural Resources Management
- Certificate in Ethnic and Intercultural Relations
- Certificate in Spatial Information Systems
- Science Year One Program

Thompson Rivers University

CAMPUS LOCATION: Kamloops, B.C.

WEBSITE: tru.ca

RELATED PROGRAMS:

- Associate of Commerce and Business Administration Diploma
- Associate of Science Degree (Several Concentrations)
- Bachelor of Arts
- Bachelor of Business Administration Degree
- Bachelor of Computing Science Degree
- Bachelor of Science
- Carpenter
- Commercial Transport Vehicle Mechanic
- Computer Systems: Operations and Management Diploma
- Cook
- Culinary Arts Certificate
- Electrical Construction Foundation Certificate
- Electrician
- Engineering Transfer Program
- Gasfitter
- Heavy Duty Equipment Mechanic
- Heavy Equipment Operator
- Industrial Electrical
- Partsperson and Warehousing Foundation Certificate
- Plumber
- Post-Baccalaureate Diplomas in Business (Several Options)
- Water and Wastewater Utilities Certificate
- Welding

Thompson Rivers University, Open Learning

CAMPUS LOCATION: N/A

WEBSITE: tru.ca/distance

RELATED PROGRAMS:

- Associate of Science Degree
- Bachelor of Commerce Degree

- Bachelor of Science (General Program) Degree
- Bachelor of Science (Major in Biology/Life Science) Degree
- Bachelor of Technology (Trades and Technology Leadership) Degree
- Diploma in Information Technology and Management
- Water Treatment Technology Certificate/Diploma

Trinity Western University*

CAMPUS LOCATION: Langley, B.C.

WEBSITE: twu.ca

RELATED PROGRAMS:

- Bachelor of Business Administration Degree
- Bachelor of Science (Major in Natural & Applied Science) Degree
- Bachelor of Science (Major or Honours in Biology) Degree
- Bachelor of Science (Major or Honours in Chemistry) Degree
- Bachelor of Science in Environmental Studies Degree
- BSc (Major in Applied Mathematics with Computing Science) Degree

University Canada West*

CAMPUS LOCATION: Vancouver, B.C. and online

WEBSITE: ucanwest.ca

RELATED PROGRAMS:

- Bachelor of Commerce, General Studies Degree

University of British Columbia

CAMPUS LOCATION: Vancouver

WEBSITE: ubc.ca

RELATED PROGRAMS:

- Bachelor of Applied Science (Engineering) Degree Programs
- Bachelor of Arts Degree
- Bachelor of Commerce Degree
- Bachelor of Environmental Design Degree
- Bachelor of Science Degree

University of British Columbia - Okanagan

CAMPUS LOCATION: Kelowna, B.C.

WEBSITE: ok.ubc.ca

RELATED PROGRAMS:

- Bachelor of Applied Science in Engineering Degree
- Bachelor of Arts (Major in Computer Science) Degree
- Bachelor of Management Degree
- Bachelor of Science Degree

University of Northern BC

CAMPUS LOCATION: Prince George, B.C.

WEBSITE: unbc.ca

RELATED PROGRAMS:

- Bachelor of Applied Science in Environmental Engineering Degree
- Bachelor of Arts Degree
- Bachelor of Commerce Degree
- Bachelor of Science Degree
- Certificate in Traditional Environmental Knowledge

University of the Fraser Valley

CAMPUS LOCATION: Abbotsford, B.C.

WEBSITE: ufv.ca

RELATED PROGRAMS:

- Accounting Certificate
- Applied Business Technology Certificate
- Associate of Science Degree
- Bachelor of Business Administration Degree
- Bachelor of Computer Information Systems Degree
- Bachelor of Science Degree
- Carpentry Certificate
- Computer Information Systems Diploma
- Construction Electrician Certificate
- Cook
- Electrician Apprenticeship Training
- Electronics Technician Common Core Certificate
- Engineering (First-Year) Transfer Program
- Heavy Duty/Commercial Transport Certificate
- Plumbing and Piping Certificate
- Professional Cook Certificate
- Welder

University of Victoria

CAMPUS LOCATION: Victoria, B.C.

WEBSITE: uvic.ca

RELATED PROGRAMS:

- Bachelor of Arts Degree
- Bachelor of Commerce Degree
- Bachelor of Engineering Degree Programs
- Bachelor of Science Degree

Vancouver Community College

CAMPUS LOCATION: Vancouver, B.C.

WEBSITE: vcc.ca

RELATED PROGRAMS:

- Administrative Assistant Certificate
- Adult Upgrading Program
- Applied Business Technology Certificate
- Cooking
- Culinary Arts
- Culinary Management Diploma
- Heavy Duty Mechanic Apprenticeship

Vancouver Island University

CAMPUS LOCATION: Nanaimo, B.C.

WEBSITE: viu.ca

RELATED PROGRAMS:

- Aboriginal Construction Certificate
- Aboriginal University Bridging Program Certificate
- Advanced Diploma in GIS Applications
- Applied Business Technology (In-Classroom) Certificates
- Associate of Science Degree
- Bachelor of Applied Science (Engineering) University Transfer Program
- Bachelor of Business Administration Degree
- Bachelor of Natural Resource Protection Degree
- Bachelor of Science Degree
- Business Administration Diploma
- Business Management Certificate
- Carpenter
- Computing Science Diploma
- Culinary Arts Certificate/Diploma
- Electrician
- Heavy Duty Mechanic
- Heavy Equipment Operator
- Professional Cook

- Resource Management Officer Technology Diploma
- Road Building and Heavy Construction Equipment Operator Certificate
- Welder





→ Additional Private Training Organizations

More than 300 career colleges in B.C. represent private post-secondary education and offer a wide range of programs. Over 48,000 students, including 10,000 international students, attend private career colleges in B.C. every year; a portion of them focused on mining. This section will provide information about some of the institutions that offer mining and mining related training in B.C. In addition, you will learn about the organizations that manage private training institutions; they can help find training programs and courses that suit your unique career, employment and skills development needs.

Aboriginal Skills Group

DESCRIPTION: Non-profit partnership project dedicated to increasing Aboriginal employment in strategic markets

LOCATION: 2446 Falcon Way, Tsawwassen, BC

PHONE: 604-948-2181

EMAIL: info@aboriginalskills.ca

WEBSITE: aboriginalskills.ca

CLAC Training

DESCRIPTION: CLAC Training offers a wide range of courses that are open to members and non-members. All courses are provided by certified trainers in our modern training centres, in our training partners' facilities, on your job site, or online.

LOCATION: Fort St. John, Kelowna, Langley, Prince George

PHONE: Toll Free: 800-331-2522

WEBSITE: <https://www.clac.ca/Your-work/Training/BC>

Construction and Specialized Workers Training Society

DESCRIPTION: The Construction and Specialized Workers Training Society offers courses specific to providing training for labourers.

LOCATION: 120-19092 26th Avenue, Surrey, B.C.

PHONE: 604-538-5101 or Toll Free 1-800-661-3001

EMAIL: training@liuna1611.ca

WEBSITE: cswu1611.org/contractors/training.html

Continuing Mining & Mineral Education

DESCRIPTION: Continuing Mining and Minerals Education provides practical, skills-based training. The short courses include topics in coal, exploration, geology, mine planning & mining, environmental & regulatory, mineral processing, financial, and professional development.

LOCATION: 18-2214 Folkestone Way, West Vancouver, BC V7S 2X7

PHONE: 604-366-2351

EMAIL: smanvell@cmme.ca

WEBSITE: cmme.ca

EduMine

DESCRIPTION: Edumine provides short courses online, in person and through live webcasts. The short courses can be taken individually or combined to receive a Certificate in Mining Studies. The short courses can be applied towards continuing education units (CEU's) required by some professional organizations.

LOCATION: Suite 900, 580 Hornby Street, Vancouver, BC

PHONE: 604-683-2037

EMAIL: nalbrecht@infomine.com

WEBSITE: edumine.com

Electrical Industry Training Institute

DESCRIPTION: Electrical industry training

LOCATION: Unit 304, 20644 Eastleigh Crescent, Langley, BC

Phone: 604-427-4200

EMAIL: info@eitiglobal.com

WEBSITE: eiti.bc.ca

Electrical Joint Training Committee

DESCRIPTION: Electrician trades training and apprenticeships

LOCATION: Suite 100 – 1424 Broadway Street, Port Coquitlam, BC

PHONE: 604-571-6540

EMAIL: info@ejtc.org

WEBSITE: ejtc.org

Interior Heavy Equipment Operator School

DESCRIPTION: Heavy equipment operator training

LOCATION: #2 - 10058 HWY 97 North, Winfield, BC

PHONE: 250-766-3853 or Toll Free 1-866-399-3853

EMAIL: info@iheschool.com

WEBSITE: iheschool.com

IUOE Local 115 Training Association

DESCRIPTION: IUOE Local 115 provides training programs to operators, apprentices, school-leavers, and others looking to start, refine, or broaden their career. Local 115 offers courses to union members and non-union members.

LOCATION: Suite 100, Deer Lake Centre #1, 4940 Canada Way, Burnaby, B.C.

PHONE: 604-299-7764

EMAIL: oetp@iuoe115.com

WEBSITE: iuoe115.com/training

Kitimat Valley Institute

DESCRIPTION: Kitimat Valley Institute is located in Kitimat, BC and offers training services in construction training courses, health and safety, and mobile equipment training courses.

LOCATION: 1352 Alexander Ave, Kitimat BC

PHONE: 250-639-9199 ext. 34

EMAIL: nbarriault@kvic.ca

WEBSITE: kvic.ca

O'Brien Training

DESCRIPTION: O'Brien Training is located in Prince George, BC and offers training for equipment operators. They have a 500 acre construction training site that allows for a training program that mirrors a 'real' working/production environment.

LOCATION: 9185 Rock Island Road, Prince George, BC

PHONE: 250-563-0061 or Toll Free 1-877-563-1998

EMAIL: obtrg@telus.net

WEBSITE: obrientraining.com

Operators Training School

DESCRIPTION: Operators Training School provides training for heavy equipment operators in a wide variety of skills including site preparation, foundation and footing excavation, truck loading, services installation, road building, etc.

LOCATION: 206 - 20641 Logan Avenue, Langley, BC

PHONE: 604-533-0575

EMAIL: OTSinfo@operatorstraining.com

WEBSITE: operatorstraining.com

Rayway Operator Training School Ltd.

DESCRIPTION: Rayway Operator Training School offers training in the operation of excavators and loader backhoes.

LOCATION: 1123 272 Street, Aldergrove, BC

PHONE: 604-546-7600

EMAIL: rayway@shaw.ca

WEBSITE: rayway.ca

Taylor Pro-Training Ltd.

DESCRIPTION: Taylor Pro-Training is located in the Okanagan region and provides training for both heavy equipment and driver training.

LOCATION: 2654 Norris Road, Kelowna BC

PHONE: 250-765-7624 or Toll Free 1-877-860-7627

EMAIL: info@taylorprotraining.com

WEBSITE: taylorprotraining.com

UA Piping Industry College of British Columbia

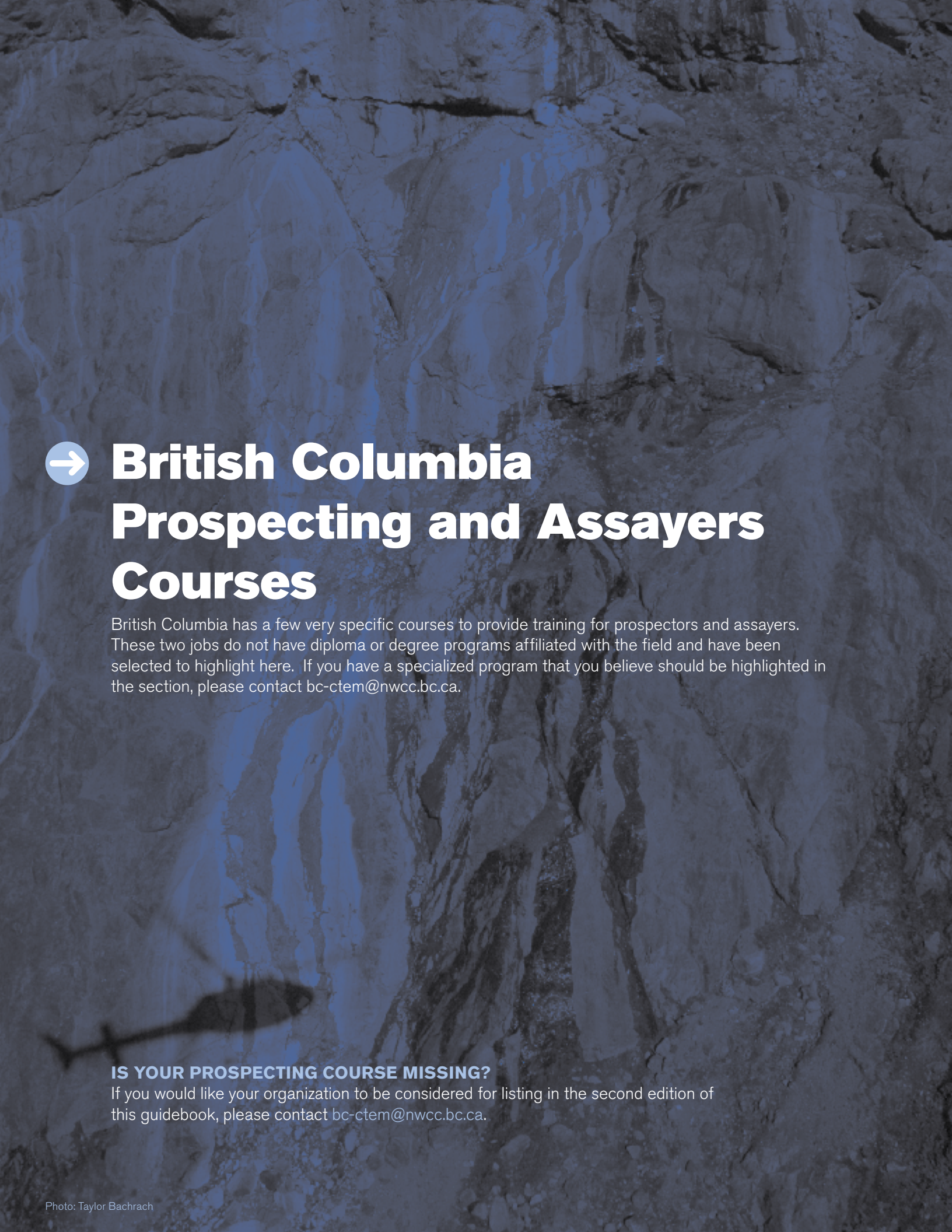
DESCRIPTION: Piping trades apprenticeship training

LOCATION: 1658 Fosters Way #101, Delta, BC

PHONE: 604-540-1945 or Toll Free 1-877-540-1945

EMAIL: registrar@uapicbc.ca

WEBSITE: uapicbc.ca



→ **British Columbia Prospecting and Assayers Courses**

British Columbia has a few very specific courses to provide training for prospectors and assayers. These two jobs do not have diploma or degree programs affiliated with the field and have been selected to highlight here. If you have a specialized program that you believe should be highlighted in the section, please contact bc-ctem@nwcc.bc.ca.

IS YOUR PROSPECTING COURSE MISSING?

If you would like your organization to be considered for listing in the second edition of this guidebook, please contact bc-ctem@nwcc.bc.ca.

Annual Basic Prospecting Course

LOCATION: Chamber of Mines of Eastern BC, Nelson, BC

DESCRIPTION: This longstanding prospecting course is designed for the beginner to intermediate prospector. The annual course lasts for one week in April/May with five evening sessions on Monday through Friday, a lecture session on Saturday and a field trip on Sunday. The course costs \$250.00 which includes a textbook, a mineral ID kit and other supplies.

FOR MORE INFORMATION:

To register, contact Jane Swan at 250-352-5242 or chamberofmines@netidea.com.

BCIT Assayer Certification Training

LOCATION: British Columbia Institute of Technology, Burnaby Campus

DESCRIPTION: Comprehensive assayer training is available through Chemical and Environmental Technology on a part-time studies basis (as night school, distance education, workshop or Internet courses). The training was developed to meet the mining industry's growing demands for skilled and competent assayers in B.C. The advanced training we offer in applied analytical chemistry prepares successful students to become eligible to write the exam for Provincial Certification given by the B.C. Ministry of Energy and Mines.

FOR MORE INFORMATION: <http://www.bcit.ca/study/programs/5360nbcit>

BCIT Prospecting Courses

LOCATION: British Columbia Institute of Technology, Burnaby Campus, Vancouver, B.C.

DESCRIPTION:

Provides an introduction to geology and mineral deposits as it applies to prospecting and mineral exploration. Courses are normally offered in the winter or spring, and are also offered in an online format.

FOR MORE INFORMATION:

bcit.ca/study/courses/mine1003

bcit.ca/study/courses/mine1004

BCIT Prospecting Field School

LOCATION: British Columbia Institute of Technology, Oliver field camp, B.C.

DESCRIPTION:

MINE 1005 - Prospecting and Exploration Field School

Designed for prospectors, explorationists, students, field assistants, contractors and hobbyists as an introduction to field techniques used in prospecting and exploring for mineral deposits at a field school near Oliver in south-central BC. Dates: normally offered in May.

FOR MORE INFORMATION: bcit.ca/study/courses/mine1005

Northwest Community College Introduction to Geology and Prospecting Course

DESCRIPTION: This six day course provides the basic information required to become a successful prospector but may also be of interest to amateur rock hounds, students and field assistants. Learning topics: Rock and Mineral Identification, Claim Staking Online and Claim Management, Basic Geology and Mineral Deposits, Rock, Soil and Stream Sediment Sampling, and Prospector Field Day.

FOR MORE INFORMATION: 1-877-277-2288 ext. 5831 sem@nwcc.bc.ca

UNBC Introduction to Prospecting Course

DESCRIPTION: This three-day course offer students an introduction to the basics of prospecting for bedrock minerals, and includes a full day in the field learning hands-on methods. By the end of the course, students will have learned to identify basic rocks and minerals, including ore minerals; to understand the formation of mineral deposits; and to know the basic techniques of prospecting, how to stake a claim online, and how to market their discoveries.

FOR MORE INFORMATION: <http://www.unbc.ca/continuing-studies/courses> or contact Rob Bryce at 250-960-5982, Rob.Bryce@unbc.ca



Safety starts with you — ask questions

You have the right to proper information, instruction, training, and supervision while on the job. If you're unsure about something, speak up and ask questions — it could save your life.

Learn more about your rights and responsibilities.
Visit WorkSafeBC's young worker site at raiseyourhand.ca.

WORK SAFE BC

LET CLAC HELP YOU

Further your career with help from CLAC. We offer

- Apprenticeship sponsorships
- Apprenticeship reimbursements
- CLAC Jobs to connect you with employers, and employers with you
- Multicraft opportunities and dual ticketing possibilities
- Health and safety training, skills training, and more

CLAC is a national sponsor for Skills Canada.

Learn more at clac.ca

Or call us at 800-331-2522

**CLAC**
better together





→ Other Relevant Organizations

The mining industry is supported by numerous organizations. These organizations provide a voice and resources about a particular topic. You can find a lot of useful information about selected areas or demographics on the mining industry by visiting the organization's website. Many offer events, training and support to individuals interested in finding a job or learning more about their focus. The section highlights mining industry, academic, training, and other relevant associations in British Columbia.

IS YOUR ORGANIZATION MISSING?

If you would like your organization to be considered for listing in the second edition of this guidebook, please contact bc-ctem@nwcc.bc.ca.

MINING INDUSTRY ORGANIZATIONS

Association for Mineral Exploration British Columbia (AME BC)

Every January, AME BC hosts the Mineral Exploration Roundup Conference , the world's premier technical mineral exploration conference held in Vancouver, BC. Roundup is an excellent networking and learning opportunity for students and members of the industry, First Nations, government and the public. Along with exhibits, technical and showcase sessions, Roundup also offers workshops, tours and short courses to those interested in a successful and responsible mineral exploration and development industry.

AME BC is the lead association for the mineral exploration and development industry based in British Columbia. Established in 1912, AME BC represents, advocates, protects and promotes the interests of thousands of members who are engaged in mineral exploration and development in BC and throughout the world. AME BC encourages a safe, economically strong and environmentally responsible industry by providing clear initiatives, policies, events and tools to support its membership.

WEBSITE: amebc.ca

British Columbia Stone, Sand & Gravel Association (BCSSGA)

There are companies operating stone quarries and sand and gravel pits all across the province which are critical sources of material for building homes, buildings and critical infrastructure like highways and railroads. They also often provide mining jobs that are closer to communities than many other mining operations.

The British Columbia Stone, Sand & Gravel Association is a not-for-profit association representing members comprised of aggregate producers, suppliers, and associates throughout the province of British Columbia. The Association works with governing bodies and seeks to ensure the industry has an effective and lasting contribution to the economy and to the building of British Columbia. The aggregates industry has generally two sectors : construction aggregates and industrial aggregates. Construction aggregates is further divided into naturally occurring sand and gravels and crushed rock products. Industrial aggregates comprise rock and minerals such as lime, dolomite, and lava rock, among others.

WEBSITE: gravelbc.ca

BC Centre of Training Excellence in Mining (CTEM)

Students can use the website to discover where training is offered across the province as well as learning about the training institutions that have programs relevant to the minerals industry. Students can post their resumes and find jobs that match their skill set.

The BC Centre of Training Excellence in Mining (CTEM) was created in April 2013 as part of a commitment by the Government of BC to provide British Columbians with access to education and training programs that deliver career skills for the natural resource industries.

As a province-wide “virtual hub,” CTEM’s vision is to collaboratively facilitate innovative training solutions for the mineral industry and B.C. communities. It achieves this by connecting industry, students, communities and training providers, and by playing a leading role in determining industry skills requirements, facilitating responsive training and supporting partners.

WEBSITE: bc-ctem.ca

Geoscience BC

Many of our projects are identified through a process of requests for proposals (RFPs). We have two main RFPs: open requests for applied or innovative geoscience projects that will attract investment to BC; and targeted requests that are more directed proposals to undertake specific work, or calls for bids on specific surveys, in order to achieve program objectives.

Geoscience BC is a non-profit organization established in 2005 through an investment from the Province of British Columbia. We generate earth science information in partnership with First Nations, the resource sector, universities, governments and communities. We deliver this information to the public to encourage investment and enable informed land use decisions for the benefit of all British Columbians.

WEBSITE: geosciencebc.com

MineralsEd

MineralsEd provides resources for teachers and youth (elementary, intermediate and secondary). MineralsEd.ca has an interactive map showing all B.C. mine locations and links to details about those operations.

MineralsEd is a partnership program between teachers and the minerals industry in B.C. It was created to assist teachers in their development of educational materials to support teaching about minerals, mining and geoscience in the classroom. MineralsEd’s goals are to foster a well-informed public through school education based on accurate and balanced minerals information, and to stimulate young peoples’ interest in minerals industry careers. Teachers can receive newsletters, attend Pro-D events, and access teaching resources.

WEBSITE: mineralsed.ca

Mining Association of British Columbia (MABC)

MABC's website has lists of resources that provide information about the operating mines in British Columbia. It has a job board and a calendar that lists industry events that happen throughout BC, as well as other valuable industry resources and publications.

The Mining Association of BC is one of the oldest associations in the province. Established in 1901, MABC aims to support a strong and vibrant mining and mineral processing industry in British Columbia. MABC represents the collective needs and interests of operating coal, metal and industrial mineral mining companies, as well as two smelters. MABC's primary focus is on key public policy issues, including aboriginal and community relations, environment, health and safety, human resources, competitiveness and the Towards Sustainable Mining initiative. MABC also provides its member companies with a wide variety of services such as participation in key industry-related committees, updates on regulatory change, meetings that provide the opportunity to exchange information among members, joint industry action on issues of common concern, and the availability of staff expertise on the areas of greatest interest.

WEBSITE: mining.bc.ca

Mining Industry Human Resources Council (MiHR)

MiHR publishes a number of online resources that are available to you. These resources range from MiHR publications and valuable links to related external websites to a library of video resource material and a photo gallery.

MiHR's vision contributes to the strength, competitiveness, and sustainability of the Canadian mining industry by leading the collaboration among communities of interest to address emerging human resources opportunities and challenges.

MiHR's mission is to be a catalyst and industry leader by spearheading the collaboration among the Canadian mining sector's communities of interest to:

- Identify emerging human resources opportunities and challenges
- Develop targeted solutions
- Facilitate their implementation

WEBSITE: mihr.ca

Mining Suppliers Association of BC (MSABC)

The Mining Suppliers of BC has an online directory of suppliers, contractors and consultants who are potential employers.

The Mining Suppliers Association of B.C. (MSABC) membership provides equipment, products and related services to the B. C. mining industry. MSABC is a strong partner of MABC in building industry initiatives that focus on sustainability, land use, First Nations cooperation, government relations and

public awareness. It works closely with MABC on environmental issues and health and safety in mining. In addition, MSABC is a major contributor to industry events and programs, education and charitable causes.

WEBSITE: miningsuppliersbc.ca

Women in Mining BC (WIMBC)

WIMBC hosts a number of events throughout the year. There are resources for students who are interested in connecting with women in the industry. The website showcases the activities of WIM membership groups around the province of BC, serving as an open invitation to professionals and students involved in or affiliated with the mineral exploration and mining industry to become part of this dynamic network.

Women in Mining BC (WIMBC) is a networking organization connecting professionals and students involved in or affiliated with the mineral exploration and mining industry. Our primary goal is to foster relationships to promote opportunities, to share knowledge and experiences, to encourage growth and diversity. As industry ambassadors, our secondary but equally important goal is to encourage industry participation in our community.

WEBSITE: wimbc.ca

ACADEMIC, TRAINING AND OTHER RELEVANT ASSOCIATIONS

Association of Professional Engineers and Geoscientists of BC (APEGBC)

The association lists detailed resources for high school and university students interested in engineering and geoscience. APEGBC's Student Membership will help you learn more about the engineering and geoscience professions and ease the transition from student life to professional life. Scholarships are available for students.

WEBSITE: apeg.bc.ca

BC Association of Institutes and Universities (BCAIU)

The post-secondary institutions belonging to the BC Association of Institutes and Universities share a common value in working together, optimizing relationships with other education organizations, with business, industry and local communities. BCAIU represents institutes and teaching universities: the British Columbia Institute of Technology, Capilano University, Emily Carr University of Art and Design, the Justice Institute of British Columbia, Kwantlen Polytechnic University, the Nicola Valley Institute of Technology, the University of the Fraser Valley and Vancouver Island University.

WEBSITE: bcaiu.com

BC Campus

BCcampus provides infrastructure for student data exchange, shared services, online learning, distance education, communities of practice and online resources for educators. Valuable student services include: admission applications, course directory, course record and transferability guide, transcript exchange and virtual library.

WEBSITE: bccampus.ca

BC Colleges

BC Colleges allows students to compare eleven BC Colleges and their programs: university, trades, development education, continuing education, para-professional, career, technical and applied and international.

WEBSITE: bccolleges.ca

Education Planner

Education Planner is a publicly funded resource that allows you to compare post-secondary programs in BC. Education Planner helps learners make well-informed decisions about their education and career options.

WEBSITE: educationplanner.ca

Industry Training Authority (ITA)

The Industry Training Authority (ITA) is the provincial government agency that governs and manages B.C.'s industry trades training and certification system. ITA works with employers, employees, industry, labour, training providers and government to issue credentials, manage apprenticeships, set program standards, and increase opportunities in the trades. ITA registers apprentices and sponsors, maintains apprentice records, oversees exams and other assessments, issues credentials and funds training at public and private institutions.

WEBSITE: itabc.ca

Private Career Training Institutions Agency (PCTIA)

PCTIA is the regulatory body for private career training institutions in BC. PCTIA sets basic education standards for registered private career training institutions in British Columbia and establishes standards of quality which must be met by accredited institutions. Private career training institutions in BC enroll over 48,000 students each year. Programs range from sound and audio technicians to licensed practical nurses to commercial pilots. In BC, private career training is regulated. PCTIA is a Crown Corporation under the Ministry of Advanced Education of British Columbia.

WEBSITE: pctia.bc.ca

Research Universities Council of BC (RUCBC)

The RUCBC represents the interests of the six major universities in British Columbia. Its mandate is to identify issues facing the universities, provide system wide leadership in the development of relevant public policy and communicate on behalf of the university system. RUCBC also provides a coordinating forum for its member universities and acts as a provincial focal point for dealing with the Government of British Columbia and provincial or national bodies associated with universities.

WEBSITE: tupc.bc.ca

SkillSource Group Training Organization

SkillSource is a non-profit group training organization with a mandate to increase access to trades training and work experience for apprentices. SkillSource sponsors apprentices and matches them with various employers across B.C. The organization offers a comprehensive range of apprenticeship supports and helps apprentices achieve certification in their trade. SkillSource is committed to building a qualified trades' workforce for B.C.'s economy.

WEBSITE: skillsourcebc.ca

Trades Training BC

Trades Training BC is a consortium of 14 public post-secondary educational institutions created to promote trades training in British Columbia. TradesTrainingBC.ca is a portal to provide information and direct students and employers to apprenticeship, foundation, vocational and youth programs offered at one of the 14 member institutions throughout BC.

WEBSITE: tradestrainingbc.ca

Worksafe BC-Certification and Training

WorkSafeBC is dedicated to promoting workplace health and safety for the workers and employers of this province. We consult with and educate employers and workers and enforce the Occupational Health and Safety Regulation. In the event of work-related injuries or diseases, WorkSafeBC works with the affected parties to provide return-to-work rehabilitation, compensation, health care benefits, and a range of other services.

WEBSITE: worksafebc.com

WorkBC

WorkBC helps people find jobs, explore career options and improve their skills. WorkBC also helps employers fill jobs, find the right talent and grow their businesses.

WorkBC employment centres offer a wealth of practical information such as: database of B.C. job postings, career tools that bring occupations to life, job-search tips, employment programs and more. People who regularly use WorkBC products and services include parents, teachers, career and employment counsellors, human resources professionals, researchers and decision-makers.

WEBSITE: workbc.ca

Leadership and Support of the BC Government

CTEM thanks the Government of BC for providing leadership and financial support. CTEM's activities complement B.C.'s Skills for Jobs Blueprint: Re-Engineering Education and Training, which is aligning education and training with in-demand occupations that are critical to the major industries of B.C., including mining and mineral exploration.



"The B.C. Centre of Training Excellence in Mining is a great example of a partnership between industry and our public post-secondary system. The centre is a hub for mine training education that supports diverse, strong and growing economy in B.C."

Hon. Andrew Wilkinson
Minister of Advanced Education



"The mining sector in B.C. is poised for growth. Through the B.C.'s Skills for Jobs Blueprint, government is working closely with industry and labour to deliver training and apprenticeships for in-demand careers. With a million jobs openings projected in B.C. by 2022 driven by retirements and a growing economy, we need to make sure we connect people with the right skills so they can find their fit in our diverse economy."

Hon. Shirley Bond
Minister of Jobs, Tourism and Skills Training and Minister Responsible for Labour



"With five new mines open since 2011 and over 30 major mine and expansion proposals currently in the environmental assessment and permitting process, the demand for skilled workers continues to grow in the mining sector. This funding will help ensure post-secondary students can develop the skills they need to fill the many mining and mineral exploration jobs this growing industry has to offer."

Hon. Bill Bennett
Minister of Energy and Mines



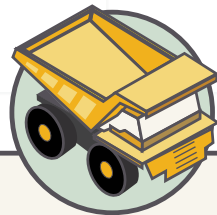
→ **Appendix:**
Career Zone Graphics

THE IMPORTANCE OF MINING IN BC



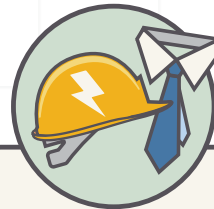
BOTH HISTORICALLY AND IN THE PRESENT, MINING IS ONE OF BRITISH COLUMBIA'S MOST IMPORTANT INDUSTRIES.

IT NOT ONLY CONTRIBUTES WEALTH TO THE PROVINCE, BUT IT CREATES HIGH PAYING AND REWARDING CAREERS:



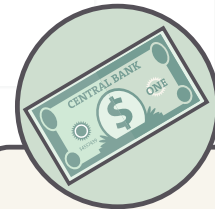
Gross mining revenues for the BC mining industry

\$8.5 BILLION



People employed in BC

10,720
(up from 10,419 in 2012.)

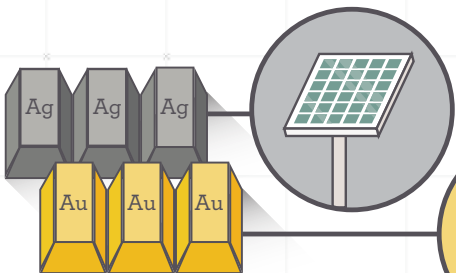


Average salary and benefits

\$114,600

PERHAPS EVEN MORE IMPORTANT, HOWEVER, IS WHAT THE MATERIALS FROM MINING ALLOW US TO DO:

GOLD AND SILVER



Silver is the **MOST CONDUCTIVE METAL** and is used in solar panels: on average, 20g of silver is in each individual panel.

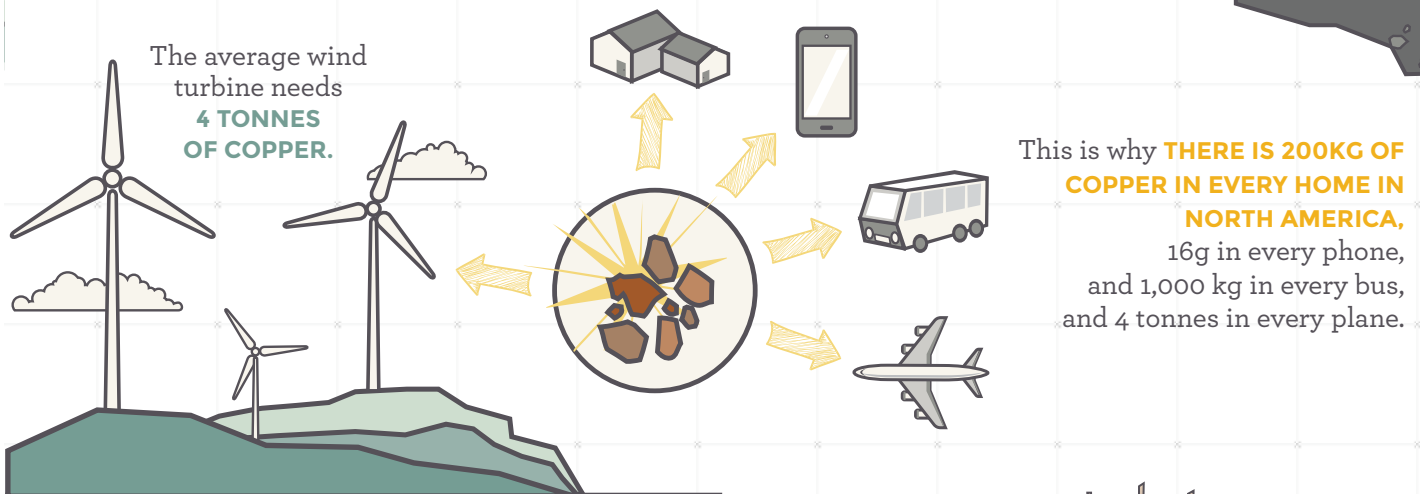
Gold is mission critical because it **DOES NOT CORRODE**. It is used for the most important electrical connections in phones, laptops, and other devices.

COPPER

Copper is one of BC's **MOST IMPORTANT** and valuable resources.

Copper is 100% recyclable, highly conductive and ductile. This makes it perfect for wiring and electronics.

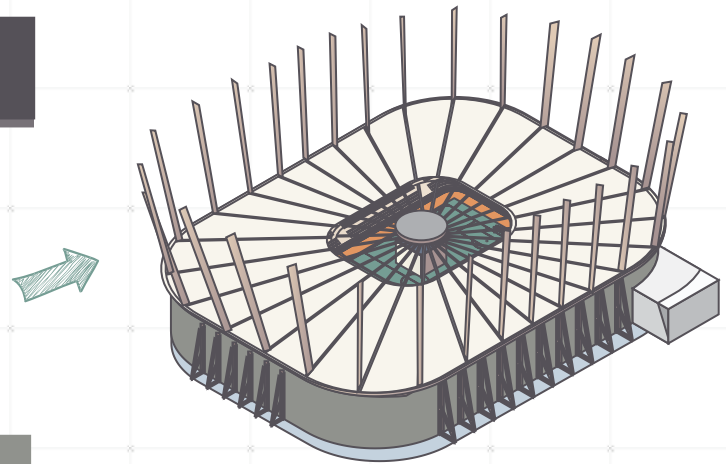
Copper is key for **RENEWABLE ENERGY**.



METALLURGICAL COAL

Different from thermal coal, met coal is used **PRIMARILY TO MAKE STEEL**.

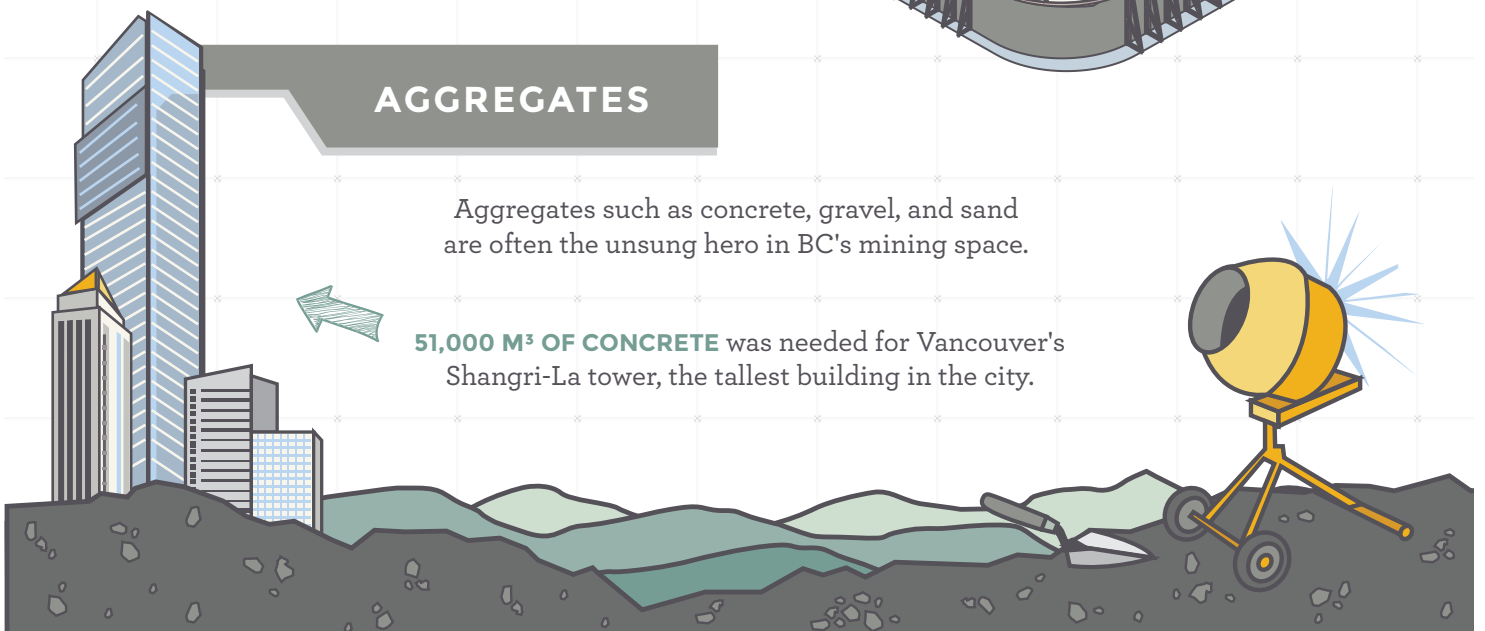
To construct BC Place's retractable roof, it took **16,000 TONNES OF STEEL** to do the job.



AGGREGATES

Aggregates such as concrete, gravel, and sand are often the unsung hero in BC's mining space.

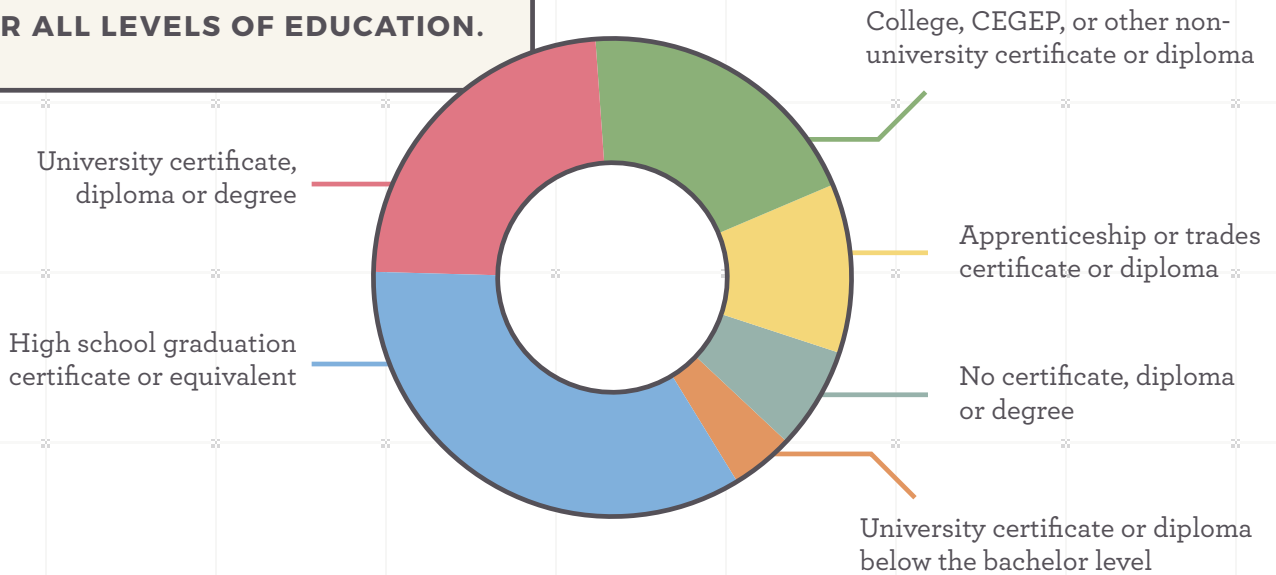
51,000 M³ OF CONCRETE was needed for Vancouver's Shangri-La tower, the tallest building in the city.



Funding provided through the Canada–British Columbia Labour Market Development Agreement.

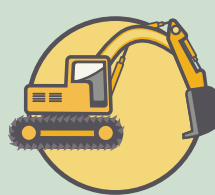
HIRING FOR: MINING JOBS IN BC

MINING IN BC HAS A WIDE RANGE OF JOBS AVAILABLE FOR ALL LEVELS OF EDUCATION.



CUMULATIVE HIRING REQUIREMENTS

With an aging workforce in the industry, it is expected that by 2022 there will need to be **OVER 16,000 NEW HIRES**:



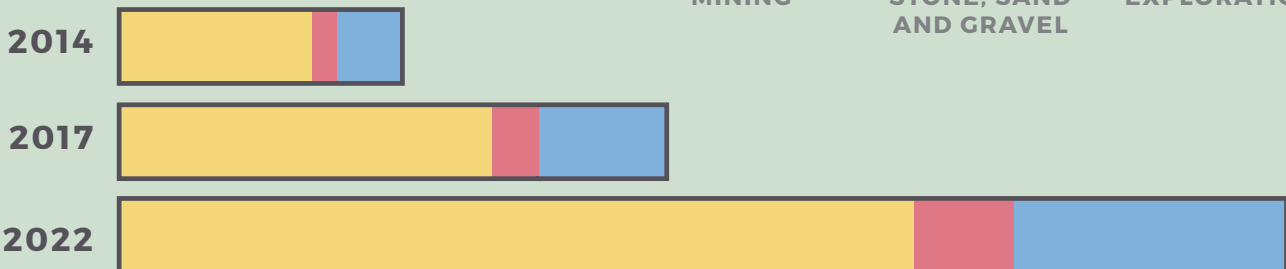
MINING



STONE, SAND AND GRAVEL



EXPLORATION



THE OCCUPATION GAP

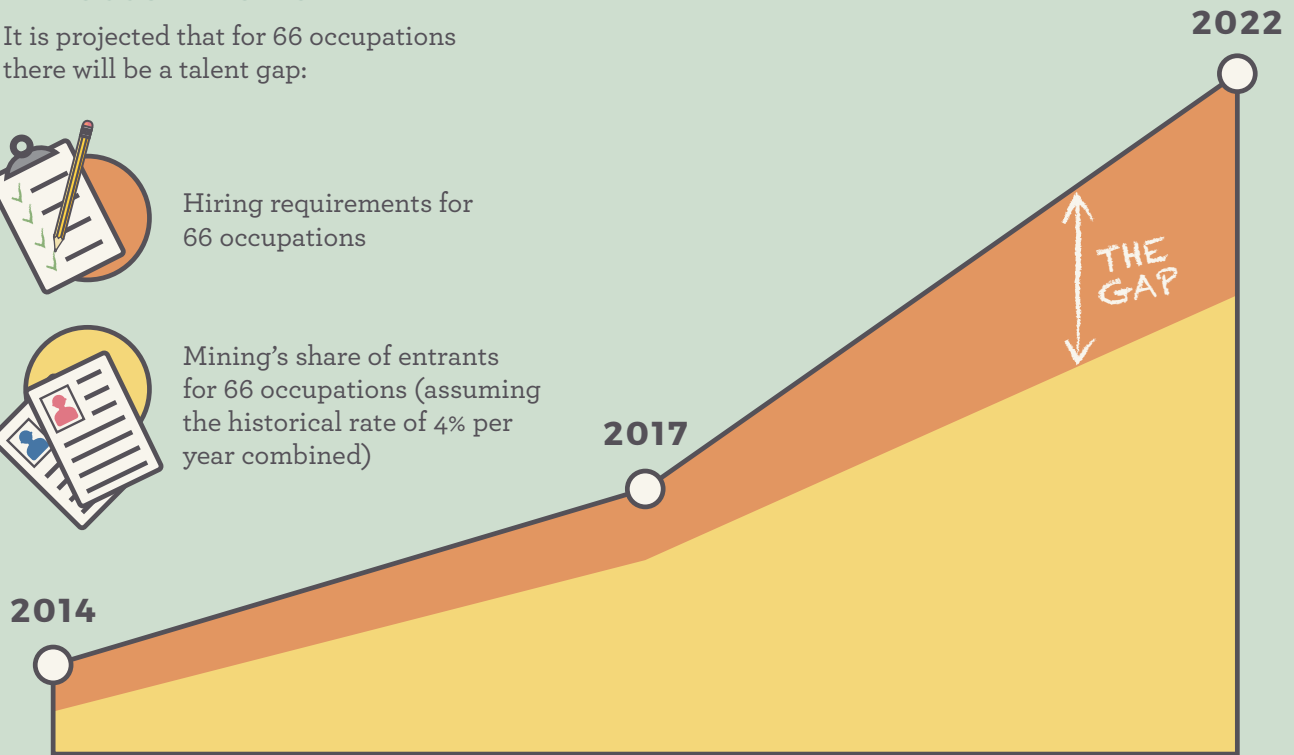
It is projected that for 66 occupations there will be a talent gap:



Hiring requirements for 66 occupations

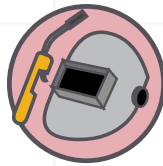


Mining's share of entrants for 66 occupations (assuming the historical rate of 4% per year combined)



JOBS MOST NEEDED LEADING INTO 2022

Some of the jobs with the biggest projected shortages include:



Trades



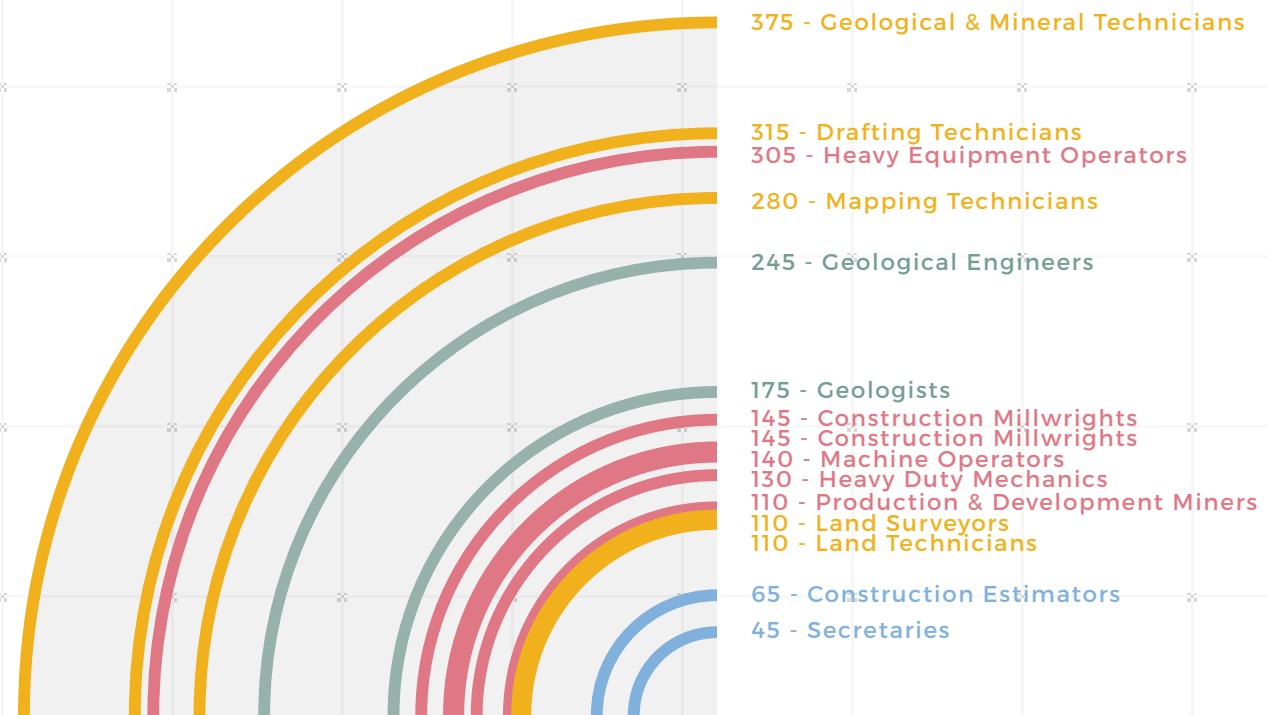
Professional & Physical Science



Technical



Support Workers



MINERAL EXPLORATION

START

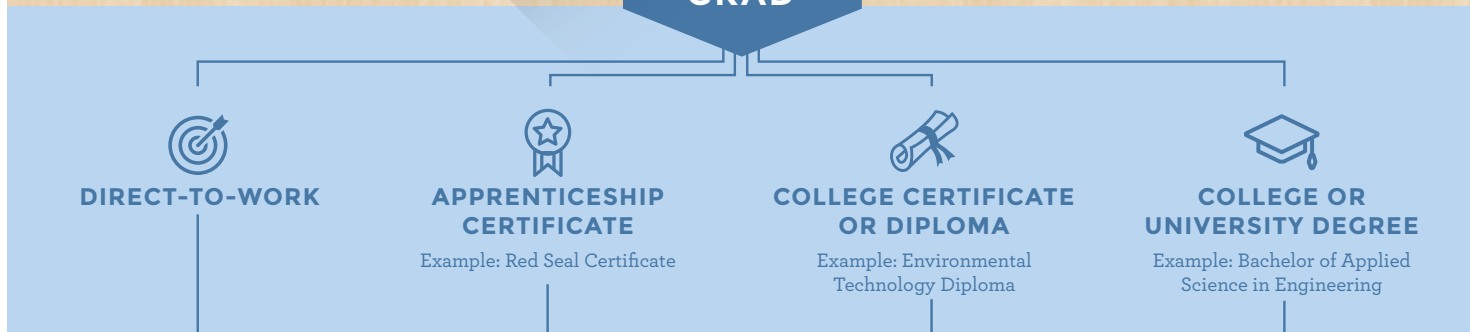


Funding provided through the Canada-British Columbia Labour Market Development Agreement.

CAREER ZONE



GRAD



STONE, SAND, AND GRAVEL EXTRACTION

START

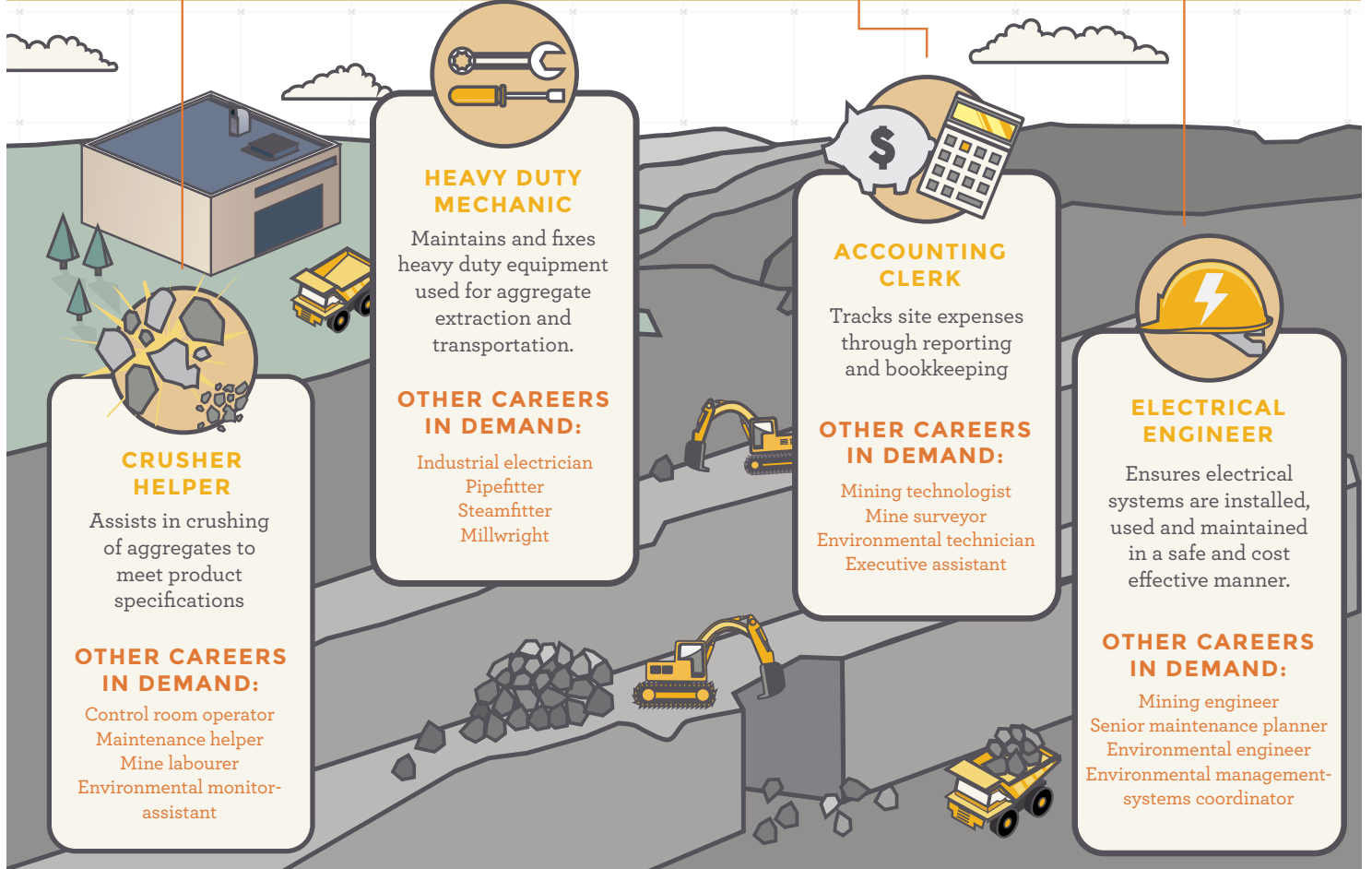


Funding provided through the Canada-British Columbia Labour Market Development Agreement.

CAREER ZONE



GRAD



OPEN PIT MINING

START



Funding provided through the Canada-British Columbia Labour Market Development Agreement.

CAREER ZONE

CORE GRADE 11-12 COURSES



- Dual Credit
- Career Prep Certif
- Work Experience
- Electives

GRAD

DIRECT-TO-WORK

APPRENTICESHIP CERTIFICATE

Example: Red Seal Certificate

COLLEGE CERTIFICATE OR DIPLOMA

Example: Environmental Technology Diploma

COLLEGE OR UNIVERSITY DEGREE

Example: Bachelor of Applied Science in Engineering



HEAVY EQUIPMENT OPERATOR

Works with large mining equipment to ensure safe mine operations and production

OTHER CAREERS IN DEMAND:

- Mining machine operator
- Driller's helper
- Long-haul truck driver
- Mine labourer



MILLWRIGHT

Maintains, repairs, or constructs industrial machinery on site

OTHER CAREERS IN DEMAND:

- Metal fabricator
- Welder
- Pipefitter
- Cook/chef



ENVIRONMENTAL TECHNICIAN

Uses specialized equipment to test soil, water, to make sure mine site is safe

OTHER CAREERS IN DEMAND:

- Mineral processing operator
- Construction Estimator
- Driller/blaster
- Mapping technician



MINING ENGINEER

Designs and oversees the development of the mine plan

OTHER CAREERS IN DEMAND:

- Mine Geologist
- Electrical Engineer
- Mine Geochemist
- Materials Engineer

UNDERGROUND MINING

START



Funding provided through the Canada-British Columbia Labour Market Development Agreement.

CAREER ZONE

CORE GRADE 11-12 COURSES

PLAN

- Dual Credit
- Career Prep Certif
- Work Experience
- Electives

GRAD

DIRECT-TO-WORK

APPRENTICESHIP CERTIFICATE
Example: Red Seal Certificate

COLLEGE CERTIFICATE OR DIPLOMA
Example: Environmental Technology Diploma

COLLEGE OR UNIVERSITY DEGREE
Example: Bachelor of Applied Science in Engineering

LONG-HAUL TRUCK DRIVER

Transports processed mine ore to warehouse or shipping facilities

OTHER CAREERS IN DEMAND:

- Mine support worker
- Mining machine operator
- Driller's helper
- Mine labourer

METAL FABRICATOR

Builds and implements structures or transport systems for mine site with metal

OTHER CAREERS IN DEMAND:

- Millwright
- Welder
- Pipefitter
- Mechanic

MINERAL PROCESSING OPERATOR

Works with chemical and physical processes to extract metal from ore

OTHER CAREERS IN DEMAND:

- Mineral technologist
- Inspector and tester
- Mapping technician
- Construction estimator

MINE MANAGER

Creates and modifies the mine plan according to weather, costs, and other variables

OTHER CAREERS IN DEMAND:

- Biologist
- Mine Geochemist
- Surveyor
- Mechanical Engineer

MINING MOVES BRITISH COLUMBIA

CYCLING

Every material used in bicycles, from the steel processed by burning metallurgical coal to the aluminum, titanium or carbon fibre in the frame, is derived from mining.

PORT MANN BRIDGE

12,000 tonnes of structural steel
25,000 tonnes of asphalt
157,000 m³ of concrete

SKYTRAIN

Route size: **68.7KM**

Skytrain relies on aluminum conductors to facilitate over **396,500** trips each weekday.

AVIATION

Typically, there are **23** precious metal containing parts in an aircraft engine.

Gold is critical to aircraft avionics and platinum maintains the longevity of turbine blades.

ROADS

There are over **47,000KM** of roads and highways connecting BC communities, requiring concrete, asphalt and structural steel for bridges.

BUSES

2,481 buses, requiring steel and aluminum, operate in over 130 BC communities

Copper is critical to powering Vancouver's trolleybus fleet, which uses **11,000** trolley line poles.

CARS

Cars in BC: **3 MILLION**

Platinum group metals are used in catalytic converters, which help prevent approximately **4** million tonnes of pollution each year.

The average car requires about **630KG** of steelmaking coal to produce.



VISUAL CAPITALIST
www.visualcapitalist.com

This infographic brought to you by:

MABC
MINING ASSOCIATION OF BRITISH COLUMBIA

www.mining.bc.ca
Twitter: @ma_bc



a **British Columbia** explorer,
developer and mine operator



discover
develop
operate

Red Chris is the largest mining industry employer in the northwest region. The mine has partnered with local colleges and communities to provide training programs and education opportunities.

imperialmetals.com

YOUR AD COULD BE HERE. PLEASE CONNECT WITH US AT [BC-CTEM.CA](http://bc-ctem.ca)



ADVANCING CONSTRUCTION OF THE HIGH-GRADE GOLD BRUCEJACK PROJECT IN NORTHERN BC



COMMERCIAL PRODUCTION TARGET 2017



Geoscience BC

SCHOLARSHIP PROGRAM

Each year, Geoscience BC awards scholarships to graduate students working on earth science projects in British Columbia. Visit www.geosciencebc.com to apply.

info@geosciencebc.com





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of assets
in top-rated
jurisdictions

Peer-leading
growth pipeline

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lowest-cost
producers with
established track
record

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Invested and
experienced
team

A history
of value
creation

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