

## PROGRAM INFORMATION

<b>Academic Year:</b>	2026-2027
<b>Credential:</b>	College Certificate
<b>Program Delivery:</b>	Full-Time
<b>Duration:</b>	1 Year
<b>Length:</b>	2 Semesters
<b>Program Code(s):</b>	M049 - Distance (CH)

## DESCRIPTION

Northern's Mineral Exploration Techniques certificate will give you the knowledge and skills you need to be a valued member of a mineral exploration team. It's an exciting career for those that enjoy working outdoors helping with the many tasks involved in exploring for and evaluating new mineral deposits.

Combining on-site and distance learning, this full-time one-year program ends with an eight-day field school where you'll get to practice carrying out basic and geological field and exploration methods you've been taught during the year.

You'll carry out activities such as practicing compass use, map orientation, field notes, sample collections, field description of rocks, mineral identification, map making, grids and grid mapping, drill core logging and more. Along the way, you'll gain comprehensive skills and a broad understanding of one of the world's biggest growth industries.

Coursework covers everything from ore signatures and environmental practices, to bush safety and survival. You will be prepared for a wide range of jobs, including lab assistant, geological technician, and quality controller. This program of study also opens the door to continuing studies at the Haileybury School of Mines.

The modular format and distance delivery of this program provides the flexibility for students to study while maintaining their employment and caters to students in remote northern communities. Graduates are ready to enter the job market with a college certificate after only one year of study.

## CAREER OPPORTUNITIES

Upon the completion of the Mineral Exploration Techniques program, graduates will have a broad understanding of the mineral exploration industry and how it relates to mining. Students will graduate with a comprehensive range of skills required to be immediately employable in the mineral exploration industry including sampling, geological surveys, fieldwork and Geographic Information Systems (GIS). They will be mindful of health and safety, ethical practices, environmental sustainability and societal conscientiousness.

Graduates may find employment as: Geological Assistant/Technician, Core Technician, Lab Assistant, Field Assistant/Technician, Geophysical Assistant/Operator, and/or Sales Representative.

- Mineral sampler
- Employed in mineral ore and metal processing plants such as copper, lead and zinc, refineries, uranium processing plants, steel mills, aluminum plants, precious metal refineries, cement processing plants, clay, glass and stone processing plants and foundries.

## VOCATIONAL LEARNING OUTCOMES

1. Complete all work in compliance with current legislation, standards, regulations and guidelines.
2. Comply with current health and safety legislation, as well as organizational practices and procedures.
3. Communicate information accurately and effectively in oral, visual, written and electronic forms.
4. Develop and use personal and professional strategies and plans to enhance professional growth and competence.
5. Collect representative geological samples and data and perform routine tests, using current and relevant tools.
6. Assist with the identification, analysis and resolution of mineral exploration related operations and problems.
7. Collect and assist in the appropriate application of mineral exploration data from new and existing sources.
8. Use conventional and electronic technology to assist in the monitoring, control and execution of mineral exploration activities.
9. Apply the principles of mathematics, science and economics to assist in the analysis, evaluation and recommendation of solutions to technical problems related to mineral exploration activities.
10. Apply environmental and community - sustainability best practices in mineral exploration workplaces.

## PROGRAM COURSES

The following reflects the planned course sequence for full-time offerings of the program. Programs at Northern College are delivered using a variety of instruction modes. Courses may be offered in the classroom or lab, entirely online, or in a hybrid mode which combines classroom sessions with virtual learning activities.

### Semester 1

CM1903	Communications I – Model A
MA1100	Mathematics I
MX1003	Introduction to Mineral Exploration
MX1013	Sampling Methods and Protocols
MX1023	Introduction to Geology and Geomorphology
MX1033	Mineral Exploration Workplace Best Practices

### Semester 2

GN1443	Indigenous Culture and Awareness
MX2003	Introduction to GIS Applications
MX2013	Geophysical Methods in Mineral Exploration
MX2023	Environmental Best Practices in Mineral Exploration
MX2033	Fieldwork, Mapping and Orienteering
MX2063	Geochemical Methods in Mineral Exploration
MX2004	Min Ex Field School

## PROGRAM PROGRESSION

The following reflects the planned progression for full-time offerings of the program.

### Fall Intake

Sem 1: Fall 2026  
Sem 2: Winter 2027

**Winter Intake**

Sem 1: Winter 2027  
Sem 2: Summer 2027

**ADMISSION REQUIREMENTS**

- Ontario Secondary School Diploma (OSSD)
- Grade 12 English (C, U)
- Grade 12 Math (C, U) (MCT4C preferred; MAP4C is accepted with a minimum GPA of 60%)
- Grade 12 Chemistry (C, U) recommended
- Grade 12 Physics (C, U) recommended
- Good computer skills and a familiarity with Microsoft Word, Excel and PowerPoint recommended
- Or equivalent

Academic prerequisites for this program may be obtained free of charge through [Academic Upgrading](#).

Applicants who do not have a high school diploma or equivalent and will have reached the age of 19 years on or before the start of the program must undergo academic testing and may be required to complete [Prior Learning Assessment & Recognition \(PLAR\)](#) process to demonstrate equivalency of admission requirements prior to admission into a program.

For more details, please contact the Admissions Office at 705-235-7222 or [admissions@northern.on.ca](mailto:admissions@northern.on.ca).

**PROGRAM SPECIFIC REQUIREMENTS & ADDITIONAL INFORMATION**

Refer to the program page for [Mining Field School Required Supplies](#) documentation.

**Work Integrated Learning Opportunities**

N/A

**Pathways to Success - Certificate to Diploma**

Graduates of the Mineral Exploration Techniques program may choose to continue their studies in the Haileybury School of Mines – [Mining Engineering Technician](#) Diploma program at Northern College, with advanced standing in three common courses.

**Articulation / Transfer Agreements**

A number of articulation agreements have been negotiated with universities and other institutions across Canada, North America and internationally. These agreements are assessed, revised and updated on a regular basis. Please contact the program coordinator for specific details if you are interested in pursuing such an option. Additional information can be found at [Articulation Agreements](#).

## GRADUATION REQUIREMENTS

- 11 Program Courses
- 2 Communications Courses
- 1 General Education Courses

### Graduation Eligibility

To graduate from this program, a student must attain a minimum of 60% or a letter grade of CR (Credit) in each course in each semester unless otherwise stated on the course outline. Students should consult departmental policies and manuals for additional details and exceptions.

### Graduation Window

Students unable to adhere to the program duration of one year (as stated above) may take a maximum of two years to complete their credential. After this time, students must be re-admitted into the program and follow the curriculum in place at the time of re-admission.

## CONTACT INFORMATION

For questions about being admitted into the program, please contact Northern College Admissions at [admissions@northern.on.ca](mailto:admissions@northern.on.ca) or by phone at 705-235-3211 ext. 7222. For questions about the content of the program, contact the Program Coordinator.

Josh Dubois, Program Coordinator  
Tel: 705-672-3376 ext. 8836  
Email: [duboisj@northern.on.ca](mailto:duboisj@northern.on.ca)

## COURSE DESCRIPTIONS

### Semester 1

#### **CM1903 Communications I – Model A**

Communications I is a practical course designed to help strengthen essential oral and written communication skills. Students will be exposed to a variety of learning methods and communication formats. Emphasis will be placed on the use of appropriate structure, writing conventions, tone and style as well as the enhancement of interpersonal, teamwork and presentation skills. Students will also develop discipline-specific documents, practice proper business etiquette and learn the importance of ethical behaviour and professionalism in the classroom and workplace. Attention to detail is emphasized.

#### **MA1100 Mathematics I**

This course covers basic algebra properties, graphing the straight line, basic geometry and trigonometry, and solving a system of equations graphically and algebraically. It also covers vector addition by components and by the cosine and sine laws.

**MX1003 Introduction to Mineral Exploration**

This course introduces the student to the Mineral Exploration industry, the associated policies, legislation and acts that govern exploration on a global, national and provincial scale. It examines the Mining sequence in Ontario. Students will learn about the process and responsibilities of companies from consultation, exploration, advanced stage exploration, development, production to closure/reclamation. This course also provides an introduction to Mineral Economics as it pertains to global markets down to local scale impacts. The course introduces the different types of economic mineral deposits.

**MX1013 Sampling Methods and Protocols**

This course introduces the student to the sampling methods and protocols used in the mineral exploration and mining industry. The students learn various methods and processes for extracting, processing, recording, shipping and storage of geological, soil, vegetation and water samples. The students learn the importance of QA/QC – Quality Assurance/ Quality Control, accuracy, contamination prevention, accountability, and transparency in sampling methods. Data entry creating spreadsheets in Microsoft Excel as a database platform is practiced.

**MX1023 Introduction to Geology and Geomorphology**

This course introduces the student to the science of geology and mineralogy and the theories that govern our understanding of the Earth's processes and geomorphological processes that form the landscapes we see every day. These topics will be examined in context with how different ore deposits have different inherent geological indicators and subsequent exploration methods employed governed by the landscapes in which they occur.

**MX1033 Mineral Exploration Workplace Best Practices**

This course introduces the student to the best practices and standards in the mineral exploration workplace including the field, lab and coreshack environment setting. Students learn the general safety protocols and standards employed in the field of mineral exploration including bush safety and survival. Students learn about the social and personal benefits of safe work practices and the methods to best prevent accidents or injuries. Students will review the role, rights and responsibilities of an individual in today's health and safety conscious world.

**Semester 2****GN1443 Indigenous Culture and Awareness**

This general education course will provide students with an introduction to Canadian Indigenous Nations' history, sovereignty, land titles, cultural history and current critical issues. Topics addressed include the content of Indigenous rights, economic and social development, community and political processes, and business law and policies, justice & social services. Canadian Indigenous History and Relations is a general education course that has been incorporated into all programs at Northern College.

**MX2003 Introduction to GIS Applications**

This course introduces the basic principles of geographic information systems. Emphasis will be placed on the theory, uses and applications of GIS in mineral exploration. Students will examine the relationships between sample data, databases and GIS in mineral exploration and digital map making.

**MX2013 Geophysical Methods in Mineral Exploration**

This course introduces the student to the theory and application of geophysical surveys in mineral exploration. Students will examine the relationship of magnetic, electrical, electromagnetic and gravity properties and surveys to the various ore deposit type signatures.

**MX2023 Environmental Best Practices in Mineral Exploration**

This course introduces the student to concepts of environmental vulnerability and responsibility in the mineral exploration industry. It outlines the responsibilities and best practices of all parties in regard to the Environmental Protection Act and the Mining Acts of Ontario. It examines the techniques used by the mineral exploration industry to mitigate the potential for environmental impacts during exploration activities.

**MX2033 Fieldwork, Mapping and Orienteering**

This course introduces the student to the basics of how to complete fieldwork efficiently, safely and with regard for the environment. Students learn about the components of maps and field notes and how to interpret air photos, topographic and geological maps and cross-sections. The course teaches the students about orienteering, compass and GPS use and bush skills.

**MX2063 Geochemical Methods in Mineral Exploration**

This course introduces the student to the theory and application of geochemical surveys in mineral exploration. Students analyze the relationship of rock, soil and biogeochemical chemistry to various ore deposit type signatures. Students also examine the various analytical methods used in industry.

**MX2004 – Min Ex Field School**

Students will gain direct hands-on experience in drill-core logging, drill-core-cutting, and sampling of rock, soils, vegetation and water. Field work includes outcrop, grid and traverse mapping, line-cutting, digital map making, data entry, geophysical methods, geochemical methods, orienteering and bush craft, geology and geomorphology.