

We acknowledge and respect that we are gathered on the traditional lands of the Anishnaabe People of Turtle Island and proudly recognize our local host Atikameksheng Anishnawbek. We also recognize the contributions of Wahnapiatae First Nation and the Metis Nation of Ontario.

Course Title	Geology I				
Course Code:	GEO1100	Credit Value:	4	Credit Hours:	56
Programs:	COMN Common Mining Engineering GEDC Geology - Dual Credit MNTN Mining Engineering Technician MNTY Mining Engineering Technology				
Equivalencies		Prerequisites		Corequisites	

This course may be delivered in a variety of different formats: 100% in-class, 100% online (or a blend of both), videoconferencing, distributed learning or off-campus. Please confirm with your faculty member which format will be used for your section of this course.

General Education Course: ☐

Eligible for PLAR: ☒

Degree Breadth Course: ☐

Experiential Learning: ☐

Research Intensive Course Designation: ☐

COURSE DESCRIPTION

In this course, students will discover mineralogy; igneous, sedimentary, and metamorphic rocks; weathering and erosion; and the earth's internal structure. In the hands-on lab component of this course students will learn to identify at least 50 main rock and ore forming minerals.

Date: May 20, 2026

Alison Caruso

Approved by: _____

ALISON CARUSO
 Chair, Schools Of Engineering Tech & Enviro.
 Studies, Schools Of Skilled Training, Engineering
 Technology & Environmental Studies

Effective: Fall 2026, Winter 2027, Spring 2027

RELATIONSHIP TO PROGRAM VOCATIONAL LEARNING OUTCOMES

PROGRAM LEVEL	
This course contributes to your program by allowing you to demonstrate the following vocational learning outcomes:	
Program(s)	Vocational Learning Outcomes
Mining Engineering Technician	College Standards 1. Complete all work in compliance with company policies, procedures, and government requirements to ensure safe and legal mining operations. 2. Identify properties of rock and mineral materials relevant to mining activities.
Mining Engineering Technology	College Standards 1. Apply company policies, procedures, and regulatory requirements to support safe, legal, and environmentally responsible mining operations. 2. Analyze properties of rock and mineral materials to assess implications for mining activities.

COURSE CURRICULUM**Topics/Concepts Covered in This Course**

- Introduction - To geology, to the course, also (in brief) to the geology of the earth and its principal features.
- Mineralogy - A classroom review of the principal chemical and physical properties of minerals. Selective discussion of crystallography and crystal chemistry.
- Weathering, Soils and Erosion - Chemical and mechanical weathering, soil types, soil formation, principal agents of erosion, erosion leading to formation of a sediment.
- Igneous Rocks - The igneous rock-forming processes, magmas, crystallization. Igneous rocks as dikes, sills, stocks, batholiths. Volcanic landforms. Igneous rock types.
- Sedimentary Rocks - Sedimentary rock-forming processes. Laws of superposition, horizontality, continuity. Sedimentary rock types.
- Metamorphic Rocks - The rock cycle, formation of metamorphic rocks. Chemical and mineralogical changes due to metamorphism. Cleavage, schistosity, gneissosity. Topic will be covered if time permits.
- Lab Work - Mineral properties and process of identification of up to 50 common rock-forming minerals.

COURSE LEVEL: Learning Outcomes and Objectives	
To earn credit for this course, you must reliably demonstrate your ability to:	
Learning Outcome	Objectives
1.	1.1 Describe in simple terms the earth's internal structure.

Learning Outcome	Objectives
Describe the basic aspects of the earth's structure, including plate tectonics.	1.2 Describe the ultimate causes of plate movement. 1.3 Explain the evolution of the earth's surface areas (tectonic plates) over time. 1.4 Explain the generic effects of plate movement over time. 1.5 Describe how the earth's internal structure affects the formation of common rock types.
2. Describe and recognize the physical properties of minerals, which are based on their crystal chemistry.	2.1 Describe the internal structure of an atom. 2.2 Describe the various ways in which atoms bond to form molecules in the solid state. 2.3 Describe the internal crystal chemistry of selected minerals. 2.4 Recognize how the crystal chemistry of minerals determines their physical properties. 2.5 Describe and recognize the physical properties used to identify minerals.
3. Identify unknown minerals in a lab or field environment.	3.1 Recognize, quantify, and list the physical properties of a mineral. 3.2 Determine which physical properties together constitute the diagnostic criteria for a given mineral. 3.3 Test, identify, and name up to 50 common rock-forming and economic minerals using criteria of mineral chemistry, structure, and physical properties.
4. Differentiate and describe the essential aspects of weathering and erosion.	4.1 Describe common chemical weathering reactions. 4.2 Describe common types of mechanical weathering. 4.3 Describe how the products of chemical and mechanical weathering may be eroded and transported by the most common agents of erosion. 4.4 Explain how the common agents of erosion eventually deposit the products of weathering in a new location. 4.5 Describe the 'Rock Cycle'. 4.6 Understand and describe the 'Hydrologic Cycle'.
5. Recognize the names of common igneous rocks; and describe their composition, texture, and the processes that form them.	5.1 Name some common igneous rocks. 5.2 Describe the composition of some common igneous rocks. 5.3 Describe the texture of some common igneous rocks.

Learning Outcome	Objectives
	5.4 Describe the physical configuration of some common igneous rock bodies. 5.5 Describe the mode of formation of some common igneous rocks.
6. Recognize the names of common sedimentary rocks; and describe their composition, texture, and the processes that form them.	6.1 Name some common sedimentary rocks. 6.2 Describe the composition of some common sedimentary rocks. 6.3 Describe the texture of some common sedimentary rocks. 6.4 Describe the physical configuration of some common sedimentary rock bodies. 6.5 Describe the mode of formation of some common sedimentary rocks.

Essential Employability Skills

Communication

- communicate clearly in written, spoken, and visual form that fulfills purpose/needs of audience.
- respond to written, spoken, or visual messages in a manner that ensures effective communication.

Numeracy

- execute mathematical operations accurately.

Critical Thinking and Problem Solving

- apply a systematic approach to solve problems.
- use a variety of thinking skills to anticipate and solve problems.

Information Management

- locate, select, organize, and document information using appropriate technology and info systems.
- analyze, evaluate, and apply relevant information from a variety of sources.

Interpersonal

- show respect for the diverse opinions, values, belief systems, and contributions of others.
- interact with others in groups in ways that contribute to effective working relationships.

Personal

- manage the use of time and other resources to complete projects.
- take responsibility for one's own actions, decisions, and consequences.

Delivery Method

- Classroom: Course is delivered through scheduled synchronous teaching that may be face-to-face and/or virtual.

Learning Activities

- Lectures
- Class Discussions
- Labs
- Group Work
- Research
- Field Trip(s)
- Small Group Instruction
- One-to-One Instruction

Resources Required

Books

Charles Fletcher, Dan Gibson, Kevin Ansdell, *Introduction to Physical Geology, Canadian Edition Binder Ready Version*, Canadian Edition, Wiley

ISBN: 978-1-118-30083-1

Price: \$ 182.50

Second Hand Permissible: ☒

Additional Supplies

6" Ruler

stainless is best

Hand Lens

10 X magnification, glass lenses

Streak Plate

unglazed porcelain, supplied by college

Mineral Identification Tables

supplied by college

Magnet and Scribe

small, inexpensive, tied to thread or string

Glass Plate

clear, rimmed with electrical tape or duct tape, supplied by college

Evaluation Plan

Grading Scheme

A	80% - 100%
B	70% - 79%
C	60% - 69%
D	50% - 59%
F	0% - 49%

Evaluation Method	Value (%)
Applied Activities (G)	36%
-Eight mineral ID activities of equal value (Bag #1 - #8) -Students must pass (50%) each bag assessment. -The overall average required for bag assessments 1 to 8 is 70%.	

This is an important document and should be saved for future reference. It may be needed for certification, credit transfer and employment purposes.
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Evaluation Method	Value (%)
-Students must complete all 8 bags. Missed assessments may be made up at the discretion of the instructor only if you notify the instructor before the class you are absent.	
Test/Exam	37%
Three theory tests: -First test (8%) -Second test (12%) -Third test (12%) One lab test (Bag #9) (5%) Missed tests MAY be made up at the discretion of the professor ONLY if notification is made before the test begins.	
Quizzes	9%
Three theory quizzes of equal value (3%). Missed quizzes may be made up at the discretion of the professor ONLY if notification is provided by phone (voicemail) or email on or before the scheduled class.	
Assignments	8%
One theory research assignment (4%) One lab research assignment (4%)	
Professional Conduct	10%
Theory = 5%, Lab = 5%. An assessment of ethical and behavioural conduct necessary to be successful in the employment related to the course of study. Includes accepting feedback, effective communication, participation, and punctuality.	

ADDITIONAL INFORMATION

A course outline is the College's commitment to the students. It supports educators, students, employers, and external partners in determining the depth of knowledge and level of performance that a student will be able to demonstrate upon successful completion of a course. Both instructor and student are obligated to follow the content of the course outline. It is your responsibility to meet these outcomes as assigned.

Note: You should maintain a copy of this course outline for your records. You may require this course outline if you seek transfer credits or further studies at other institutions.

Cambrian Email Addresses

All email correspondence with currently registered students must be via the students' College-issued email, as per the College's [IT Acceptable Use Policy](#). Students must familiarize themselves with the IT Acceptable Use Policy, as it outlines the acceptable use of College information systems and technology, and mitigates risks to the College's IT infrastructure.

Bring Your Own Device (BYOD) and Apps Anywhere

Cambrian College is a BYOD institution, which means that students bring the device of their choice that meets program-specific minimum technology requirements. Program-specific minimum technology requirements can be viewed on program pages on the Cambrian College website. AppsAnywhere is an easy-to-use app store-like platform providing students with a way to access their College apps and software on demand, anywhere, anytime both on and off campus. These both enrich the student learning experience in and out of the classroom, while providing maximum flexibility.

Policies

It is the student's responsibility to be aware of the College's policies. Policies, procedures and forms can be found on the [College website](#).

Academic and Student Services

Cambrian has a variety of student and academic services to support students during their academic journey at the College.

- [Academic Integrity Office](#)
- [Academic Success Centre](#)
- [Bookstore and Campus Store](#)
- [International Student Support Services](#)
- [KPMG Pride Centre](#)
- [Career Centre](#)
- [Registrar's Office \(Enrolment Centre\)](#)
- [First Step Centre](#)
- [Accessibility Services](#)
- [Library](#)
- [Pathways](#)
- [Available Scholarships and Bursaries](#)
- [Cambrian Student Council \(CSC\)](#)
- [Cambrian Indigenous Student Circle \(CISC\)](#)
- [Cambrian Athletic Association \(CAA\)](#)
- [Student Life Centre](#)
- [Test Centre](#)
- [The Learning Centre \[Tutoring Services\]](#)
- [Wabnode Centre for Indigenous Services](#)
- [Women's Resource Centre](#)

Copyright

Copyright is the exclusive legal right given to a creator to reproduce, publish, sell, or distribute his/her work. All members of the Cambrian community are required to comply with Canadian copyright law, which governs the reproduction, use and distribution of copyrighted materials. This means that the copying, use and distribution of copyright-protected materials, regardless of format, are subject to certain limits and restrictions. For example, activities such as photocopying or scanning an entire textbook or uploading class materials to a course sharing site are prohibited.

See the [Cambrian Library website](#) for additional information regarding copyright and for details on allowable limits.

Audio/Visual Capture

Sounds and images from this class, and contributions made by a participant, virtually or in-person, are recorded under the authority of the *Ontario Colleges of Applied Arts and Technology Act, 2002*. The main purpose of these recordings is to allow students enrolled in the course to review content and engage in activities, whether they attend any given class in person, virtually, or at all. Class

recordings are for personal use only and shall not be shared or transferred. Faculty may also review these recordings to prepare for future classes, evaluate students, collaborate in program reviews, or provide feedback to faculty and/or students. Any questions about the use of multimedia recordings may be addressed to your respective Dean.

Equity, Diversity, and Inclusivity

Cambrian is committed to building and preserving an equitable, diverse, and inclusive learning community where students, faculty, and staff may achieve their full potential in an environment characterized by equality of respect and opportunity. All students and employees have the right to live and work in an environment that is free from discrimination and harassment. Therefore, Cambrian College will not tolerate any form of discrimination or harassment in its employment, education, accommodation, or business dealings. For more information, please visit: [Equity, Human Rights, and Accessibility](#).

Prior Learning Assessment and Recognition (PLAR)

Students wishing to have work or life experience that meets course learning outcomes considered for credit through Prior Learning Assessment and Recognition should email the Enrolment Centre at records@cambriancollege.ca.

Transfer Credit

Students wishing to have courses from other programs or institutions assessed for equivalency and/or transfer credit should visit the [Transfer Credits page](#) on the Cambrian website. The student should maintain a copy of this course outline for their records. Students may require this course outline if seeking transfer credits or further studies at other institutions.

Test Proctoring at Cambrian

Many courses include major tests and/or final exams. The practice at Cambrian requires that these types of test situations involve proctoring to ensure academic integrity. Online tests/exams may employ a proctoring services to enable you to take your exam from a location of your choosing within a period specified by your instructor. When you are taking an online test/exam, the proctoring service may capture your video, screen, audio, and web surfing data to protect academic integrity. Cambrian College collects, uses, discloses, and retains personal information in compliance with the *Freedom of Information and Protection of Privacy Act (FIPPA)*. Your personal information is being collected under the authority of the *Ontario Colleges of Applied Arts and Technology Act S.O. 2002, c.8, Sched. F*. This information will be used for the purpose of administering a test/exam through an online proctoring service acting as an authorized agent of the College. Please refer to Cambrian's [Official Student Records Policy](#) for more details. If you have any questions regarding the collection of your personal information, please contact Vice President Academic, Cambrian College, 1400 Barry Downe Rd., Sudbury ON P3A 3V8, 1-705-566-8101 ext. 6245.

Schools of Skilled Training, Engineering Technology & Environmental Studies Regulations

Lab Attendance

This course includes a mandatory lab component. The grading in this course will include the evaluation of lab reports and performance during labs.