Yukon University	**School of Science**
	GEOL 108 **Earth Through Time**
	Term: Winter 2026 **Number of Credits: 3**

Course Outline

INSTRUCTOR: Dr. Chad Morgan
E-MAIL: cmorgan@yukonu.ca **PHONE:** (867) 456-8570
OFFICE LOCATION: T1084 **OFFICE HOURS:** Drop-in and by appointment

CLASSROOM: Online synchronous Zoom lectures, Tuesday & Thursday 7:00 – 8:20 pm
DATES: January 6, 2026, to April 16, 2026

COURSE DESCRIPTION

GEOL 108 examines Earth's history from initial formation through to the present-day using evidence found in the geologic record; as well as the corollary development of geological thought and understanding in both Western and Indigenous worldviews. The course covers three main themes in Earth history: 1) the concept of deep time; 2) the evolution of plate tectonics; and 3) the biological evolution of Earth using evidence from the fossil record. The growth of the continents, the opening and closing of ocean basins, episodes of large-scale erosion and deposition on the continents, and orogenic (mountain-building) episodes are fundamental geologic topics covered in this course. Students will develop competencies in measuring geologic time using the application of stratigraphic principles, paleontology and radioactive decay.

Life on Earth during the major geological time periods is discussed with a focus on significant evolutionary developments and mass extinctions. Plate tectonics, climate, and relative sea-level are examined as determinants of evolutionary change with particular reference to North America and Western Canada.

This course is designed to run concurrently with GEOL 106 (Historical Geology). Students in GEOL 108 will share lectures with students in GEOL 106 (Historical Geology) but will not complete a lab component. This course serves as an option for students to satisfy programs requiring a 3-credit science course without a lab. Students may not take GEOL 108 for credit towards the Earth Sciences diploma.

COURSE REQUIREMENTS

There are no prerequisites for this course.

Cross-listed or Excluded Courses: GEOL 106 Historical Geology: Students enrolled in the Earth Sciences Diploma or bridging program may not take this course for credit.

EQUIVALENCY OR TRANSFERABILITY

Receiving institutions determine course transferability. Find further information at: https://www.yukonu.ca/admissions/transfer-credit

LEARNING OUTCOMES

Upon successful completion of the course, students will be able to:

1. Demonstrate knowledge and proper use of the geologic time scale, as well as understanding of the history of its development.

2. Describe Indigenous perspectives on geologic history, with a specific focus on northwestern Canada. Demonstrate how western scientific perspectives and Indigenous oral traditions have contextualized the same geologic developments through different lenses.

3. Demonstrate understanding of the suite of geologic principles used to analyze Earth history and apply those principles to evaluate and interpret the geologic history of specific localities in western Canada.

4. Summarize how Earth's continents and oceans evolve over geologic time and relate this to specific evidence preserved in the rock record.

5. Describe the relationships between plate tectonics and the evolution/extinction of life on Earth, from first life through to the present-day.

6. Research a variety of invertebrate fossils and discuss how they contribute to 1) geologists' understanding of life during specific geologic time periods and 2) interpretations of Earth history.

7. Summarize the key sedimentological, paleoclimatic, tectonic, and biological lines of evidence that have been used to interpret the history of Earth with a focus on North America and western Canada in particular.

COURSE FORMAT

Weekly breakdown of instructional hours

This course consists of two 80-minute lectures per week in an online format through Zoom. Course materials will be provided through the course Moodle page. The course will include asynchronous 'take-home' content (activities and assignments) which will require additional time outside of the scheduled lecture periods. The class will proceed following a schedule of activities with set assignments and due dates throughout the term. This is not a self-paced course. The schedule included in this course outline presents the major topics to be covered in the lectures. Please note that the course schedule may be modified through the term at the instructor's discretion.

Delivery format

Lectures for the Winter 2026 offering of this course will be delivered online via Zoom. Students are expected to attend the virtual lectures during scheduled class time so they can ask questions and directly engage with the instructor and their peers. Lectures will not be recorded. Review of any missed material or completion of missed activities is the responsibility of the student. Examinations will be delivered remotely through the course Moodle portal with additional details on the delivery method presented by your instructor closer to the examination date. One on one appointments with the course instructor may be scheduled online or in-person at the Ayamdigut Campus.

EVALUATION

Lecture Participation	5 %
Lecture Assignments	25 %
Fossil and Earth Materials Field book	30 %
Midterm Examination	20 %
Final Examination	20 %
Total	100%

Attendance and Participation

Students are expected to attend lectures, as well as complete asynchronous course content each week. It is the responsibility of the student to inform the instructor if they will be missing a lecture and to make-up for missed content on their own time. Attendance and participation will be noted by the instructor and will be valued at 5% of the final grade.

Assignments

Two lecture-based assignments will be distributed at scheduled intervals during the course. These assignments will focus on topics in historical geology. In addition, students in GEOL 108 will maintain a Fossil and Earth Materials Field book throughout the term, which involves examination of online 3-D models representing key fossils through Earth's history. Submission of field book entries will be due at scheduled points during the course, as well as at the end of the semester. Further details will be provided at the start of the term by your instructor.

Late assignments will be graded based on the following scheme: a deduction of 10% per day up until a total deduction of 50% is reached, following that, assignments must be submitted prior to the date that the instructor hands back the graded assignment (set by the instructor). All assignments must be submitted prior to the end of the last lecture.

Examinations

This course has two lecture examinations: a midterm and a final. The midterm exam (1.5 hrs) is conducted during scheduled lecture time; the final exam (3 hrs) is conducted during the final exam period scheduled by the Office of the Registrar. Both the midterm and final exam are conducted online through the Moodle platform.

Missed exams will be assigned a grade of 0% unless re-scheduling for a valid reason is approved and determined in advance of the exam date. If there are known conflicts with exam scheduling, please see the instructor as soon as possible to discuss an alternative examination date. Please note that excuses such as car trouble, vacation travel, oversleeping, and misreading the exam schedule are not considered legitimate reasons and will not qualify a student for a deferred exam.

COURSE WITHDRAWAL INFORMATION

Refer to the YukonU website for important dates.

TEXTBOOKS & LEARNING MATERIALS

Required Textbook:

Fensome, R., Williams, G., Achab, A., Clague, J., Corrigan, D., Monger, J., & Nowlan, G. (eds.) 2014. *Four Billion Years and Counting: Canada's geological heritage* (1st edn.). Nimbus Publishing and the Canadian Federation of Earth Sciences, 402 pp. ISBN: 978-1-55109-996-5.

The textbook is available online at retail sellers including Amazon.ca, Chapters-Indigo, and the publisher (https://nimbus.ca/store/four-billion-years-and-counting.html).

ACADEMIC INTEGRITY

Students are expected to contribute toward a positive and supportive environment and are required to conduct themselves in a responsible manner. Academic misconduct includes all forms of academic dishonesty such as cheating, plagiarism, fabrication, fraud, deceit, using the work of others without their permission, aiding other students in committing academic offences, misrepresenting academic assignments prepared by others as one's own, or any other forms of academic dishonesty including falsification of any information on any Yukon University document.

Please refer to Academic Regulations & Procedures for further details about academic standing and student rights and responsibilities.

ACCESSIBILITY AND ACADEMIC ACCOMMODATION

Yukon University is committed to providing a positive, supportive, and barrier-free academic environment for all its students. Students experiencing barriers to full participation due to a visible or hidden disability (including hearing, vision, mobility, learning disability, mental health, chronic or temporary medical condition), should contact Accessibility Services for resources or to arrange academic accommodations: access@yukonu.ca.

TOPIC OUTLINE*

Week	*Date*	*Lecture*	*Lecture Topics*	*Textbook Readings*
1	Jan. 6	1	Course Introduction & Intro to Geology I	Ch. 1 – 2
	Jan. 8	2	Intro to Geology II	
2	Jan. 13	3	Stratigraphic Principles and the Sedimentary Rock Record	Ch. 3
	Jan. 15	4	Deep Time and development of the Geologic Time Scale	
3	Jan. 20	5	Fundamentals of Palaeontology I	Ch. 4
	Jan. 22	6	Fundamentals of Palaeontology II	
4	Jan. 27	7	Hadean Eon and Cosmology – origin of the universe, solar system, and Earth	Ch. 5
	Jan. 29	8	Archean Eon I	
5	Feb. 3	9	Archean Eon II – Earliest evidence of life	
	Feb. 5	10	Evolution and Taxonomy I	
6	Feb. 10	11	Evolution and Taxonomy II	
	Feb. 12	12	Proterozoic Eon I	Ch. 6 – 7
7	Feb. 17	13	Proterozoic Eon II	
	Feb. 19	14	Proterozoic Life – From microscopic to macroscopic	
8	Feb. 24	15	Palaeozoic Life I – Marine invertebrates	Ch. 7 – 8
	Feb. 26	16	Palaeozoic Life II – Rise of tetrapods	
9	Mar. 3	Midterm Review Session		
	Mar. 5	Midterm Exam (online in class)		
10	Mar. 10	Reading Break (no classes)		
	Mar. 12			
11	Mar. 17	17	Palaeozoic Life III – Arrival of plants	Ch. 8
	Mar. 19	18	Paleozoic Era – Assembling Pangaea	
12	Mar. 24	19	Mesozoic Life I – Marine realm	Ch. 9
	Mar. 26	20	Mesozoic Life II – Terrestrial realm	
13	Mar. 31	21	Mesozoic Era – End of the Pangaea party	
	Apr. 2	22	Cenozoic Era	Ch. 10 – 11
14	Apr. 7	23	Cenozoic Life	
	Apr. 9	24	The Anthropocene debate, a new epoch?	Ch. 18, 20
15	Apr. 14	25	TBD	
	Apr. 16	26	TBD	

**Lecture Schedule subject to change at Instructor's discretion*