



Physical and Historical Geology – GEOL 106

University Studies Program

Course Outline

COURSE IMPLEMENTATION DATE: Pre 1998
OUTLINE EFFECTIVE DATE: September 2023
COURSE OUTLINE REVIEW DATE: April 2028

GENERAL COURSE DESCRIPTION:

This course is an introduction to the major principles of structural and historical geology. Historical geology topics include geologic time, relative and absolute dating techniques, organic evolution, the study of fossils and the geologic history of the earth from the Precambrian to the present. Mineral deposits and natural resource issues will also be examined.

Program Information: This course is intended for University Studies and Business Management diploma and degree students. It can also be used as an elective for BMGT diplomas and the Bachelor in Business Administration (Sustainable Business Practices) degree.

Delivery: This course is delivered face to face.

COTR Credits: 3

Hours for this course: 90 hours

Typical Structure of Instructional Hours:

Instructional Activity	Duration
Lecture Hours	45
Seminars / Tutorials	
Laboratory / Studio Hours	45
Practicum / Field Experience Hours	
Other Contact Hours	
Total	90

Practicum Hours (if applicable):

Type of Practicum	Duration
On-the-job Experience	N/A
Formal Work Experience	N/A
Other	N/A
Total	

Course Outline Author or Contact:

Katie Burles, M.Sc.

Signature

APPROVAL SIGNATURES:

Department Head
Erin Aasland Hall
E-mail: aaslandhall@cotr.bc.ca

Dean of Business and University Studies
Stephanie Wells
E-mail: SWells2@cotr.bc.ca

Department Head Signature

Dean Signature

EDCO

Valid from: September 2023 – April 2028

Education Council Approval Date

COURSE PREREQUISITES AND TRANSFER CREDIT:

Prerequisites: None

Corequisites: None

Flexible Assessment (FA):

Credit can be awarded for this course through FA Yes No

Learners may request formal recognition for flexible assessment at the College of the Rockies through one or more of the following processes: External Evaluation, Worksite Assessment, Demonstration, Standardized Test, Self-assessment, Interview, Products/Portfolio, Challenge Exam. Contact an Education Advisor for more information.

Transfer Credit: For transfer information within British Columbia, Alberta and other institutions, please visit <http://www.cotr.bc.ca/Transfer>.

Students should also contact an academic advisor at the institution where they want transfer credit.

Prior Course Number: N/A

Textbooks and Required Resources:

Textbook and class teaching materials selection varies by instructor and may change from year to year. Presentations associated with class activities will be posted on COTROnline and should be downloaded and read. The following textbooks have been selected for the class and sections of the textbooks will be utilized in the course. Please consult the instructor syllabus for further details.

Earle, S. 2019. *Physical Geology* – 2nd edition. Online: <https://opentextbc.ca/physicalgeology2ed/>

Waldron, J., and Snyder, M. *Geological Structures: A Practical Introduction*. Online: <https://open.umn.edu/opentextbooks/textbooks/899>

Introductory Physical Geology Laboratory Manual – First Canadian Edition (v.3 – Jan 2020)
Online: <https://openpress.usask.ca/geolmanual/>

Since these textbooks are open access and available online, textbooks do not have to be purchased from the bookstore. The instructor will supplement the class with assignment activities that are not provided in the textbook or the lab manual. These assignment activities will be posted on COTROnline.

In-class activities may include presentations and stories by guests or attendance of online events conducted by virtual meeting technologies.

LEARNING OUTCOMES:

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

- reflect upon the Ktunaxa story of creation, contrasting it with other Indigenous science and western scientific worldviews;
- outline respective ways to visit and learn from the homelands and waterways in Ktunaxa ?amak?is, the traditional territory of the Ktunaxa Nation;
- describe theories for the formation of the solar system and the history of the Earth;
- apply the evidence for the plate tectonic theory and how it explains many of the Earth's major processes;
- reiterate the dynamics of the three types of plate boundaries and the geologic processes that occur at each boundary;
- describe the internal mechanisms that drive the plate tectonic process;
- summarize the various deformations of the earth's crust;
- apply the basic principles of structural geology to determine the geologic history of a portion of the Earth's crust;
- explain how igneous, sedimentary and metamorphic rock develops within the rock cycle and describe where these rocks are found within the context of structural geology and processes;
- explain and apply the various relative and absolute dating techniques;
- describe how sedimentary rocks and their fossils reflect the paleo environments at various times in Earth's history;
- recognize common fossils and types of fossilization;
- explain the environmental and geological conditions prevailing during the early stages of Earth's history;
- describe how the arrangement and location of the continents and oceans has changed over time;
- relate the changes in surface features and climate to the organic evolution of the biosphere;

- summarize the conditions that lead up to the mass extinctions that have occurred and the possible catastrophic events that may have contributed to the rate of extinction of some organisms;
- discuss the geologic and chemical processes that result in the formation of ore deposits; and
- demonstrate a basic knowledge of the geology of Canada and British Columbia in the context of world geology and global geological processes.

COURSE TOPICS:

- Ktunaxa Creation Story
- Plate Tectonics
- Rocks
- Structural Geology
- The Rock Cycle
- Deformation, Mountain Building, and Continents
- Earthquakes
- The Sea Floor
- Geologic Time
- Fossils and Evolution
- Precambrian Earth and Life History
- Paleozoic Earth and Life History
- Mesozoic Earth and Life History
- Cenozoic Earth and Life History

See instructor’s syllabus for the detailed outline of weekly readings, activities and assignments.

EVALUATION AND ASSESSMENT:

Assignments	% Of Total Grade
Lab	
Lab Assignments	30%
Lab exam	10%
Class	
Class Project	10%
Midterms	20%
Final Exam	<u>30%</u>
Total	100%

Please see the instructor’s syllabus for specific classroom policies related to this course, such as details of evaluation, penalties for late assignments and use of electronic aids.

Note: Students must attain a 50% average on all lab-based assignments and exams and a 50% average on all class-based assignments and exams to pass Geography 101.

EXAM POLICY:

Students must attend all required scheduled exams that make up a final grade at the appointed time and place.

Individual instructors may accommodate for illness or personal crisis. Additional accommodation will not be made unless a written request is sent to and approved by the appropriate Department Head prior to the scheduled exam.

Any student who misses a scheduled exam without approval will be given a grade of "0" for the exam.

COURSE GRADE:

Course grades are assigned as follows:

Grade	A+	A	A-	B+	B	B-	C+	C	C-	D	F
Mark (Percent)	≥ 90	89-85	84-80	79-76	75-72	71-68	67-64	63-60	59-55	54-50	< 50

A grade of "D" grants credit, but may not be sufficient as a prerequisite for sequential courses.

ACADEMIC POLICIES:

See www.cotr.bc.ca/policies for general college policies related to course activities, including grade appeals, cheating and plagiarism.

COURSE CHANGES:

Information contained in course outlines is correct at the time of publication. Content of the courses is revised on an ongoing basis to ensure relevance to changing educational, employment and marketing needs. The instructor endeavours to provide notice of changes to students as soon as possible. The instructor reserves the right to add or delete material from courses.