APPLIED SCIENCE AND MANAGEMENT DIVISION
GEOL 105
3 Credit Course
Fall, 2019

COURSE OUTLINE

GEOL 105

PHYSICAL GEOLOGY

3 CREDITS

PREPARED BY: Dr. Joel Cubley, Instructor
DATE: July 15, 2019

APPROVED BY: Margaret Dumkee, Dean
DATE: July 15, 2019

APPROVED BY ACADEMIC COUNCIL: April 17, 2012
RENEWED BY ACADEMIC COUNCIL: February 23, 2015

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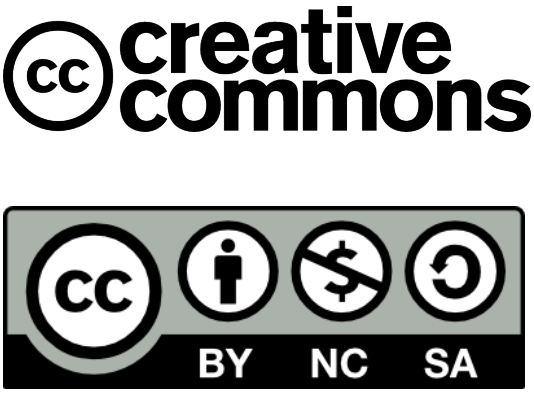

Version 1.1 revised and approved by Academic Council: June 20, 2018
Academic Council, Governance Office
Academic Council MyYC: Policies, Procedures and Forms

APPLIED SCIENCE AND MANAGEMENT DIVISION
GEOL 105
3 Credit Course
Fall, 2019

PHYSICAL GEOLOGY

INSTRUCTOR: Dr. Joel Cubley

OFFICE HOURS: T/Th (11 am – 12pm)

OFFICE LOCATION: T1090

CLASSROOM: M111 (lecture)
T1090 (laboratory)

E-MAIL: jcubley@yukoncollege.yk.ca

TIME: W (1-2:30 pm) – lecture
F (10:30 am – 12:00 pm) – lecture
F (1–4 pm) - laboratory

TELEPHONE: (867) 456-8605

DATES: September 4–December 20, 2019

COURSE DESCRIPTION
Geology 105 is an introduction to the materials that constitute the earth and the processes affecting the earth. Topics covered include atomic structure and minerals; igneous, sedimentary and metamorphic rocks; weathering, erosion and depositional processes; earth composition and structure; basic geophysics; plate tectonics; and economic geology.

PREREQUISITES
Admission to the Geological Technology, Science, Northern Science, Renewable Resource Management, or Northern Environmental and Conservation Sciences programs; and/or permission from the instructor.

EQUIVALENCY OR TRANSFERABILITY
Geology 105 has established equivalency with the following institutions:

Simon Fraser University – EASC 101
Thompson Rivers University – GEOL 1110
University of British Columbia – EOSC 110 and EOSC 111
University of British Columbia Okanagan – EESC 111
University of Fraser Valley – GEOG 1XX
University of Northern British Columbia – SCIE 1XX
University of Victoria – EOS 100
Vancouver Island University – GEOL111

LEARNING OUTCOMES

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

- identify and classify basic rocks and minerals in hand sample.
- use basic geoscience terminology in describing lithologies, structures and geologic processes.
- connect earth processes to earth cycles, such as the rock cycle and tectonic cycle, and define the time scales at which different cycles operate.
- apply geological and geophysical principles and concepts to solving geologic problems on a number of scales.
- describe the geologic history of a region based on field exposures, maps, cross-sections, rock samples, and photographs.

COURSE FORMAT

This course consists of two 90-minute lectures and one three-hour lab period per week. The lecture schedule included in this course outline details the major topics covered and when those topics will be presented throughout the course. Please note that this schedule will likely be modified throughout the term, as some topics may not be finished within the predicted lecture time. Laboratory exercises will be conducted in both laboratory and field settings.

ASSESSMENTS

Attendance & Participation

Students are strongly encouraged to attend all lectures and laboratory exercises. Lab exercises can be completed only during lab periods and materials may not be available outside these hours. Off-campus field exercises must be completed during the allocated time with the instructor present.

Assignments

Weekly lab exercises will be due at the start of the following lab section. In addition to these exercises, students will participate in three in-class lecture "learning assessments" to help reinforce critical concepts. Two take-home lecture assignments will be administered over the course of the semester.

Readings from the textbook will be assigned to support lecture instruction. Students should expect to spend 1-2 hours per week on background reading, and 3-4 hours on laboratory and/or lecture assignments.

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).

Tests

This course has two lecture examinations, a midterm and a final. The midterm exam is conducted during scheduled lecture time; the final exam is conducted during the final exam period scheduled by the Office of the Registrar. There is also a final laboratory exam conducted during the final week of classes in the regularly scheduled laboratory time. The midterm lecture exam is a 1.5-hour exam; the lecture and laboratory final exams are designed to take 3 hours.

Missed exams will be assigned a grade of 0% unless re-scheduling for a valid reason is approved and determined in advance of scheduled exam date. Any student who is absent from a test or exam for legitimate reasons will be eligible to write a deferred exam. Please note that excuses such as car trouble, vacation travel, oversleeping, and misreading the test schedule are not considered legitimate reasons and do not qualify the student for a deferred exam.

For missed exams, the student must contact the instructor within 48 hours of the missed exam by phone or email. For missed final exams, students must contact the Chair of the School of Science. Any deferred exams will be scheduled by the Chair.

EVALUATION:

Tests and Assignments	***Weight***	***Dates***
Weekly Lab Assignments	30% (3% each)	Due at the start of each subsequent lab section.
Midterm Exam	15%	During lecture class time (see schedule).
Lab Final Exam	15%	During scheduled lab time in the final week of classes.
Final Exam	20%	During exam period, as scheduled by registrar.
In-class Learning Assessments	10% (3.3% each)	During lecture class time (see schedule).
Take-home Lecture Assignments	10% (5% each)	
Total	100%	

REQUIRED TEXTBOOKS AND MATERIAL
This course utilizes an open-source textbook offered through the BC Campus Open Ed project.

Earle, S. 2015. Physical Geology (1st ed.). British Columbia (BC) Open Campus.

The textbook may be accessed at: https://opentextbc.ca/geology/

ACADEMIC AND STUDENT CONDUCT

Information on academic standing and student rights and responsibilities can be found in the current Academic Regulations that are posted on the Student Services/ Admissions & Registration web page.

PLAGIARISM
Plagiarism is a serious academic offence. Plagiarism occurs when a student submits work for credit that includes the words, ideas, or data of others, without citing the source from which the material is taken. Plagiarism can be the deliberate use of a whole piece of work, but more frequently it occurs when students fail to acknowledge and document sources from which they have taken material according to an accepted manuscript style (e.g., APA, CSE, MLA, etc.). Students may use sources which are public domain or licensed under Creative Commons; however, academic

documentation standards must still be followed. Except with explicit permission of the instructor, resubmitting work which has previously received credit is also considered plagiarism. Students who plagiarize material for assignments will receive a mark of zero (F) on the assignment and may fail the course. Plagiarism may also result in dismissal from a program of study or the College.

YUKON FIRST NATIONS CORE COMPETENCY

Yukon College recognizes that a greater understanding and awareness of Yukon First Nations history, culture and journey towards self-determination will help to build positive relationships among all Yukon citizens. As a result, to graduate from ANY Yukon College program, you will be required to achieve core competency in knowledge of Yukon First Nations. For details, please see www.yukoncollege.yk.ca/yfnccr.

ACADEMIC ACCOMMODATION

Reasonable accommodations are available for students requiring an academic accommodation to fully participate in this class. These accommodations are available for students with a documented disability, chronic condition or any other grounds specified in section 8.0 of the Yukon College Academic Regulations (available on the Yukon College website). It is the student's responsibility to seek these accommodations. If a student requires an academic accommodation, he/she should contact the Learning Assistance Centre (LAC): lac@yukoncollege.yk.ca.

TOPIC OUTLINE
LECTURE TOPIC OUTLINE

Week	Date	Lecture #	Lecture Topic(s)	Recommended Resources
1	Sept. 4	1	Course Introduction and Introduction to Plate Tectonics	Chapter 1, Chapter 10
2	Sept. 6	2	Plate Tectonics	
	Sept. 11	3	In-class Learning Assessment #1: Plate Tectonics	
3	Sept. 13	4	Minerals	Chapter 2
	Sept. 18	5	Minerals	
4	Sept. 20	6	Igneous Rocks and Processes (Intrusive)	Chapter 3
	Sept. 25	7	Igneous Rocks and Processes (Extrusive)	Chapter 4
5	Sept. 27	8	Weathering, erosion, and soil formation	Chapter 5
	Oct. 2	9	Sedimentary Rocks and Processes: Rock types	Chapter 6
6	Oct. 4	10	Sedimentary Rocks and Processes: Depositional environments and sedimentary structures	
	Oct. 9	11	Learning Assessment #2: Rock Cycle	
7	Oct. 16	12	Metamorphic Rocks and Processes: Controls and Classification	Chapter 7
	Oct. 18	13	Metamorphic Rocks and Processes: Types of metamorphism	
8	Oct. 23	14	Midterm Review	
	Oct. 25	15	Midterm Exam (in class)	
9	Oct. 30	16	Rock Deformation and Geological Structures: Stress and Strain	Chapter 12

	Nov. 6	17	Rock Deformation and Geologic Structures: Folding and faulting	
10	Nov. 8	18	Geologic Time: Geological time scale and relative dating techniques	Chapter 8
	Nov. 13	19	Geologic Time: Isotopic dating and other dating methods	
11	Nov. 15	20	Learning Assessment #3: Geologic Time	
	Nov. 20	21	Earthquakes: plate tectonics controls, classification, measurement	Chapter 11
12	Nov. 22	22	Introduction to Geophysics and the Earth's Interior	Chapter 9
	Nov. 27	23	Geology of the Oceans	Chapter 13
13	Nov. 29	24	Energy Resources	Chapter 20
	Dec. 4	25	Mineral Resources	
14-15			**Final Exam Period** Exam to be Scheduled by School of Science	

LABORATORY ACTIVITIES

Week	Laboratory Activity
1	Orientation of Planar Features – Mandanna Group Field Trip
2	Structural Contours and Strike Lines
3	Outcrop Patterns, Strike Lines and Cross Section Construction
4	Identification and Classification of Minerals
5	Identification and Classification of Igneous Rocks
6	Identification and Classification of Sedimentary Rocks
7	Identification and Classification of Metamorphic Rocks
8	Classification of Folds and Faults
9	Earthquakes and Propagation of Seismic Waves
10	Well Log Interpretation

The above topics are first-order themes for weekly lab exercises. Each laboratory handout will provide a detailed introduction to the theory and techniques needed to be successful in the exercise. No laboratory exercises will be conducted during the first week of classes.