CAMOSUN COLLEGE
School of Arts & Science
Department of Chemistry and Geoscience

GEOS-100 Physical Geology
Winter 2020 Course Outline

The Course Description is online @ http://camosun.ca/learn/calendar/current/web/geos.html

Ω *Please note: This outline will not be kept indefinitely. It is recommended students keep this outline for their records, especially to assist in transfer credit to post-secondary institutions.*

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1. Instructor Information

a.	**Instructor**	Dr. Leanne Pyle
b.	**Office hours**	Monday & Tuesday 12:30-1:30, or e-mail to make an appointment
c.	**Location**	F344D
d.	**Phone**	250-370-3506
e.	**E-mail**	PyleL@camosun.bc.ca
f.	**Website**	D2L

2. Intended Learning Outcomes

Upon completion of this course the student will be able to:

1. Analyze minerals for common physical properties.
2. Identify common rock-forming minerals on the basis of their properties.
3. Infer how samples of some rocks have formed.
4. Infer the relationship of rock-forming processes to plate tectonics.
5. Describe and interpret textural features of rocks.
6. Describe compositional features of rocks.
7. Classify common rocks based on texture and composition.
8. Apply techniques to determine the chronological order of events in Earth's history.
9. Calculate absolute ages of Earth materials and events.
10. Identify common geologic structures and use symbols to represent such structures on maps.
11. Identify, describe and interpret geological structures in three dimensions.
12. Determine the relationship of geological structures and plate tectonic boundaries.
13. Determine the location of an earthquake from seismic data.
14. Use seismograms to infer relative earth movements on faults.
15. Relate the nature and distribution of major earth features such as mountains, volcanoes and earthquakes to plate tectonics.

3. Required Materials

a. Text: 4th Canadian Edition Earth: **An Introduction to Physical Geology**, E.J. Tarbuck, F.K. Lutgens, C.J. Tsujita & S.R. Hickock, 2015, 4th ed. Pearson Canada Inc.

b. **Lab Manual**: Laboratory Manual in Physical Geology, AGI, 10th edition of Busch and Tasa, 2015, Pearson Canada Inc. or the 11th edition.

If you buy a used copy of the lab manual, check that it contains all of the mineral charts (p.90-98 in Ch.3) and rock tables in chapters 5, 6 & 7. Check that all templates at the back are still attached such as the 3 geo-tools pages. Earlier editions of this manual have different exercises, figures and page calls and are not suitable.

c. Online Physical Geology Textbook by Dr. Steven Earle, Thompson Rivers University: You may use this as an alternate supplemental textbook to enhance your understanding.
http://open.bccampus.ca/find-open-textbooks/?uuid=52166cd1-e380-4e1b-9a6f-d891936e4749

d. Satellite and Space station photos of Earth features, landforms and real-time processes are at:
https://earthobservatory.nasa.gov/topic/image-of-the-day

e. Hand lenses and coloured pencils will be supplied in the lab.

4. Course Content and Schedule

a. GEOS100-001 Lectures: Monday at 2:30-3:50PM in Fisher 262 & Tuesday at 2:30-3:50PM in Fisher 310; Lab on Friday at 8:30AM-11:20PM in Fisher 300.
b. GEOS100-002 Lectures: Monday at 11:00-12:20PM in Fisher 334 & Tuesday at 11:00-12:20PM in Fisher 212; Lab on Thursday, 2:30PM-5:20PM in Fisher 300.
c. Lab attendance is mandatory, you must pass the lab to pass the course. Lab assignments are intended to be completed within the lab period and handed in at the end of the lab. There are no make-up labs. Labs require pre-lab preparatory reading from the corresponding Lab# in your manual. Lab assignments are done as teams for help with measurements, discussion of concepts and interpretations. Write your partners' name on each assignment. Labs often pull up your overall course mark.
d. Two labs will be based on field trips. This integrates your course learning with field observations and gives you practice relating the theory and terminology to real world observations and processes. Signed waivers are required to participate. An assignment done on-site during the field trip will be worth equal credit of one lab.
e. The schedule on the following page represents the intended sequence of topics.

5. Basis of Student Assessment (Weighting)

a. Lab exercises = 25% of the course mark (10 lab assignments worth 2.5% each).
b. Midterm Exam 1 = 20%. There is no make-up exam.
c. Term Project and Discussion Presentation = 20%
d. Final exam, cumulative, as scheduled during final exam period = 35%. Final exam schedules are set by the College and posted on Camlink. You must have a passing grade in the lab portion of the course to be able to write the Final Exam.

GEOS100 Physical Geology Schedule

Week	Lecture Topics	Text Chapter	Lab Topic (Lab# matches Manual)
January 6	Introduction to Earth Science	Chapter 1	
	Origin of Earth and Earth's Structure	Chapter 1	
	Earth Systems Science	Chapter 1	
January 13	Minerals: Groups and Identification	Chapter 2	Lab 3 Minerals Part 1
	Igneous Processes and Rocks	Chapter 3	
	Geohazards 1: Volcanoes	Chapter 4	
January 20	Weathering Processes and Soils	Chapter 5	Lab 3 Minerals Part 2
	Sedimentary Processes and Rocks	Chapter 6	
	Metamorphic Processes and Rocks	Chapter 7	
January 27	Plate Tectonics 1: How the World Works	Chapter 12	Lab 5 Igneous Rocks
	Plate Tectonics 2 (continued)	Chapter 12	
	Plate Tectonics 3 (continued)	Chapter 12	
February 3	Geohazards 2: Earthquakes and Tsunamis	Chapter 10	Lab 6 Sedimentary Rocks
	Geology of the Oceans	Chapter 11	
February 3	**Term Project Topic/Idea due**		
February 10	Building of Continents; Rock Deformation	Chapter 13	Lab 7 Metamorphic Rocks
	Geology of BC	OpenText Ch. 21	
February 17	**BC Family Day & READING WEEK**		
February 24	**Mid-term Exam in Lab Period**		Mid-term & Lab 4 Rock Cycle
February 24	Telling Geological Time	Chapter 8	
	Geological Time and the Rock Record	Chapter 8	
	Earth History – Precambrian	Chapter 8	
March 2	Earth History – Paleozoic Era	Chapter 8	Field Trip 1
	Earth History – Mesozoic Era	Chapter 8	
	Earth History – Cenozoic Era	Chapter 8	
March 9	Mass Wasting & Landforms	Chapter 14	Lab 8 Fossils & Dating
	Hydrosphere 1: Fluvial Processes	Chapter 15	
	Hydrosphere 2: Fluvial Landforms	Chapter 15	
March 16	Hydrosphere 3: Groundwater Processes	Chapter 16	Lab 10 Geological Maps
	Hydrosphere 4: Groundwater Issues	Chapter 16	
	Cryosphere 1: Glacial Processes	Chapter 17	
March 23	**Term Project Written Report & Presentations due in Assignment Dropboxes**		
March 23	Cryosphere 2: Glacial Landforms	Chapter 17	Field Trip 2
	Aeolian Processes and Landforms	Chapter 18	
	Coasts and Sea Level Change	Chapter 19	
March 30	Earth's Resources	Chapter 20	Term Presentations
	Climate Change Impacts	OpenText Ch. 19	
April 6	Course wrap-up/summary		

6. Grading System, Standard Grading System (GPA)

Percentage	Grade	Description	Grade Point Equivalency
90-100	A+		9
85-89	A		8
80-84	A-		7
77-79	B+		6
73-76	B		5
70-72	B-		4
65-69	C+		3
60-64	C		2
50-59	D		1
0-49	F	Minimum level has not been achieved.	0

Temporary Grades

Temporary grades are assigned for specific circumstances and will convert to a final grade according to the grading scheme being used in the course. See Grading Policy at http://camosun.ca/about/policies/index.html for information on conversion to final grades, and for additional information on student record and transcript notations.

Temporary Grade	Description
I	*Incomplete*: A temporary grade assigned when the requirements of a course have not yet been completed due to hardship or extenuating circumstances, such as illness or death in the family.
IP	*In progress*: A temporary grade assigned for courses that are designed to have an anticipated enrollment that extends beyond one term. No more than two IP grades will be assigned for the same course.
CW	*Compulsory Withdrawal*: A temporary grade assigned by a Dean when an instructor, after documenting the prescriptive strategies applied and consulting with peers, deems that a student is unsafe to self or others and must be removed from the lab, practicum, worksite, or field placement.

7. Recommended Materials to Assist Students to Succeed Throughout the Course

(Use texts, lab manual and course website links weekly)

8. College Supports, Services and Policies

Immediate, Urgent, or Emergency Support

If you or someone you know requires immediate, urgent, or emergency support (e.g. illness, injury, thoughts of suicide, sexual assault, etc.), **SEEK HELP**. Resource contacts @ http://camosun.ca/about/mental-health/emergency.html or http://camosun.ca/services/sexual-violence/get-support.html#urgent

College Services

Camosun offers a variety of health and academic support services, including counselling, dental, disability resource centre, help centre, learning skills, sexual violence support & education, library, and writing centre. For more information on each of these services, visit the **STUDENT SERVICES** link on the College website at http://camosun.ca/

College Policies

Camosun strives to provide clear, transparent, and easily accessible policies that exemplify the college's commitment to life-changing learning. It is the student's responsibility to become familiar with the content of College policies. Policies are available on the College website at http://camosun.ca/about/policies/. Education and academic policies include, but are not limited to, Academic Progress, Admission, Course Withdrawals, Standards for Awarding Credentials, Involuntary Health and Safety Leave of Absence, Prior Learning Assessment, Medical/Compassionate Withdrawal, Sexual Violence and Misconduct, Student Ancillary Fees, Student Appeals, Student Conduct, and Student Penalties and Fines.

Term Project Details: Descriptive Writing and Presentation (Worth 20%)

The goals of this writing and presentation project are to:

- Hone your research and effective scientific writing skills;
- Apply appropriate referencing of main points by using citations and creating a list of references;
- Explain scientific concepts and evidence-based assessment and description of a research topic;
- Explore your topic's implications to geological issues;
- Synthesize and communicate your topic in a five-minute presentation.

Written Assignment Description: Stonework in Victoria or Geology of Vancouver Island (15%)

1. Choose a type of stonework/building stone present in the city of Victoria, using the publication "Dimension Stone in Victoria, BC" by Hora and Miller (1994) as a guide (in "Term Project" folder on D2L) **OR** choose a field site from the book "Geology of Southern Vancouver Island" by Yorath (2005) (on reserve at the library and for purchase in the bookstore).
2. Create a title for your project and send the topic idea to your instructor for approval by early February. You may pick a site that is not in the guides if you can find appropriate information.
3. Visit the site on a self-guided fieldtrip. Make your own observations and take notes and photographs to support your observations.
4. Research your topic using Hora and Miller (1994) OR Yorath (2005) as a start, plus find four additional references that explain aspects of your observations and topic. There are excellent resources available at http://camosun.ca/services/writing-centre/. A proper reference should be a scholarly source. Review what this means (i.e., not a website, not the encyclopedia and not Wikipedia).
5. Prepare a brief written piece, with a total word count not to exceed 1000 words, not including Figure captions and Reference List. Include the following potential headings:
    a. Introduction
    b. History of the Site/Statue/Building OR geological history of outcrop
    c. Description of the stone OR Description of outcrop at site
    d. Weathering features
    e. List of References
6. See http://camosun.ca.libguides.com/c.php?g=92416&p=1138937 for more assistance about APA style, http://camosun.ca.libguides.com/apa, and the APA Help Guide in our D2L Readings Folder. APA format includes the following guidelines:
    - The text and the reference list should be double-spaced.
    - Numbering starts on the title page, at the top right of the page.
    - Reference list entries must have a hanging indent.
    - 2.54 cm margins all around (top, bottom, left, and right) on each page.
    - Use Times Roman font, or a similar serif font.
    - Each paragraph should be indented.

Five-minute Presentation (5%)

- Prepare a PowerPoint presentation about your site and topic that consists of about 5 slides (Introduction, key findings, Conclusion).
- Include images from your fieldtrip and include citations.

References

Hora, Z.D., & Miller, L.B. (1994). A City Guide & Walking Tour. British Columbia Ministry of Energy, Mines and Petroleum Resources, *Information Circular 1994-15*, 1-44.

Yorath, C.J. (2005). *Geology of Southern Vancouver Island*. Victoria: Harbour Publishing.