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

GEOS-100-001
Physical Geology
Winter 2018

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. Tark Hamilton - Theory/Lecture/Lab/Field Trips		
(b) Office hours	Tues-Thurs-Fri: 7:30-8:20, 10:20-11:30 AM & Thur-Fri 11:30 AM-12:20 PM		
(c) Location	Young 200		
(d) Phone	250-370-3331	**Alternative:**	
(e) E-mail	thamilton@camosun.bc.ca	Read: Tues, Thurs and Friday only	
(f) Website	https://sites.camosun.ca/tarkhamilton/course/geos-100-physical-geology/		

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: Computer access for on-line assignments, additional readings, colour images. Supportive websites. Paper edition of Lab manual 10th edition (*Do Not buy "Course Smart" or other on line publications for lab manuals as the graphics are too poor and there isn't room on lab benches for computers in addition to specimens and maps*)

(a) **Text**: 4th Canadian Edition Earth: An Introduction to Physical Geology, E.J. Tarbuck, F.K. Lutgens, C.J. Tsujita & S. R. Hickock 4th ed. Prentice Hall 2014.

(Note: this has Canadian content and access to on-line exercises. All of my test questions are based on this text. The 1st Canadian edition without Hickock is more complete & also OK.)

(b) **Lab Manual**: Laboratory Manual in Physical Geology, AGI, 10th edition of Busch and Tasa, 2015, Pearsoned
Ensure if you buy a used copy of the lab manual that it contains all of the mineral p.90-98 in Ch.3 and rock tables and nomograms in chapters 5, 6 &7. Also ensure that all templates at the back and figures are still attached including structural models 1-6 and the 3 geo-tools pages one paper and 2 plastic. Note that earlier editions of this manual have different exercises, figures and page calls. They are not suitable for doing the labs as too much has changed to be able to answer the intended questions.

(c) On Line Physical Geology Textbook by Dr. Steven Earle, Thompson Rivers University: You may use this as an alternate supplemental textbook to enhance your understanding. The test questions however are based on the language and chapter headings in Earth see (a) above. http://open.bccampus.ca/find-open-textbooks/?uuid=52166cd1-e380-4e1b-9a6f-d891936e4749 1

(d) Recommended reading of other geology texts in the library or on line (c), a geological glossary (dictionary), a mineral identification book and web based research, readings, and participation in real weekend and on-line virtual field trips.

(e) Satellite and Space station photos of Earth features, landforms and real-time processes are at: http://earthobservatory.nasa.gov/IOTD . Weekly additions and archives of space station or satellite digital images of geological events and features around the globe. I put up specific links on the course website and there is lots of archival and searchable material for past geological events: volcanic eruptions, hurricanes, landslides, glaciers, etc.1

(f) **Other** *Hand lens* (needed in many labs and field trips), protractor, drawing compass, coloured pencils (all needed for labs 4 onward for drawing and colouring).

4. Course Content and Schedule: **Instruction** 14 weeks: Jan.8 through April.14

(Can include: Class hours, Lab hours, Out of Class Requirements and/or Dates for quizzes, exams, lecture, labs, seminars, practicums, etc.)

a. Classroom 3 hours/week 9:30-10:20: Tue, Thu & Fri in Room(s) E348

b. Lab F300: 3 hours Thu – 1:30-4:20 PM (With prior approval alternate lab Fri afternoon after your scheduled lab period 1:30-4:20 but *not on scheduled test or quiz days due to limited space*)

c. (Lab attendance is mandatory, you must pass the lab to pass the course)

d. Labs are due at the *beginning* of the following lab the week following their issue. If you *ask in advance* you might be able to attend my other lab exercise but this requires advance permission due to full sections or in case the labs are a week out of phase). There are no make-up labs. Access to F300 is limited, use your lab time efficiently, most labs require 1 hour of reading ***prior to coming to the lab*** and 2-3 hours of homework after the lab on your own to complete the exercises. It is better to turn in partial labs than none at all, as lab points are cumulative! Labs are always due at the start of the following lab period or as announced for special 2 week or partitioned lab exercises. Later labs get half marks for 1 week late and zero after that.

e. *1 half day weekend field trip is optional and counts as a full lab score.* These will be scheduled and announced 2 weeks in advance. These integrate your course learning with field observations and give you practice relating the theory and terminology to real world observations and processes. These and any field trips during lab periods will require your **signed waviers** to participate. One wavier does it for the whole term. Waviers are due back immediately on starting the course to be able to attend field trips including those in lab time.

f. Labs, Tests & Quiz Schedule

Week/ Lab /Date	Experiment	Pre-Lab Reading

1. Jan 8/12 Intro Local Field Trip & Read Earth: Ch**1** 1-29 + Ch 9, 10, 11, **12**, 13 252-309
2. Jan 15/19 Lab 1: Units, Density and Isostasy *AGI Manual* 1-38 & Lab Form
3. Jan 22/26 Lab 2 Plate Tectonics & Magma Generation (& Homework) 39-54 & Lab Form
4. Jan 29/Feb 2 Lab 3 Minerals (exercise + 50 minerals) 73-110 & Lab Form
5. Feb 5/9 Finish Lab 3 p.73-100 & hand in. Do Rocks for Lab 4 Rock Cycle 111-128 Form
→ Finish Lab 4 as Homework, due at beginning of next lab period Feb 12/16

Family Day Monday Feb 12 - **Theory Test 1** in Lab Period Hour 1, don't be late!

6. Feb 12/16 Theory Test 1 & Lab 5 Igneous Rocks (do as Homework) 129-142 & Form

Feb 23: Final Exam Schedule Posted for Apr 16-27. Do not book travel earlier than this!

Field Trip: Sunday, Feb 18, 2018 Sidney (Armstrong Point and Island View Beach to make +2m low tide at 12:48 PM) Meet 11:00 AM Wilna Thomas Building Staff Lot 2. Return 2:30 PM!

7. Feb 26/Mar 2 ***Min Quiz*** in 1st 1.5 hour finish & hand in Lab 5 Ign Rocks 129-142 & Lab Form
8. Mar 5/9 Lab 6 Sediments & Sedi Rocks complete and hand in. 153-170 & Lab Form
9. Mar 12/16 Lab 7 Metamorphic Rocks & Tectonic settings 187-198 & Lab Form
10. Mar 19/23 ***Rock Quiz*** in 1st 1.5 hour & Time Lab 8 Finish as Home Work 207-216 & Form

Fri Mar 30/Apr 2 College closed for Spring Holiday - Time Lab 8 Due in Lecture Mar 28/29!

Field Trip: Easter Sunday, Mar 25, 2018 (Botanical Beach "Port Rainfrew" to make +0.6m low tide at 5:15 PM) Meet 11:00 AM Wilna Thomas Building Staff Lot 2. Return 7:30 PM

11. Mar 26/30 ***Theory Test 2 in 1st hour*** & Lab 10 Structures 259-272 & Lab Form
12. Apr 2/6 Complete & Hand in Lab 10 Structures 259-272 & Lab Form
13. Apr 9/12 Complete & Hand in Lab 16 Earthquakes 391-396 & Lab Form
14. Apr 16-27 Final Exam Period as assigned on Camlink by Feb 23.

Field Trips in lab period and TBA 2 weeks in advance on a Saturday or Sunday ~1/2 day

Weekend Field Trips: Depart Camosun staff parking lot by the Wilna Thomas Building at scheduled 2 weeks in advance. Transport via Camosun Bus and driver. Student Drivers and other Car Rides are arranged by sign up in lecture 1 week in advance.

- Theory exams as above in Weeks 6 in Lecture and 12 during the 1st hour of the lab followed by a lab exercise
- Mineral and Rock Practical Identification Quizzes in 1st part of lab weeks 7 & 11 (no late starts)
- Final exam at the end of the course is cumulative and will cover **all** course & lab material. **Don't** make travel arrangements for the final exam period Dec 11-19. The final exam schedule will be posted Oct 20 on Camlink. Only medical excuses will be allowed for missed finals.
- You must pass both the lecture portion and the lab portion in order to pass the course
- At least a passing grade on lab marks must be achieved in order to write the final exam.
- Students are expected to come to lab on time – late arrivals will miss tests, quizzes or field trips as these begin promptly at the start of lab period. Prelab readings and assignments in AGI manual are due as you walk in the lab door. Without them you cannot do the lab. There is not time to read ~20 pages and to do the lab in the lab period.
- All lab reports must be stapled with your section number or lab day and time and your partner's name. All lab reports are joint projects of 2 people, all labs require partners for concepts, measurements, calculations and interpretations.

5. Basis of Student Assessment (Weighting)

(a) Lab exercises (due in lab generally at the beginning of the following lab period or as scheduled above Labs, 2, 3 and 10 count double as they are longer 2 week labs. Labs are due at the beginning of the following lab period. There will not be time to work on old labs as there will always be new work assigned. You must attend and pass the lab to pass this course. The lab and field trips are where the scientific inquiry occurs. Field trips during lab period or on weekend count as 1 lab credit towards your total lab score. Labs count 25% of the course mark.

(b) 2 Lab quizzes during 1st hour of lab period along with regular lab assignments as scheduled above ~Week 7 (5%) covering: (mineral physical properties, formulas & identification), week 14 (5%) (covering rock identification and origin). Labs and lab tests combine to make 25% of course mark. Lab

marks are relative to your peers and the overall point total. Most people's lab marks pull up their course mark. This is where you learn by doing and earn your grade.

(c) Midterm exams covering theory will take place in lab period hour 1 (no late starts!), by weeks 6 and 12. Exam 1 = 15% and Exam 2 = 25%). Written exams cover lectures through the week prior to test. You may bring in a 1 page double sided study sheet for each exam and a calculator.

(d) Weekly pop quizzes on assigned readings, new geological vocabulary terms and prior lecture notes may occur at beginning of each lab period or during the first 10 minutes of lecture.

(e) Final exam cumulative as scheduled during final exam period counts 35%. Final exam schedules are set by the college and posted on camlink by the beginning of week 8. (Feb 23 this term)

(f) I have a 1 test forgiveness policy for those who improve their test scores as the course proceeds. For example, if you do better on the final exam than a prior exam, I will replace the preceding lower mark and its proportion with the mark from your final exam.

6. Grading System

[X] Standard Grading System (GPA)

[ ] Competency Based Grading System

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.

A. GRADING SYSTEMS *http://camosun.ca/about/policies/index.html*

The following two grading systems are used at Camosun College:

1. 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

2. Competency Based Grading System (Non GPA)

This grading system is based on satisfactory acquisition of defined skills or successful completion of the course learning outcomes

Grade	Description
COM	The student has met the goals, criteria, or competencies established for this course, practicum or field placement.
DST	The student has met and exceeded, above and beyond expectation, the goals, criteria, or competencies established for this course, practicum or field placement.
NC	The student has not met the goals, criteria or competencies established for this course, practicum or field placement.

B. 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.