



COURSE OUTLINE

The course description is online @ <http://camosun.ca/learn/calendar/current/web/geos.html>

Ω Please note: the College electronically stores this outline for five (5) years only.
It is **strongly recommended** you keep a copy of this outline with your academic records.
You will need this outline for any future application/s for transfer credit/s to other colleges/universities.

1. Instructor Information

(a)	Instructor:	Dr. Tark Hamilton		
(b)	Office Hours:	10:30-11:20 M-T-W, 1:30-2:20 M-T-Th, 3:30-4:20 W		
(c)	Location:	F344B		
(d)	Phone:	250-370-3331	Alternative Phone:	
(e)	Email:	hamilta@camosun.bc.ca (email read Monday through Thursday)		
(f)	Website:	https://faculty.camosun.ca/tarkhamilton/ (under construction)		

2. Intended Learning Outcomes

(No changes are to be made to these Intended Learning Outcomes as approved by the Education Council of Camosun College.)

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

1. Describe and interpret short-term and long-term Geologic, Oceanic and Atmospheric processes and their interactions.
2. Make hypothesis-based scientific observations, analyze and interpret quantitative data with reference to Geologic, Oceanic and Atmospheric processes.
3. Comment on orbital motion and wave motion and apply standard equations to compute wave velocity.
4. Use simple laboratory equipment to study and measure wave velocity.
5. Utilize standard tide and current tables and software.
6. Interpret relationships among temperature, salinity and density of seawater, and how these properties vary over time.
7. Describe ocean current transport and be able to assess the role of currents in global heat transfer.
8. Describe relationships among surface ocean currents and atmospheric circulation.
9. Analyze grain size of sediment samples and interpret current environment and sedimentary environment of deposition from sediment data.
10. Determine salinity of water samples and the relationship of salinity to temperature, density and dissolved gases.
11. Comment on the energy budget of the atmosphere, and its short-term and long-term variability.
12. Comment on the chemical evolution of the atmosphere.
13. Describe coastal processes at the land-sea interface.
14. Relate ocean-floor topography and ocean depth data to processes of sea-floor spreading and the age of ocean basins.

3. Required Materials

- (a) Texts: **The Earth System**, 3rd Ed. by **Kump, Kasting and Crane**, Prentice Hall, Pearson Ed.
- (b) Other: Calculator, Computer with spread sheet program. <http://earthobservatory.nasa.gov/>

4. Course Content and Schedule

Lectures: (2) 1 hour and 20 minute blocks: Mon E348 2:30-3:50; Thur F302 2:30-3:50
Labs: F300 Tues 2:30-5:20

The list that follows represents the intended sequence of topics, but the sequence may be altered in order to discuss events of local or international significance, e.g. rainfall, hurricanes, flooding, landslides, earthquakes, volcanic eruptions, tsunami, as they occur during the course.

1. Introduction, KKC Ch. 1, p. 1 - 20
2. Systems concepts, KKC Ch. 2, p. 21 - 26
3. Feedback and equilibrium, KKC Ch. 2, p. 26 - 35
4. Electromagnetic radiation and Earth's energy balance, KKC Ch. 3, p. 36 – 56
5. Atmospheric Circulation, KKC Ch. 4, p. 57-83
6. Ocean Circulation, surface currents KKC Ch. 5, p. 84 – 95
Ocean Circulation, circulation of the deep oceans, p. 96-106
7. Structure of the solid earth, KKC Ch. 7, p. 122 – 130
Plate Tectonics, KKC Ch. 7, p. 130 – 147

Test 1 ~week 7-Tues Oct 18

8. Cryosphere, KKC Ch. 6, p. 108-121
9. Biogeochemical Cycles: The short-term carbon cycle KKC Ch. 8, p. 149 – 159;
Long-term carbon cycle, KKC Ch. 8, p.
Carbonate-silicate cycle, p.168-170
P and N cycles, p. 170-173
10. Origin of the Earth, KKC Ch. 10, p. 190-197
11. Long-term Climate, KKC Ch. 12, p. 233-253

Test 2~week 12-Tues Nov 22

12. Pleistocene Glaciation; Milankovitch Cycles KKC Ch. 11, p. 271-294
13. Global Warming, Part 1, Recent and Future Climate, KKC Ch. 15, p.295-320
14. Part 2, Impacts, Adaptation and Mitigation, p. 321-339

Term Project due~week 13-Tues Nov 29

15. Ozone, KKC Ch. 17, p. 340-360
The Future; Review

There are 14 broad topics, which will each require about 1 week. We will attempt to cover all the topics thoroughly, as time permits. Bear in mind that the **interrelationships amongst topics are of fundamental importance**. For example, greenhouse gases affect climate and climate affects the carbon cycle.

5. Basis of Student Assessment (Weighting)

(This section should be directly linked to the Intended Learning Outcomes.)

(a) **Labs:** 10 labs, each worth 2.5% of the course for a total of 25%. Labs are done in pairs for help with measurements discussion of concepts and interpretations. Label each lab assignment with your name and your partner's name. Most people learn most in the lab and pull up their course marks by handing in all of the labs. **YOU MUST PASS THE LAB TO PASS THE COURSE**

(b) **Field Trips** may occur during lab periods so do not arrive late or we may have gone off without you! 2 half day field trips are scheduled on **Sunday Sept 25 and Saturday October 22, both at 7 AM.**

(c) **Exams:** Tests 1 in week 7 during lab period, and test 2 in week 12, each worth 15%; Final worth 30%. **YOU MUST PASS THE FINAL TO PASS THE COURSE**

(d) **Term Project on an Earth System topic:** as a research paper, experiment or field observations and report (or other approved activity) worth 15%

Final exam at the end of the course will cover **all** course & lab material.

You must have a passing grade in the lab portion of the course to be able to write the final exam.

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

Don't make travel arrangements for the final exam period. Only medical excuses will be allowed.

6. Grading System

(No changes are to be made to this section unless the Approved Course Description has been forwarded through the Education Council of Camosun College for approval.)

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	Minimum level of achievement for which credit is granted; a course with a "D" grade cannot be used as a prerequisite.	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 E-1.5 at camosun.ca for information on conversion to final grades, and for additional information on student record and transcript notations.

Temporary Grade	Description
I	<i>Incomplete:</i> 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	<i>In progress:</i> A temporary grade assigned for courses that, due to design may require a further enrollment in the same course. No more than two IP grades will be assigned for the same course. (For these courses a final grade will be assigned to either the 3 rd course attempt or at the point of course completion.)
CW	<i>Compulsory Withdrawal:</i> 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 or Services to Assist Students to Succeed Throughout the Course

LEARNING SUPPORT AND SERVICES FOR STUDENTS

There are a variety of services available for students to assist them throughout their learning. This information is available in the College calendar, at Student Services, or the College web site at camosun.ca.

STUDENT CONDUCT POLICY

There is a Student Conduct Policy **which includes plagiarism**.
It is the student's responsibility to become familiar with the content of this policy.
The policy is available in each School Administration Office, at Student Services,
and the College web site in the Policy Section.

ADDITIONAL COMMENTS AS APPROPRIATE OR AS REQUIRED