



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:	Regular: 10:30-11:20 M, T, W, Th; Or By Appt. Only: 11:30-12:20 M, Th, F or 2:30-3:20 F		
(c)	Location:	Young 200		
(d)	Phone:	250-370-3331	Alternative Phone: (field trips – cell)	250-216-6448
(e)	Email:	hamiltont@camosun.bc.ca read Mon-Fri only, tark_hamilton@yahoo.com		
(f)	Website:	https://faculty.camosun.ca/tarkhamilton/ (updates throughout course)		

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 the three major sediment types, their settings and how they provide environmental records, including clastic sediments, chemical sediments, and biological sediments.
2. Describe common sedimentary minerals and their roles as matrix and cements and analyse the significance of sedimentary structures, fossils and trace fossils.
3. Identify common sediments and the roles of weathering, erosion, transport, deposition in their genesis and relate particle size of sediments to the energetics of sedimentary transport.
4. Utilize the petrographic microscope for the identification of sedimentary minerals and textures.
5. Relate suites of sedimentary rocks to adjacent and sequential environments taking into account effects of physics, chemistry and biology.
6. Describe the stratigraphic and depositional effects of changing base level or sea level with reference to the stratigraphic principles, facies, time assignments and correlation tools of: biostratigraphy, magnetostratigraphy and lithostratigraphy.
7. Describe several types of sedimentary basins and their assemblages of sediments and compare and contrast geophysical and well-logging exploration techniques related to basin analysis.
8. Identify different tectonic settings using lithologies and sediment properties.
9. Compare sedimentary resources, their settings and uses including: aggregates, coal, sedimentary iron formations, sediment hosted metals deposits, groundwater and hydrocarbon reservoirs.

3. Required Materials

(a)	Texts	"Sediments and Basins" Andrew Miall 2006 required
-----	-------	---

(b)	Lab Manuals	<p>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 sections on Beaches, Deep sea, Deserts, Erosion, Glaciers, Sediments, Geological Time, Weathering, etc.) Earlier editions suitable too.</p> <p>“Ancient Environments and the Interpretation of Geologic History” 3rd ed. Lynn Fichter and David Poche. Out of print. <u>Lab copies available for loan only.</u> Do not mark in books or deface pages.</p> <p>“AGI Laboratory Manual in Physical Geology” 10th edition by Busch and Tasa, 2014 (From Geos 100) for mineral and rock identification and selected exercises. Labs 2, 4, 5, 6, 7, 8 have handy reference and background materials. Labs 11, 12, 13, 14, 15 provide in depth examples on specific sedimentary facies. Limited <i>in-lab-use-only</i> loaner copies available of older editions. Older editions of AGI are suitable and recommended for your personal aid in labs.</p> <p>Hand lens, pocket knife, sturdy hiking boots</p>
-----	----------------	---

4. Course Content and Schedule

Instruction 14 weeks: Jan 5 - April 10

a. Classroom Lecture 3 hours 9:30-10:20 Mon, Wed, Thur - **F210**

b. Lab 3 hours Tues – 2:30 - 5:20 PM **F300**

(Lab attendance is mandatory, you must pass the lab to pass the course). Please come to labs on time as there is often an introductory lecture to get you started, a quiz or a field trip, none of which will help you if you miss them!

Most Labs are due at the *beginning* of the following lab period the week following their issue. There are no make-up labs. Labs will normally be handed out in the Monday lecture for that week and available on your course website near the bottom of the course page. Access to the Geoscience Lab and its rocks, maps and displays **F300** is limited, use your lab time efficiently, **most labs require 1 hour of reading prior to coming to the lab & 2-3 hours after the lab** on your own or with your partner to complete the exercises & report.

c. Local Field Trips during lab time & 1 or 2 weekend 1 day trips are **required**. My reminder in lecture gives 2 weeks notice. Field trips count the same as 1 lab towards your lab mark. Tentatively a field trip is scheduled for Tuesday March 24 in your regular Lab period and also for Sunday March 22 ~8AM-2PM to East Sooke Park and Muir Creek. There may be an earlier local field trip in lab time, tides and vehicles permitting.

5. Basis of Student Assessment (Weighting)

a. Theory Tests: covering: vocabulary, rocks and minerals in sediments, stratigraphy, geological time, fossils, evolution, physical processes (weathering, transport, deposition, bedforms, sedimentary structures, geological settings (bars, beaches, channels, deltas, moraines etc.), sediment evolution, sedimentary systems, basins etc. Test 1 – 10%, Test 2 – 20%, Final – 35%

b. Labs and field trips are collectively worth 25% of your course mark. Lab work will include some optical mineralogy and use of the petrographic microscope to examine sedimentary rocks and interpret their textures. Any lab quizzes are worth 2 labs. See sequence of topics below in box. Lab work includes some book work and homework on sedimentary processes, concepts from handouts taken from Fichter’s AE book: sediment classification, evolution, interpreting stratigraphic sequences from cross sections and maps.

c. Term Paper and Power Point Presentation 10% of Theory mark. This will be a scientific term paper with: title, abstract, introduction, photos, maps or figures, tables or graphs, data, interpretation and conclusions with a bibliography of references cited in the text. Examples will be given on the website. A discussion with Tark, a topic and an outline are due prior to January 27 in lab period. The power point presentation should be simple, 5-10 minutes long and have 3-5 slides to introduce your topic. Examples of past topics include: sedimentary geology of a particular

basin (WCB-Alberta, New Zealand), sediments on Mars, placer gold deposits, ground water pollution of an aquifer and remediation, stratigraphic problems (facies changes versus unconformities in a given section), local field studies (Glacio-marine sediments at Witty's Lagoon or Mt. Doug).

Labs, Tests & Midterm Schedule: Holidays: Feb. 9 Family , 12-13 read, April 3-6 Eostre

Lab Date	Experiment	Pre-Lab Reading
Schedule: Approximately 1 Chapter in text and lab manual per week		
Week 1: Miall Ch 1 & 2, AGI Manual Ch 12		
1. Jan 6	Lab 1: Porosity, Permeability, Sediment properties, Aquifers	AE 9-37 & AGI Ch:6 & 12
Week 2: Miall Ch 3, AGI Manual Ch's 4, 6		
2. Jan 13	Lab 2: Clastic Environments: Sands, Conglomerates,	AE 38-56 & AGI:Ch5,6,7
Week 3: Miall Ch 3, Ch 1 & 2		
3. Jan 20	Lab 4: Optics Petrography Sedimentary minerals, Sed Structures	Off Book see website
Week 4: Miall Ch 4 & 5, AGI Manual Ch 8		
Term Paper Topic Selection due prior to this date		
4. Jan 27	Lab 3: Sedimentation: Viscosity, particle size, shape and sedimentation:	Off book
Week 5: Miall Ch 6, AGI Manual Ch 6		
5. Feb 3	Lab 5: Carbonates, Biogenic Sediments, Evaporites & Time Lab Geological Time, Microfossils, Biostratigraphy, & Sedimentation Rates	AE 57-68, AGI Ch 6, 8
Week 6: Miall Ch 7, AGI Manual Ch 6		
6. Feb 10	Theory Test 1 & Strip Log Lab 6 from AE Depositional Environments & Strip Logs pp.69-88, AGI Ch. 6	
Week 7: Miall Ch 8, AGI Manual Ch's 11, 13, 14, 15		
7. Feb 17	Sedimentary Rock Quiz 1 st 1.5 hours & Facies Lab	AE pp. 89-118 strip logs maps
Week 8: Miall Ch 9		
8. Feb 24	Lab 7 Burgess Shale Fauna & Sequence Lab	AE pp.185-200 Eustasy and Sequence Theory + AGI Ch 6, 15
Week 9: Miall Ch 10, AGI Manual 9, 10		
9. Mar 3	Lab 8 Sponge Reefs & Hecate Strait Cores & Glacial Isostasy	
Week 10: Miall Ch 11, AGI Manual 9, 10		
10. Mar 10	Lab 9 Sedimentary Tectonics Lab	AE pp.155-184 Sedimentary Tectonics
Week 11: Miall Ch 12, AGI Manual Ch 2		
11. Mar 17	Lab 10 Theory Test 2 & AE windup	
Sunday March 22 Field Trip: Sooke & Muir Creek		
Week 12: Miall Ch 13, AGI Manual Ch 2		
12. Mar 24	Field Trip: Sidney-Deep Cove: Cretaceous: Warrior Point, 17, Armstrong Point	
Week 13: Miall Ch 14		
13. Mar 31	Student Paper Power Point Presentations	
Week 14: Miall Review		
14. Apr 7	Student Paper Power Point Presentations	
Field Trip: depart Camosun staff parking lot by the Wilna Thomas Building at 8:00 AM		
Sunday March 22 scheduled for low tide at East Sooke Park & Muir Creek pending availability of Camosun Bus and driver. Drivers and Car Rides are arranged by sign up in lecture 1 week in advance.		
<ul style="list-style-type: none"> • Mineral and Rock Practical Identification Quizzes in 1st part of lab weeks 7 & 13 (no late starts) • Theory exams in Weeks 6 and 12 • 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 December 8-16. Only medical excuses will be allowed.		
<ul style="list-style-type: none"> • At least a passing grade on lab marks must be achieved in order to write the final exam. • You must pass both the lecture portion and the lab portion in order to pass the course • 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, these labs require partners for concepts, measurements, calculations and interpretations.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.