

**APPLIED GEOMORPHOLOGY**

*Course Outline, Fall 2004*

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**COURSE DESCRIPTION**

Geomorphology is the study of landforms and the processes that shape them. This course will provide you with an opportunity to learn and apply some aspects of theoretical geomorphology. It will be a balanced mix of book knowledge and new practical skills. Topics will include processes, landforms and sediment properties associated with the geomorphic agents of water, ice and gravity, with a local and regional emphasis. Through lab and field-based activities, students will learn a range of geomorphological and related skills.

**GENERAL POLICIES**

My classes tend to be quite informal, and I encourage participation and discussion. My goal is to have you think and understand, so speak up, especially if you are confused! Still, I take the material seriously and expect you to do the same.

It is especially critical that you be punctual, careful and responsible during field-based labs – field work is unpredictable, and we don't want anyone getting injured or lost. Group work is encouraged, and you should help each other learn. But this does not mean you can copy! Each student must do their own individual lab reports, unless otherwise stated. If I catch people copying, a mark of zero will be assigned to all involved parties.

**LECTURES**

The format for this class is lectures on Mondays, labs on Fridays. Lectures will generally set up the following lab, either directly or by presenting useful theory. I use printed overheads a lot, and I will make these available at [www.camosun.bc.ca/schools/artsci/envirotech/ayles.php](http://www.camosun.bc.ca/schools/artsci/envirotech/ayles.php). I will also place a reserve binder in the library, which will contain extra readings, sample tests, and so on.

When possible, I will try to diversify the lectures with videos, slides or guest speakers.

**LABS AND GEAR**

This course is meant to be practical, and has a major lab component. **You must purchase a lab manual from the book store!**

On regular lab days, you should bring pencils, paper, graph paper, calculator, ruler and protractor. Students will be expected to complete and hand in individual lab reports, though cooperation is encouraged.

Four of our labs are field-based, and to be completed in small groups. This means you get each other's help and support, and you can hand in a single group report. On the downside, you will have to divide up the job, arrange meeting times, review each other's work and compromise. Also, I will expect a slightly higher standard of work. This can be exciting and fun, or a royal pain in the butt, and often both, but it is an important skill in the workplace, so it's good practice. If you are experiencing problems with your partners, talk it over and try to work it out. If you can't, come see me and I will try to help find a solution.

On field days, both transportation and equipment will be provided by the Environmental Technology program. The ET van will leave at 9:30 and 1:30 sharp, so don't be late unless you have made alternate arrangements with me. Also, don't break the gear – it costs way more than it should! On field days, students are responsible for bringing: waterproof field notebook, snacks, water, rain and cold gear, camera (shared or own), sturdy, waterproof boots, ruler, pens and pencils.

## READING

There is no required textbook for this course! Woohoo! But there will be required readings (see last page of this outline) from number of sources, including:

Christopherson, R.W., 2002. *Geosystems – An Introduction to Physical Geography*, 5<sup>th</sup> Ed. Upper Saddle River, NJ: Pearson Education, Inc., 660 pp. plus appendices.

Trenhaile, A.S., 1998. *Geomorphology: A Canadian Perspective*. Don Mills, ON: Oxford University Press Canada, 340 pp.

Yorath, C.J. and H.W. Nasmith, 1995. *The Geology of Southern Vancouver Island – A Field Guide*. Victoria, BC: Orca Book Publishers, 172 pp.

All of these books are available in the book store, and there will also be reserve copies in the library. Required readings from other sources will be placed in the reserve binder. Do not steal the originals! You will probably wish to photocopy quite a few readings throughout the term, but this will surely cost less than a whole new textbook...

## EVALUATION

Lab performance will be evaluated based on thoroughness, neatness, accuracy, participation and, occasionally, writing quality. Attendance during the lab time is mandatory, as these labs are very hard to reschedule. Absence due to illness or other serious reasons must be supported with a doctor's note or other documentation. Labs will generally be due the following week, and will not be accepted at all after I have returned them. I reserve the right to impose a 10% per day penalty on late reports.

<u>Assignment</u>	<u>Value</u>
1. Tools of the Trade	4%
2. Surveying	11%
3. Geomorphic Processes at Dallas Road	12%
4. Glacial Features and Landforms	6%
5. Glacial Driving Tour	12%
6. Stream Flow	6%
7. Streamkeepers Certification	12%
8. Air Photo Interpretation	6%
9. Terrain Classification	6%
Final Exam	<u>25%</u>
	100%

You will notice that there is no midterm exam... This is meant to compensate for the somewhat heavy lab workload. The final exam will be a combination of multiple choice, short answer and long answer questions. It will emphasize the lecture material, though lab material will also be drawn upon.

## COURSE SCHEDULE

\*schedule is subject to change\*

<u>Week of:</u>	<u>Monday Lecture Topic</u>	<u>Friday Lab</u>
Sep. 6	- ( <i>Labour Day</i> )	Course Introduction
Sep. 13	Volcanic and Tectonic Landforms	1. Tools of the Trade
Sep. 20	Weathering and Slope Erosion	2. Surveying <b>Lansdowne Campus</b>
Sep. 27	Mass Wasting	<i>Lab Writeup</i>
Oct. 4	Coastal Geomorphology	3. Geomorphic Processes at Dallas Road <b>Finlayson Point</b>
Oct. 11	- ( <i>Thanksgiving</i> )	<i>Lab Writeup</i>
Oct. 18	Glacial Processes and Landforms	4. Glacial Features and Landforms
Oct. 25	Local Glacial History and Sediments	5. Glacial Driving Tour <b>Greater Victoria</b>
Nov. 1	TBA	<i>Lab Writeup</i>
Nov. 8	Stream Flow	6. Stream Flow
Nov. 15	Stream Assessment	7. Streamkeeper Certification <b>Douglas Creek</b>
Nov. 22	Fluvial Morphology and Sediments	<i>Lab Writeup</i>
Nov. 29	River Regulation	8. Air Photo Interpretation
Dec. 6	Terrain Classification	9. Terrain Classification
Exam Week	FINAL EXAM	

**NOTE: Field-based lab days are shown in bold; come prepared!**

## READING LIST

<u>Week of:</u>	<u>Required Reading</u>	<u>Comments</u>
Sep. 6	Christopherson, Ch. 11.	- Review: Geologic time scale, uniformitarianism, Earth structure, rock cycle, plate tectonics.
Sep. 13	Christopherson, pp. 361-75, 383-94. Trenhaile, pp.25-30.	- Tectonic and volcanic processes and landforms. - Canada's geological origins.
Sep. 20	Trenhaile, pp. 42-55, 68-70.	- Weathering and slope erosion by water. No need to memorize chemical reactions.
Sep. 27	Trenhaile, Ch. 70-84, 88.	- Mass wasting.
Oct. 4	Christopherson, Ch. 16.	- Coastal processes and landforms.
Oct. 11	-	- Nothing for this week, but try to get ahead: heavy reading in 2 weeks.
Oct. 18	Christopherson, pp.519-534, pp. 541-548.	- Glaciers.
Oct. 25	Trenhaile, Ch. 7.  <u>For lab:</u> Assigned research articles, relevant sections of Yorath and Nasmith.	- Canada's glacial history. A dense chapter; focus on the big picture, especially from p. 147 onward. Don't get bogged down in details. - Geology and glacial features of various sites as needed for driving tour lab.
Nov. 1	TBA	- Still haven't decided...
Nov. 8	Christopherson, Ch. 14.	- Rivers and fluvial landforms.
Nov. 15	Streamkeepers Manual, Modules 1 and 2.	- Streamkeepers assessment procedures.
Nov. 22	Article by M. Church, 1992.	- An excellent, more sophisticated overview of river channel morphology. Don't sweat the details, just try to get the big picture.
Nov. 29	Article by Hart et al., 2002.	- Effects of dams and dam removal.
Dec. 6	Terrain Classification System for BC*	- The official manual. Peruse it before lab next week.

\* *This guidebook is on reserve, and copies will be available in lab. It can also be viewed online at: <http://www.for.gov.bc.ca/tasb/legsregs/fpc/fpcguide/guidetoc.htm>*