

## **GEO 322 Surface Processes Syllabus, Fall, 2007**

- Lectures: Wilkinson 108, MWF, 11:00-11:50 AM  
Instructor: Dr. Stephen Lancaster, Wlkn. 142, 737-9258, [lancasts@geo.oregonstate.edu](mailto:lancasts@geo.oregonstate.edu)  
Office hrs: Mon., 12-12:50 PM; Tues., 11-11:50 AM; or by appointment or drop-in  
Labs: M 3-4:50 PM, W 4-5:50 PM, Wlkn 210 ("Digital Earth")  
Lab Instructor: Nicole Czarnomski, [czarnomn@geo.oregonstate.edu](mailto:czarnomn@geo.oregonstate.edu)  
Texts: Ritter, Kochel, Miller, *Process Geomorphology*, 4<sup>th</sup> Ed., 2002.  
Gilbert, *Report on the Geology of the Henry Mtns.*, 1880 (on Blackboard).  
Lab manual: On Blackboard and to be provided in handouts  
Other introductory texts: • Ahnert, *Introduction to Geomorphology*, 1996.  
• Easterbrook, *Surface Processes and Landforms*, 2<sup>nd</sup> Ed., 1999.  
• Bloom, *Geomorphology*, 3<sup>rd</sup> Ed., 1998.  
• Selby, *Earth's Changing Surface*, 1985.  
Texts for further reading: • Knighton, *Fluvial Forms and Processes*, 1998.  
• Leopold, Wolman, and Miller, *Fluvial Processes in Geomorphology*, 1964.  
• Selby, *Hillslope Materials and Processes*, 2<sup>nd</sup> Ed., 1993.

### **Course description:**

Examination of surficial processes and terrestrial landforms of the earth, including slopes, rivers, glaciers, deserts, and coastlines. Field trip(s) required; transportation fee charged. PREREQ: GEO 102 or GEO 202. Lec/lab.

### **Communication with the Instructor:**

The most reliable way to communicate with me is in person, preferably during my office hours. If you need to send me email, alert me so that I expect your message. In general, *please do not consider email or voice mail reliable for communicating with me!*

### **Brief outline:**

- I. Introduction to the geomorphic system
- II. Weathering
- III. Advective and diffusive processes
- IV. Processes, drivers, and associated landforms for hillslopes, streams, glaciers, and coasts
- V. Landscape evolution

### **Course objectives and expected learning outcomes:**

The objective of GEO 322 is to provide students with an introductory working knowledge of surface processes/geomorphology such that they achieve the following learning outcomes:

1. Knowledge of the basic process groups, diffusive and advective, and associated landscapes.
2. Knowledge of the fundamental process drivers, e.g., tectonics, water, and ice, and how each shapes the landscape.
3. Recognition of typical landforms and landscapes as indicative of active drivers and the local balance between process groups.

**Assessment/evaluation of student performance:**

**Summary of course requirements and credit:**

<i>Item</i>	<i>each</i>	<i>number</i>	<i>Pct. grade</i>
Lab reports	3.13%	8	25.00%
Field trip report	5.00%	1	5.00%
Mid-term exam	20.00%	1	20.00%
In-class exercises	5.00%	3	15.00%
Final exam	35.00%	1	35.00%
Total:			100.00%

**Labs and lab reports:**

The labs are designed to complement the material presented in lecture. That is, the labs will not simply be a reiteration of the material presented in lecture but will provide you with a more nearly complete understanding of the material and concepts covered in this course. In a given week, the lab and lecture topics may even be different, as the labs will build on one another to cover some topics in detail and allow you to “test drive” some of the material you've learned.

Lab reports should be neat, complete, and on time. Reports will be due at the time of the start of the next lab period. **No late reports will be accepted.** Your lab instructors will provide you with further guidelines.

**Field trip report:**

The objective of the field trip is to get you thinking about landscapes in terms of the processes that shape them. The field trip is mandatory and should be fun, and the report should be relatively easy. If you cannot attend the field trip, you will be required to complete a 5-7 pp. paper on a topic chosen by you and approved by the instructor. Your field trip report (or paper) will be due in lecture on the Friday following the trip. You may also turn it in to your lab instructor before that time. **No late reports (or papers) will be accepted.**

**In-class exercises:**

The three in-class exercises are designed to facilitate learning of the course material. These are not tests or quizzes, but they will be graded on content. Therefore, you should come to class prepared (i.e., do the reading and review the lecture notes). These exercises will not be accepted after the time they are due (the end of the class period or at the beginning of the next).

**Exams:**

The mid-term and final examinations will assess the degree to which you have achieved the above-stated learning outcomes. The final examination will be comprehensive.

**Extra credit assignments:**

Opportunities for extra credit will be provided at my discretion and will likely consist of reading and reviewing a scholarly work in surface processes.

**Outline, readings, and schedule:**

<i>Wk/D</i>	<i>Topic</i>	<i>Reading</i> <sup>1</sup>	<i>Lab</i>
1	Introduction. Geomorphic systems. Weathering	1, 3; GKG	Pre-test <sup>2</sup>
2	Physical & chemical weathering, soils	3, 4 (11)	1. Map Interp.
3	Hillslope diffusive transport, mass movements	4 (11)	2. Hillslope Exp.
<b>10/13</b>	<b>FIELD TRIP<sup>3</sup> (Saturday)</b>		
<b>10/15</b>	<b>In-class exercise: Slope hydrology and stability</b>		
4	Advective processes, overland flow, streams	5, 6, 8, 9	3. Hillslope Model
5	Fluvial transport, mechanics	6	4. Stream Model I
<b>10/26</b>	<b>MIDTERM EXAMINATION</b>		
6	Fluvial mechanics, watersheds, networks	5, 6	5. Stream Model II
<b>11/2</b>	<b>In-class exercise: Fluvial Mechanics</b>		
7	Glacial mechanics, processes. Fluvial forms	7, 9, 10	6. Glacier Profile
8	Fluvial forms & processes. Coastal processes	7, 13	6. (cont'd)
9	Landscape evolution, tectonic geomorphology	2, 5	7. Landforms
<b>11/23</b>	<b>Thanksgiving break</b>		
10	Catch-up & review		
<b>11/30</b>	<b>In-class exercise</b>		
<b>12/4</b>	<b>FINAL EXAMINATION (comprehensive), Tuesday, 12:00 PM, Wlkn 108</b>		

<sup>1</sup> Numbers are chapter numbers from the text, *Process Geomorphology*. Chapters indicated include relevant material and should be used as rough guidelines for helpful reading. GKG is G.K. Gilbert's *Geology of the Henry Mtns.*, available on Blackboard.

<sup>2</sup> Pre-test is mandatory, but the score does not affect your grade.

<sup>3</sup> Field trip cost is split between the Department and your student fees.

**Learning resources:**

The required text (*Process Geomorphology*) is on sale in the OSU Book Store. The books listed under “other introductory texts”, along with the first edition (1978!) of the required text, have been placed on reserve in the Valley Library.

Excerpts from the classic work by G.K. Gilbert, *Report on the Geology of the Henry Mtns.* (1880) are available on Blackboard. Gilbert concisely laid out the problems and concepts that occupy geomorphologists to this day and thereby provides a brilliant introduction to the field.

Class presentations for the entire class are posted on Blackboard under “Lecture Notes”.

The laboratory manual was designed for this course. Instructions for all the labs (the “lab manual”) are posted on Blackboard. Printed copies will be provided as handouts at your lab meetings.

The instructor's office hours are a valuable resource. Come early and often (and *before* you're in trouble we can't get you out of)! The lab instructors will also host office hours.

Your classmates are also a valuable resource, but see below.

**Guidelines for conduct on written assignments:**

**You will be strictly held to the University's policy on academic dishonesty. Be sure that you are familiar with that policy** (see <http://oregonstate.edu/admin/stucon/regs.htm>). **Enrollment in this class means that you are responsible for your conduct with respect to the University's policy and my guidelines written here.** Please note that both copying another person's work and allowing another person to copy your own work are considered academic dishonesty.

You are allowed and encouraged to work together on lab and field trip reports, but there are strict limits to that cooperation. (1) You must cite all your sources of information, both written and oral, and failing to do so constitutes academic dishonesty. Since it is sometimes difficult to sort out who said what in a discussion setting, you may acknowledge such discussion broadly (e.g., “I discussed this assignment with Jane Doe and John Smith.”). Specific pieces of information that are directly attributable to another person or written work must be cited (e.g., “Lancaster told those on the field trip that...(John Smith, personal communication)”). (2) Citation is not a substitute for doing your own work. For example, turning in a paper that contains nothing but cited information (e.g., “I copied the entire assignment from Jane Doe's work.”), while not academically dishonest, would be unsatisfactory and result in zero credit. (3) Finally, discussion alone does not result in work that is nearly identical in appearance to the work of another student. Two papers should not, for example, show nearly identical drawings.

In general, if you are in doubt ask the instructor and/or err on the side of too much citation and refraining from what might give the appearance of academic dishonesty.