

Geology 310- Geomorphology

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Office Hours: MW 1:00
Class: TTh 12:00 in E.S. 213

Welcome to Geology 310 – Geomorphology is the study of the Earth's surface landforms. This study is both descriptive and quantitative. Geomorphology investigates surface processes, evolution and origins of landforms. The ultimate goals of geomorphology are to understand the way in which landforms are created and to document the evolution of landforms through time.

Course Goals - After taking this class, you should have the necessary skills, background information, and confidence to undertake geomorphic investigations independently. Also, to gain an appreciation for how geomorphology can be used to understand and resolve environmental problems. Finally, to understand the processes and the amount of time responsible for forming natural landscapes.

Course Objectives

- Understand the processes and the amount of time responsible for forming natural landforms
- Explain the processes by which gravity, water, and ice modify and shape the landscape
- Predict how geomorphology can be used to understand and resolve environmental problems
- Gain the necessary skills, background information, and confidence to undertake geomorphic investigations independently.
- Understand methods, tools and dating techniques available to geomorphologists.
- Improve your ability to read, understand, and discuss scientific and popular literature relevant to the topics and places we study
- Gain your ability to collect quantitative and qualitative field data
- Master some specific skills of the geomorphologist. These skills include:
 - Understand and evaluate topographic data
 - Surveying
 - Reading topographic maps and calculating slopes
 - Creating topographic profiles
 - Develop hypotheses of the origin and history of certain geomorphic landforms
 - Interpretation of aerial photographs
 - Create and read graphs

Course Structure – Class meeting time is Tuesday and Thursday at 12:00. Tuesday class ends at 2:50 while Thursdays end at 3:50. The longer Thursdays accommodates for 5 field trips we will take this quarter (more details below). Lectures/Discussion will be given for the first hour or so on Tuesdays. The remaining time in class should be used to complete assignments or work on your class project. Please bring a notebook to class and field trips to write down any lecture notes as well as field notes.

Canvas - We will be using Canvas for this course. Here you can find this syllabus, project and lab report guidelines, labs, readings and any other important files/documents. I will also use Canvas to post maps, concept sketches, announcements, and .pdf versions of my PowerPoint lectures, and other miscellaneous items.

Required Texts - There will be reading assignments from various sources but mostly through the new text book: *Key Concepts in Geomorphology* by Paul Bierman and David Montgomery.

Evaluation – Your grade is based off the following:

Laboratory	30%
Midterm Test	15%
Final Exam	20%
Project Paper	20%
Project Poster	5%
Project Proposal	3%
Class participation/attendance	2%
Concept Sketches	5%

Field Trips - Field trips are an integral part of this course. We will take several field trips this quarter during our scheduled lab period. ***We will leave at 12:00 sharp (unless otherwise informed).*** Although we will most likely be back by 4:00, there may be a chance that we run a little late. If so, I'll make it up by shortening another lab period. This is winter quarter, so be prepared for cold and rainy weather. For each trip you **MUST** have:

- waterproof raingear
- sturdy footwear
- a sweater or fleece for warmth (hat and gloves if necessary)
- a clipboard/map board, waterproof field notebook (write in the rain), and pencil
- water & some food

Research Project - The research project consists of a written paper with a short in-class presentation during the final week of class. This project is an extremely important part of the class. Topics can be related to any aspect of geomorphology. This project is not a book review, but a presentation of data and research that you have independently investigated. It can be field based, or can be an accumulation of data from maps, aerial photos or the web and library. The project will include turning in a proposal, references and a draft. Projects are NOT simply literature reviews (though you will use the literature in the second project). *As a group*, you will identify hypotheses regarding landforms or landscape-altering processes, collect data to test your hypotheses, and, then individually, interpret data, and synthesize your results.

Class Participation - You are encouraged to participate in class by asking questions and contributing observations and comments during lecture, field trips and lab sessions.

Examinations - 2 examinations will be given during the quarter (see schedule). The final is cumulative and will cover the subjects throughout the entire course. The final will be given during finals week. **Departmental policy:** No early exams. Make-up exams given only with an official excused absence from the Student Support Services (OM 100, x3844), the Health center (x3400), or your coach.

Lab Reports - Guidelines for preparing and grading lab reports will be announced as the labs are assigned and will vary throughout the course. Labs must be turned in one week after they were assigned unless otherwise indicated. You will have a total of 4 (school) days grace to turn in late assignments. Assignments turned in late after the grace days are exhausted will be docked 10% each day up to a maximum of 50% off.

Outcomes - Geology 310 (Geomorphology) provides information for the following degree/program outcomes:

	B.A. Geology	B.S. Geology	GUR
Outcomes	<p>2. Earth's surface is affected by dynamic processes on a range of timescales</p> <p>5. Earth scientists use repeatable observations and testable ideas to understand and explain our planet.</p> <p>7. Graduates have developed their observational, analytical and quantitative skills (field, lab, computer, and classroom)</p>	<p>2. Earth's surface is affected by dynamic processes on a range of timescales</p> <p>5. Earth scientists use repeatable observations and testable ideas to understand and explain our planet.</p> <p>7. Graduates have developed their observational, analytical and quantitative skills (field, lab, computer, and classroom)</p> <p>10. Graduates (alone or in teams) will be able to present geological information clearly</p>	<p>1. Analyze and communicate ideas effectively in oral, written, and visual forms.</p> <p>3. Use quantitative and scientific reasoning to frame and solve problems.</p>

Schedule- I'll try to stick to the following lecture schedule, though things may change depending on whether we get ahead or behind. The exam times will not change so you can plan accordingly

	Date	Topic	What's Due	Reading
Week 1	Thursday – September 22	Overview and Introductions		
Week 2	Tuesday -September 27	Lab 1 - Measuring a Landform		
	Thursday – September 29	Lecture – Fluvial Processes Continue Lab 1		Chapter 2
Week 3	Tuesday - October 4	Lecture - River Channels Lab 2 - Topographic Maps	Lab 1 Report	Chapter 6
	Thursday – October 6	Lecture – Fluvial Landforms Continue Lab 2		Chapter 7
Week 4	Tuesday - October 11	Lab 3 – Fluvial Terraces Assign Mass Wasting Topics	Lab 2 Report	
	Thursday -October 13	Field Trip – Visit the Nooksack River		
Week 5	Tuesday -October 18	Class Lesson- Mass Wasting Lab 4 - Air Photos	River Concept Sketch Project Sign Up	Chapter 5
	Thursday -October 20	Field Trip - Visit a Landslide	Lab 3 Report	
Week 6	Tuesday - October 25	Lecture - Coastal Processes		Chapter 8
	Thursday - October 27	Field Trip - Visit the Coast	Lab 4 Report	
Week 7	Tuesday - November 1	Exam 1	Coastal Concept Sketch	
	Thursday - November 3	Project Field Day or Consultation	Project Proposals	
Week 8	Tuesday - November 8	Lecture - Glacial Landforms		Chapter 9
	Thursday - November 10	Field Trip - Visit Glacial Landforms/Sediments		
Week 9	Tuesday - November 15	Lecture – Ice Ages/Paleoclimate Lab 5- Ice Cores		Chapter 13
	Thursday - November 17	Lecture - Dating Techniques	Project Drafts	
Week 10	Tuesday - November 22	Lecture - Tectonic Geomorphology Lab 6 - Dating Techniques	Lab 5 Report	Chapter 12
	Thursday - November 24	<u>Thanksgiving - No Class</u>		
Week 11	Tuesday - November 29	Work on Project/Presentations	Lab 6 Report	
	Thursday - December 1	Poster Presentations	Final Paper	
Final's Week	Friday – December 9	Final Exam 8:00-10:00		