

Instructor Information

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Office Hours: Tuesdays and Thursdays 9:30–10:45 (other hours by appointment)

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Above: Bear Glacier, Alaska

This image taken in 2005 of Bear Glacier highlights the beautiful color of many glacial lakes. The hue is caused by the silt that is finely ground away from the valley walls by the glacier and deposited in the lake. The particles in this “glacial flour” can be very reflective, turning the water into a distinctive greenish blue. The lake, eight miles up from the terminus of the glacier, was held in place by the glacier, but in 2008 it [broke through and drained](#) into Resurrection Bay in Kenai Fjords National Park.

The grey stripe down the middle of the glacier is called a medial moraine. It is formed when two glaciers flow into each other and join on their way downhill. When glaciers come together, their lateral moraines, long ridges formed along their edges as the freeze-thaw cycle of the glacier breaks off chunks of rock from the surrounding walls, meet to form a rocky ridge along the center of the joined glaciers.

Image and Text: [GeoEye/NASA, 2005](#).

Read More http://www.wired.com/wiredscience/2009/09/gallery_glaciers/all/1#ixzz0dMIBWkDr

Class Meeting:

Lecture: 11:00–12:15 Tuesday & Thursday, 122 Hudson Hall

Laboratory: Lab A: Tuesday 12:30-16:20, 032 Hudson Hall

Lab B: Wednesday 12:30-16:20, 032 Hudson Hall

Textbook:

Huggett, R.J., 2011, Fundamentals of Geomorphology (Third Edition): Routledge, New York,

| ISBN13: 978-0415567756 | ISBN10: 0415567750 |

Grading Policy:

15% eNotebooks

35% Laboratory Reports

30% 2 Hour Exams (15% each)

Exam dates:

20% Comprehensive Final Exam

Exam date: Finals Week (TBA)

It is the student's responsibility to make alternative arrangements for a missed quiz or exam. Whenever possible, such arrangements should be made beforehand but if you miss a quiz or exam due to unforeseen circumstances you must contact me as soon possible with a valid excuse. A missed quiz or exam without a valid excuse will receive a grade of zero.

Course Description:

Geomorphology is the study of landforms and landscapes and their relationship to surface processes, underlying structure and the history of geological changes. Process geomorphology views landforms and landscapes as the result of a balance between driving forces, such as climate, gravity and internal heat flow, and the resisting framework created by the lithology and structure of near-surface earth materials. This approach emphasizes the relationship between process and form; underscores the linkages between geomorphology and other geoscience disciplines such as plate tectonics, structural geology, geophysics, petrology, sedimentology, stratigraphy, cosmology, atmospheric science and ecosystems studies; and acknowledges that landscapes are palimpsests that often retain relict features that are not in equilibrium with existing controls.

By the end of this semester, you should be able to;

- Evaluate the principal components and operational mechanisms that are common to most natural earth systems and apply the system concept to any biological, chemical or physical system;
- Interpret linkages between different geomorphic processes and systems;
- Collect and analyze geomorphologic data from topographic and geologic maps; geological cross sections, aerial images, field observations and spatial databases and interpret the origins of landforms or landscapes;
- Synthesize the results of a geomorphological analysis to formulate and interpret process models for natural geomorphic systems;
- Predict responses of geological systems to changes in controlling variables;
- Evaluate natural hazards (for example earthquakes, volcanoes, floods and hurricanes), and contemporary social issues such as energy and mineral resources, ground and surface water resources, pollution, and global climate change from a geomorphic systems perspective, make informed decisions about issues dealing with our physical environment and act to make the world a better place for everyone.

Expectations:

- *Effort and Workload*—Knowledge comes from understanding, not rote memorization of facts, and understanding requires curiosity and honest effort. You may expect me to treat every student respectfully and fairly and to arrive well prepared for each class. I will do my best to stimulate your curiosity through my enthusiasm and passion for geology and to present each subject in the most interesting and relevant way I can. I, in turn, expect from you an honest effort to understand the information I present. I expect you to read the assigned chapters before class and come to every class prepared to ask questions and engage in group discussions. This level of preparation requires that you dedicate time on a regular basis to read and study outside of class. If you have trouble understanding the material presented in class, I expect you to seek additional help from your classmates, a geology tutor (if one is available) or me. I am available for walk-in consultations during my office hours; however, I am generally accessible when not conducting field research. I encourage you to seek me out at any time if you have a course-related question or concern.
- *Academic Honor Code*—I expect that all students enrolled in this class support the letter and spirit of the SUNY Plattsburgh student Code of Conduct and the Honor Code Pledge;

“I COMMIT MYSELF TO ACADEMIC INTEGRITY IN AND OUT OF THE CLASSROOM. I WILL BE HONEST, RESPONSIBLE, AND GIVE SUPPORT TO OTHERS AS THEY ABIDE BY THIS PLEDGE.”

The academic Honor Code applies all aspects of your academic life but especially to cheating and plagiarism. Students found guilty of cheating or plagiarism may receive a reduction of grade for that assignment, a failing grade for the course, or may be suspended or dismissed from the College.

- *Attendance*—Attendance is required. I allow three unexcused absences without penalty during the semester. Each additional unexcused absence results in a penalty of 1% of the final grade. It is the student’s responsibility to obtain any course material (e.g. class notes, handouts, assignments and etc.) missed due to an absence.
- *Electronic Devices*—I expect all electronic devices such as cell phones, pagers, I-pods, CD-players and etc., to be deactivated and stowed away prior to class.



A small "hanging" cirque glacier perched above the west branch of the Tokositna Glacier in Denali Park and Preserve, Alaska (photo: Franzi 2013).

Lecture Schedule

Week	Lecture Topic	*Reading
<i>Beginning</i>		
<i>Introduction to Landforms and Landscapes</i>		
27 Jan	Approaches to Geomorphology, Geomorphic Systems	p.3-48
03 Feb	Geomorphic Materials and Processes (eNotes 7 Feb)	p.26-59
10 Feb	Rates and Dates in Geomorphology	TBA
<i>Structural Controls on Landscapes</i>		
17 Feb	Large-Scale Tectonic and Structural Landforms (eNotes 21 Feb)	p.97-115
24 Feb	Tectonic Geomorphology and Geological Structures	p.116-150
28 Feb	Hour Exam #1	
<i>Surface Process and Landforms</i>		
03 Mar	Weathering, Erosion and Hillslope Evolution (eNotes 07 Mar)	p.153-182
10 Mar	Drainage Basin Morphology and Hydrogeology	p.56-91
17 Mar	Spring Break Week	TBA
24 Mar	Fluvial Processes (NEGSA 3/24/14–No class) (eNotes 28 Mar)	p.220-246
31 Mar	Fluvial Landforms	p.220-246
04 Apr	Hour Exam #2	
07 Apr	Coastal Processes and Landforms	p.316-348
14 Apr	Periglacial Processes and Landforms (eNotes 18 Apr)	p.296-315
21 Apr	Glacial Processes	p.246-276
28 Apr	Glacial Landforms (eNotes 02 May)	p.246-276
05 May	Quaternary Climate Changes and Ice Ages	p.351-408
12 May	Final Exam (TBA)	

*The listed readings are from the Huggett textbook. Other readings will be assigned as appropriate.

Laboratory Schedule

Dates	Laboratory Topic
28–29 Jan.	Laboratory 1: Review of Topographic Map and Aerial Photo Analysis; Introduction to GIS (Due: 04–05 Feb)
04–05 Feb.	Laboratory 2: Basin and Range Landscapes (Due: 11–12 Feb)
11–12 Feb.	Laboratory 3: The Colorado Plateau (Due: 25–26 Feb)
25–26 Feb.	Laboratory 4: The Eastern Snake River Plain (Due: 11–12 Mar)
11–12 Mar.	Laboratory 5: Watershed Delineation & Geomorphology I – Renovo, PA (Due: 25–26 Mar)
18–19 Mar.	Spring Break – No Laboratory
25–26 Mar.	Laboratory 6: Karst Landforms – Mammoth Cave, KY (Due: 08–09 Mar)
08–09 Apr.	Glacial and Fluvial Landforms in the AuSable River Valley (field trip)
15–16 Apr.	Laboratory 7: Reconstructing Former Ice Margins and Proglacial Lake Shorelines in the AuSable River Valleys (Due: 29–30 Apr)
22–23 Apr.	Glacial and Fluvial Landforms in the AuSable River Valley (field trip)
29–30 Apr.	The Sierra Nevada: Cirque Glacier Morphometry and Estimating Equilibrium Line Elevations (ELAs) (Due: 06–07 May)

Note: This lab schedule may be subject to change due to class-size restrictions and uncertain weather conditions. Please come well prepared for inclement weather during field trips.



A panoramic view of Niagara Falls, New York and Ontario looking south. The Niagara River (less than 12000 years old) flows from Lake Erie to Lake Ontario (north) and passes over the Niagara Escarpment (Silurian). The Falls migrate southward by knickpoint migration (undercutting erosion).

Photo: http://rst.gsfc.nasa.gov/Sect6/Sect6_2.html