Geology 3315: Evolution of Earth's Surface

Spring 2018, Tuesday and Thursday, 8:00 am – 9:15 am, PS 220
Laboratory: Thursday 2-5, PS 220

Instructors: Glenn Thackray, PS 228, 282-3871, thacglen@isu.edu
Office Hours: Tu, Th 9:15-9:45, MW 11-12, and by appointment
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Office Hours: Tu 9:15-11am, and by appointment
TA/Graders: Carl Jurkowski, Office: PS 238, jurkcarl@isu.edu, Office hours: M 12-2 pm

Text: Bierman and Montgomery, *Key Concepts in Geomorphology*, 2013.
Supplementary reading provided via Moodle

Weeks of:	Topic	Text Ch.
	PART I: Introduction: Concepts and Tools	
Jan 9	Course overview: major concepts and scales of analysis in geomorphology and paleoclimatology	1
Jan 16	History of geomorphology; the tools of surficial geology; time scales in geomorphology	2
	PART II: Climate cycles, glaciation, coastal processes, and sea level change	
Jan 23, Jan 30	Glacial and periglacial landscape processes	9
Feb 6	Coastal geomorphology and sea level change	8
Feb 13, Feb 20	Paleoclimatology and landscapes. Hydrologic processes. Feb 15: Research paper topic synopsis w references due in class	13, 4
	PART III: Water, soils, and hillslopes	
Feb 27	Hydrologic processes in geomorphology Exam 1: Thursday, March 1, in class	4
Mar 6, Mar 13	Weathering, soils and hillslope erosion and evolution	3, 5
Mar 20	**Spring Break!**	
	PART IV: Rivers and drainage basins	
March 27 April 3 April 10	River processes and drainage basins Research papers due for peer review April 10, 5 pm	6, 7
	PART V: Tectonic geomorphology and landscape evolution	
April 17	Tectonic geomorphology; Research paper peer review due Monday, April 16, 5 pm Final research papers due Friday, April 20, 5 pm	12
April 24	Landscape evolution Research presentations in lab, Thursday, April 26	14
Tues, May 1	** Exam 2** Please note the date of the final exam.	7:30-9:30 am

Please note: The schedule of topics is flexible. It may be altered as the need arises, though exam dates and due dates are firm.

Laboratory section

The laboratory and lecture portions of the course are fully integrated. The laboratory exercises amplify and explore the course material in greater depth, using many tools including maps, GIS software, field data, and computer models. Note that the laboratory constitutes a substantial portion of the overall grade. Because the laboratory exercises will typically require significant introduction, it is essential that you come to lab on time and with your thinking cap on. Bring a thumb drive or external USB drive during computer labs and save all work to that device.

Research papers

Each student will choose a literature research topic to pursue through the course of the semester. The project will culminate in a short (5 ± 1 pages of text) but well-written and scintillating research paper. The research will be on a subject of your choosing, approved by and honed with the help of Ben and Glenn. A list of potential subjects will be distributed early in the semester, but don't feel limited by it—you can pursue any viable subject, as long as the topic deals in some way with geomorphology, surficial geology, and/or paleoclimatology. Pick a topic you can sink your teeth into—be sure it's not such a broad subject that you will only skim the surface. Please note the following in the schedule:

1. A half-page description of your topic and a list of your primary references will be due a few weeks into the semester, on the date specified in the schedule.
2. The near-final paper will be due for peer review by your fellow students a few weeks before the end of the semester.
3. The final paper will be due following peer review.
4. In the final laboratory session, each of you will present your topic and findings.

Please start thinking about possible topics, looking into the literature, and bouncing ideas off us well ahead of time. All papers must be well-written and involve critical analysis of the chosen topic. Please note that the page requirements are small, but that makes for challenging, more concise and polished writing. *Late work will be penalized 10% per day.*

Grading

Exam 1	25%
Exam 2	25%
Research paper, peer review and presentation	15%
Lab exercises and problem sets	30%
Attendance and Participation	5%

Exams will consist largely of multiple-choice, short-answer, and medium-answer questions, calculations (pertinent equations provided), and diagrams.

Getting Help

Scheduled office hours are listed at the top of this document. You can also find us available many other times via email or office doors. Because of the diverse duties and commitments of the job, we tend to be moving targets, so please set a time to meet if possible. By all means, contact us one way or another if you need feedback or assistance, and we can arrange a time and means. We are here to help you to thrive in this course.

***Academic Integrity**: Academic integrity is expected of all students. Academic dishonesty, including cheating, copying or plagiarism, is unacceptable. The Idaho State University academic dishonesty policy allows an instructor to impose one of several penalties for cheating that range from a warning up to assigning a failing grade for the course or dismissal from the University. ANY use of an electronic device or other form of unauthorized materials during an exam or other assessment will be considered cheating. During the two exams, no electronic devices or other aids can be used or even visible. For more information, see the ISU Policies and Procedures Policy 4000 (Academic Integrity and Dishonesty) located at: http://www2.isu.edu/policy/4000/index.shtml*

Geology 3315: Evolution of Earth's Surface: Lab Schedule

Laboratory Thursday 2-5, PS 220

Required Lab Materials: colored pencils, transparent ruler, field notebook, USB hard drive

Collaboration and solo work: There are many parts of labs on which you will collaborate with others to collect data and the like. Collaboration is an important skill! However, analysis and submitted work will be completed on your own and will be your unique product.

End Product: All short and long answer questions are to be in a **typed format**. Mathematical work is not required to be typed. Maps, graphs, concept sketches and data tables are to be handed in when specified in the lab.

GRADING POLICY: All labs are due the **following Thursday** at **2 pm, at the start of lab**. Labs turned in late will receive a grade no higher than 80%. Labs turned in after the **beginning** of the following lab will receive a ZERO.

We stress the importance of working on the labs, using the scheduled lab time while the instructors are there to help you! These labs count for a significant portion of your course grade.

Please note: The lab schedule is flexible. It will be altered as the need arises.

Lab Date	Lab Exercise & Locations
Jan 11	1. Geomorphic domain mapping lab—*Map and concept sketch*
Jan 18	2. Aquarium radiation experiment—*Hands on and concept sketch lab*
Jan 25	3. Glacial ELA analysis and mass balance – *Map, computer, and concept sketch lab*
Feb 1	4. Glacial landforms and processes—*Map and air photo lab*
Feb 8	5. Dendroclimatology- *Limber Pine analysis – computer lab (or field lab if weather permits)*
Feb 15	6. Dendroclimatology Analysis- *computer lab (or field lab if weather permits)*
Feb 22	7. Coastal terraces, uplift rates, and sea-level variation: *Map & Excel lab*
March 1	8. Hillslope hydrology concept sketch and map—*Map lab*
March 8	9. Hillslopes: Experimental hillslopes – *Hands on lab*
March 15	10. Hillslopes: Landslide identification and classification – *Computer lab*
March 22	**Spring Break**
March 29	11. Rivers: Experimental rivers – *Hands on lab*
April 5	12. RTK/Salmon Falls Intro – *Field/lecture* (To Salmon Falls 4/8)
April 12	13. Marsh Creek field trip, 1-6 pm—*Field lab*
April 19	14. Rivers: Mapping channel morphology – *Field lab*
April 26	Student presentation of research topics

***Accessibility**: Our program is committed to all students achieving their potential. If you have a disability or think you have a disability (physical, learning disability, hearing, vision, psychiatric) which may need a reasonable accommodation, please contact Disability Services located in the Rendezvous Complex, Room 125, 282-3599 as early as possible.*

***CoSE X-grade Policy**: In the College of Science & Engineering, a student who earns a failing grade via course work (exams, homework, etc.) and has unexcused absences that total more than 30% of class meetings will receive a grade of "X".*