

Geomorphology: Mountains, Rivers, Deserts
GEOG 3200 -- section 001: Fall 2016
Lectures//Class meetings: T, H 2:00-3:20 BUC 208

Dr Kathleen Nicoll, Associate Professor

Office: BLDG 73 Room 208 **Telephone:** 801-585-5800

** preferred email is kathleen.nicoll@gmail.com

Facebook: Geomorphology Rules

Office Hours: T, H 1:00-1:30 pm; then I am available before class in BUC
& after 5 pm in BLDG 73 106 ** may be arranged by appointment &
changes will be announced

U of U Catalog Entry

Geomorphology: Mountains, Rivers, Deserts (4 credits) Prerequisite: GEOG 1000 or instructor's consent.
Fulfills Physical/Life Science Exploration.

Why does Utah look different than Kansas? How did the Grand Canyon form? This course explores Earth's surface systems to see how landforms are created and modified over time. These systems include mountain building, and erosion and deposition by rivers, glaciers, landslides, wind, and shoreline processes. Analysis of landforms and processes will be directed towards understanding how the surface of the Earth got to be the way it is, and how it is changing. Comparison of different landforms will be used to illustrate how different processes operate. For example, mountain valleys carved by glaciers are significantly different than those carved by rivers. This course offers explanations for differences such as this, and explores reasons for changes that take place in landforms. A field trip will provide an opportunity to see local examples of different processes and their resulting landforms.

One Saturday Field Trip will be held on 11/5. Students who do not attend cannot make it up. Details will be announced. The trip will be held from 8 am-6 pm, or thereafter, departing from and returning to a parking lot locale at the U. Attending students must download and sign forms whether or not they attend the field trip.

Textbook: The current prescribed textbook is *Key Concepts in Geomorphology* by Paul R. Bierman and David R. Montgomery. Available at bookstore or online. Reading the textbook in advance of lecture is an essential component of the course. The content of the text should be considered as background; the lecture may deviate. Additional reading and other materials may be supplied to you online or as handouts.

Requirements: Basic internet fluency is necessary. Some exercises will require internet access and use of Google Earth freeware. The prerequisite courses for this class is GEOG 1000 and as such, students are expected to be geographically literate and have the foundational mastery on topics. Students who are struggling should consult the GEOG/ENVST 1000 textbook. Students must know the location of the world's continents and oceans, the location of the 50 states, and be able to read latitude and longitude on a map.

Accommodations: In compliance with the Americans with Disabilities Act of 1990, The University of Utah seeks to provide equal access to its programs, services and activities for people with disabilities. If any student needs accommodations in the class, reasonable prior notice needs to be given to the Center for Disability Services, 162 Olpin Union Building, 581-5020 (V/TDD). CDS will work with students and course instructors to make arrangements for accommodations. All written information in this course can be made available in alternative format with prior notification to the Center for Disability Services; students requiring this service must advise the Center of their needs.

Structure & Purpose of Lectures, Readings and Assignments: Two lecture periods are scheduled for each week; your attendance and participation is essential. Lectures, readings, assignments, and the offered field trip all complement and reinforce each other. Lectures provide the structure of the course, discussion of key issues, and additional material will be presented that cannot be found in the textbook. The content of the lectures will be at the discretion of the professor, and will not simply recap material in the text.

Independent work assignments are part of this course. Occasional guest appearances by other faculty members or graduate students may occasionally be scheduled; students are expected to learn this material as well.

Careful and critical reading of the text and your own notes is important. Students should aim to read on topics in advance of the schedule specified in the topical outline that will be handed out at the first lecture. Part of the learning process is to learn how to educate yourself! Whatever text you use will examine many (but not all) of the issues raised in the lectures as well as additional concepts that may not be presented during the lecture period. The key is to find your own motivation and learn to find information.

Assignments will be made to individuals and groups. They are designed to provide practice with methods, concepts and topics introduced in the lectures and readings. The assignments will vary throughout the semester.

Field Trip: To better familiarize you with our landscape (and to provide a chance to enjoy the outdoors), a day-long field trip will be held on 11/5/2016. Field Trip attendance IS MANDATORY, and participants will find it helpful. There will not be a make-up field trip opportunity. More details will be announced. Those attending should plan on spending ALL day from 8 am until 6 pm on the trip, and should bring your own pack lunch and water/drinks). We will likely be outside in full sun for much of the time, so make sure to come prepared – bring sunglasses, wear good sunscreen and a sunhat. There will be some walking involved, but there are ****not**** demanding amounts of difficult hiking required on the course. Please wear reliable footwear (sneakers, boots, or other closed shoes) and full-length trousers (i.e., not shorts). Recommendations: sunglasses, day pack, watch, chapstick, extra snacks, more water than you think you will want... camera, notebook, pens, clipboard.

Grading and Policies Thereof: Your grade will be assigned based upon your performance on two exams, the class assignments and problem sets, some quizzes and participation. The responsibility for earning a grade is placed squarely on the shoulders of the student taking this course. Course grades will be determined by how much material each student can show they have learned, as follows:

1. MidTerm Exam 100 points. .
2. Final Exam 100 points.
3. Assignments 200 points.
4. Participation & Quizzes 100 points**

^Total 500 points

**The Professor may decide to drop the lowest quiz score on the part 4 mentioned above.

Students who do not hand in materials for unexcusable reasons (as defined by the university) cannot by design earn an A in the course.

The mid-term will be closed-book. The final exam will be part take-home//open book and it will also have an in-room component. The in-class part of the final will include short-answer format, some problems, and essay questions. The material presented in this course is cumulative, but each exam will emphasize the material covered since the previous exam, as specified in the timetable outline handed out at the first lecture. The exams are designed to realistically stretch your mind, and will involve real world scenarios.

The standard rules of examinations are set by the department and University policies. Make-up exams and quizzes are not routine in this course, and may only offered at the discretion of the Professor upon evidence of medical reasons or **extreme** extenuating circumstances. Requests for any make-up exams must be placed in writing to Dr Nicoll within 24 hours of the exam; if granted, the time and format of any make-ups is at her discretion, and shall occur within 10 days of the originally scheduled exam or quiz.

Students with special needs as defined by the university must consult with the Center for Disabilities early in the semester to arrange accommodations such as extra exam time.

During exams, tests and quizzes, the University and department policies apply, as does a modicum of jurisprudence on the part of all students. Adherence to the general code of honor is expected on the part of students. Students may only represent themselves in the context of their work, and may not consult others or work together unless specifically told to do so. Because the exams in this class are take home exams, students must strive to remain ethical.

Students are advised that turned in work may not be plagiarized. Cutting and pasting from the internet is not tolerated; ideas should be rewritten. The University has firm policies about instructional offences; they are not tolerated under any circumstances. Penalties are severe. In general, instructional offences involve some form of deceit or trickery, such as plagiarism or copying. This form of offence involves the use and passing off the work of someone else (including other students) as one's own, without giving credit to another. To recap the prevailing University rules and regulations:

* Academic misconduct will not be tolerated. Penalties may include failure of an assignment, the entire course, and/or the filing of formal charges with appropriate university authorities. Academic misconduct includes, but is not limited to, cheating, misrepresenting one's work, and plagiarism:

* Cheating involves the unauthorized possession or use of information in an academic exercise, including unauthorized communication with another person during an exercise such as an examination.

* Misrepresenting one's work includes, but is not limited to, representing material prepared by another as one's own work or submitting the same work in more than one course without prior permission of all instructors.

* Plagiarism means the intentional unacknowledged use or incorporation of any other person's work in one's own work offered for academic consideration or public presentation.

Participation: Points will be based on attendance, in-class exercises, homework assignments, and participation during the scheduled lecture meetings.

Attendance at class lectures is squarely the responsibility of the student; any online versions of lecture notes do not stand alone. For most students, success in this course will require regular attendance, attention to the reading and lecture, and studying the material. Attendance allows the opportunity to ask questions, and hear other students' questions answered. Questions and discussion are welcome.

Expectations: This class is an upper-level offering and it is worth four credit hours. As such, following the University definition, mastery of the course content should require a minimum investment of 8 study hours/week on the part of each student. This 8 hours of studying is intended IN ADDITION TO the hours the student must spend attending the lecture itself. This definition is prescribed by the university and is meant to offer the student a standard for achievement. Hence, enrolled students should examine their commitments to evaluate whether they might have the required amount of time to devote to this class, and considering the others in their load.

The professor recommends that students come to class having read the prescribed chapter. Use the questions in the book to guide your study.

If students have problems understanding the material, or would like to discuss their grades, they should arrange to see the Professor early.

In-class quizzes and other exercises may be impromptu at the discretion of the instructor, and shall not normally be offered to those not in attendance. If extenuating circumstances exist, these may be documented in writing for the consideration by the Professor.

Extra credit is not offered upon request of the students. Please do not ask for extra credit.

Grade Stress: Students facing marking difficulties should examine their priorities, and whether they are investing in the appropriate reading and study strategies for 8 hours a week on the part of this class. Those students who have concerns should seek advice.

Class Conduct: Students are expected to abide by suitable classroom conduct policies; the lecture period is meant to foster learning, and students should cooperate toward that goal. The Professor shall reserve the right to preserve the integrity of the classroom as such. For example, disruptive students may be asked to leave.

During the lecture period and/or field exercises, students should exercise respect and constraint and they may not speak on communication devices, mobile phones, or engage in activities such as text messaging, IMing, web surfing, gaming, or other related activities. During the lecture period, all media devices (e.g. pagers, phones, etc) should be silenced. Students ****may not**** take notes on laptop computers, phones, PDAs, blackberries, or tape recorders unless they have sufficient accommodation.

Students who eat cheeseburgers, distract the lecture, harm the feelings of other classmates, engage in threatening behavior, or break rules may be called out, or asked to leave the classroom.

Students who are engaged in other activities (e.g. chatting, speaking on the phone, texting, etc) are not contributing to the learning environment need to examine their intentions. When such students are disruptive to others, this is a violation of the code and it demonstrates a lack of respect. Other students and/or the Professor may issue warnings, and might ask such students to leave.

Policies on appealing grades follow those prescribed by the university and the department. First and foremost, students are encouraged to discuss their grades and related matters during office hours or another scheduled time period with the Professor. Students may raise any concerns or problems with the course material, lectures, exam questions, in person, or in writing.

Students who feel they are not performing to the grade they would wish to earn are encouraged to evaluate their study strategies, and consult with the Professor.

Any student who seems to be failing or otherwise struggling may be called in by the Professor for a meeting. This call-in consultation is mainly to touch base, and should not

be viewed with hostility by the student; simply put, the Professor wishes to express concern, and does not wish anyone to fail.

Upon enrollment through the third lecture, students will indicate by their presence on the official roster that they are taking this course, and that they have read and understand the policies outlined herein.

Announcements will be made in class and posted online as needed.

Modifications to this document may be made at the discretion of the instructor.

TAKE YOUR OWN NOTES -- LECTURE NOTES WILL NOT BE POSTED ONLINE. Consult your textbooks!!!!

Accommodations, restated: In compliance with the Americans with Disabilities Act of 1990, The University of Utah seeks to provide equal access to its programs, services and activities for people with disabilities. If any student needs accommodations in the class, reasonable prior notice needs to be given to the Center for Disability Services, 162 Olpin Union Building, 581-5020 (V/TDD). CDS will work with students and course instructors to make arrangements for accommodations. All written information in this course can be made available in alternative format with prior notification to the Center for Disability Services; students requiring this service must advise the Center of their needs.

Student Athletes and others with commitments (military personnel, police, fire service personnel, etc) must inform the Professor about their schedule requirements should they be required to miss class or field trips, or leave town. We will endeavour to make things work.

If you are considering a Geography Major (or Minor): ...then welcome aboard! Make an appointment to see Marli Stevens in the department office.

If you would wish letters of recommendation or support now, or in the future: please note that a two week lead time is needed for Dr Nicoll to meet any deadlines.

Any Questions: May be directed to the Dr Nicoll. Please do not hesitate to get in touch!

Considering a major or a minor in Geography? Great! We are happy to discuss the details with you. You can consult with a peer advisor, schedule an appointment to see the department advisor, Marli Stevens. See our department website for more information. Or attend meetings of our Geography Club!

Attendance policy The University and this professor expect regular attendance at all class meetings. This syllabus is official communication in writing passed out during the first class meeting. Students are responsible for acquainting themselves with and satisfying the entire range of academic objectives and requirements as defined by the instructor. PPM, Policy 6-100III-O

Equal Access Statement The University of Utah seeks to provide equal access to its programs, services and activities for people with disabilities. If you will need accommodations in the class, reasonable prior notice needs to be given to the Center for Disability Services, 162 Union Building, 581-5020 (V/TDD). CDS will work with you and instructors to make arrangements for accommodations. All written information in the course can be made available in alternative format with prior notification to CDS.

Addressing Sexual Misconduct Title IX makes it clear that violence and harassment based on sex and gender, which includes sexual orientation and gender identity/expression, is a Civil Rights offense subject to the same kinds of accountability and the same kinds of support applied to offenses against other protected categories such as race, national origin, color, religion, age, status as a person with a disability, veteran's status or genetic information. If you or someone you know has been harassed or assaulted on the basis of your sex, including sexual orientation or gender identity/expression, you are encouraged to report it to the University's Title IX Coordinator; Director, Office of Equal Opportunity and Affirmative Action, 135 Park Building, 801-581-8365, or to the Office of the Dean of Students, 270 Union Building, 801-581-7066. For support and confidential consultation, contact the Center for Student Wellness, 426 SSB, 801-581-7776. To report to police, contact the Department of Public Safety, 801-585-2677(COPS). Additional information regarding reporting and victim supportive resources are available at the offices listed above.

Attention student veterans: the U of Utah has a Veterans Support Center on campus, in Room 161 in the Olpin Union Building. Hours: M-F 8-5pm. Please visit their website for more information about what support they offer, a list of ongoing events and links to outside resources:<http://veteranscenter.utah.edu> Please also let me know if you need any additional support in this class for any reason.

Attention all students, and in particular those members of the LGBTQ community: my classroom is a safe zone*. Additionally, please know that the U of Utah has a Resource Center on campus in Room 409 in the Olpin Union Building. Hours: M-F 8-5pm. You can visit their website: <http://lgbt.utah.edu> Please also let me know if there is any additional support you need in this class.

If English is your second language, please be aware of several resources on campus that will support you with your language development and writing. These resources include: the Department of Linguistics ESL Program (<http://linguistics.utah.edu/esl-program/> (Links to an external site.)); the Writing Center (<http://writingcenter.utah.edu/> (Links to an external site.)); the Writing Program (<http://writing-program.utah.edu/> (Links to an external site.)); the English Language Institute (<http://continue.utah.edu/eli/> (Links to an external site.)). Please note that access to translators and dictionaries is not permitted during the exams. Students may not consult notes, texts, papers, calculators, papers, written materials, or each other during exams.

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Nicoll's Goals for Intro Geomorphology Class.

Main objectives of the course

- Develop understanding of interactions between the Earth's geological, physical and chemical processes & landscape evolution.
- To relate how mountains grow and are destroyed.
- To introduce the roles and importance of rivers, esp by case study.
- To elucidate how humans modify landscapes and affect geomorphic systems.
- Relate how topography influences Earth's climate and where to look in the geomorphic record for evidence of landscape-climate interactions.
- Highlight aspects of fluvial geomorph, deserts and dryland processes.

Help students develop knowledge and understanding in the context of the subject

- Students: Learn how to learn by themselves & ask questions. Instructor: Engage students in Socratic classroom.
- Demonstrate process-response: how landscapes form and evolve.
- Show concepts of feedback systems between geological processes & climate.
- Present case studies.
- Run related field trip.
- Understand the processes and controls that govern landscape evolution.

Develop Recognition & Cognitive skills

- Analysing, evaluating, and interpreting data.
- Putting subject-specific information into a broader context.
- Develop inductive, deductive & evidence-based reasoning
- Develop ability to evaluate sources of data and qualities of observation.

Foster subject-specific practical/professional AND general/transferable skills

- Exposure to main methods in Geomorphology.
- Emphasis on scale of observation & measurements.
- Make primary observations. In field and in Google Earth.
- Handle & interpret various kinds of data.
- Read and understand published Scientific Papers.
- Interpret tables and graphs.
- Synthesize information from a range of sources. Build ability to think in 4 dimensions.
- Comprehension of scientific data and papers.
- Interpreting data in field and from armchair at photoscales.
- Use of graphs, tables & their interpretation.
- Demonstrate written presentation skills & developing oral conversational skills.

TOPICAL EMPHASES OF THIS CLASS

TECTONICS (MOUNTAINS) Key Content and organization

- Introduction to landscape evolution as function of rock cycle.
- The ascendant role of relief & tectonics: denudation, uplift and isostasy.
- Reference frames and the use of geomorphic and geodetic markers.
- Applications of relative & absolute dating methods to landscape evolution studies.
- The nature of climate-tectonic interactions.
- Introduce volcanic mountain belt evolution.
- Active vs. Passive margin evolution.
- Case studies on short and long term deformation and landscape response.
- Development and application of numerical and analog models.

RIVERS Key Content and organization

- Understand elements and drivers of hillslope systems.
- Exposure to weathering and erosion processes as related to rock cycle (tee hee)
- Introduce key riverine processes, sediment yield, importance of these to cycles.
- Focus on fluvial-lacustrine landscape forms (e.g., terraces, deltas, alluvial fans, playas)
- Assess and compare styles of physico-chemical weathering: karst, salt
- Introduce some methods of study of these features; limitations, complexities.
- Highlight cultural importance of rivers

DESERTS Key Content and organization

- Explain locations of drylands and how this might change over time.
- Build knowledge of Bio-Eco climate systematics.
- Case studies: aspects of geomorph in these landscapes: timescales, processes.
- Introduce key landforms, Aeolian and playa processes.
- Leverage tremendous examples in Utah and US SW.
- Relate importance of drylands concepts in extraterrestrial Mars Research.
- Highlight cultural importance of drylands (e.g. geoarchaeology)

2016 Course Topical Outline for Intro Geomorphology: Mountains, Rivers, Deserts

**** This is the pace, knowing there will be some shifting.**

NOTE: More Assignments will be rendered in class.

Week	Date 2016	Description of Topic Covered and accompanying book chapter
1	T, 8/23	Intro to Course; Meet & Greet. We organize.
	H, 8/25	Chapter 1: Earth's Dynamic Surface (p.1-41)
2	T, 8/30	“ Walkabout assigned – it is due 9/8
	H, 9/1	Chapter 2: Geomorphologist's Toolkit (p. 43-73)
3	T, 9/6	Chapter 3: Weathering and Soils (p.75-110) “
	H, 9/8	“
4	T, 9/13	Chapter 4: Geomorphic Hydrology (p.111-143)
	H, 9/15	“
5	T, 9/20	Chapter 5: Hillslopes (p.145-178)
	H, 9/22	“
6	T, 9/27	Chapter 6: Channels (p.179-215)
	H, 9/29	“
7	T, 10/4	Chapter 7: Drainage Basins (p.217-251), review
	H, 10/6	MID TERM EXAM – in class portion is due
8	10/14 - 16	** NO CLASS -- Happy Fall Break
9	T, 10/18	Chapter 7: Drainage Basins (p.217-251), continued ** MID-TERM EXAM Part II DUE by EMAIL 5 pm.
	H, 10/20	Chapter 8: Coastal & Submarine Geomorphology (p. 253-287)
10	T, 10/25	“
	H, 10/27	Chapter 9: Glacial and Periglacial Geomorphology (p.289-328)
	Sa, 10/29	ALL DAY SATURDAY FIELD TRIP 10/29
11	T, 11/1	Chapter 10: Wind as a Geomorphic Agent (p. 329-354)
	H, 11/3	“
12	T, 11/8	** NO CLASS LECTURE – PLEASE VOTE
	H, 11/10	Chapter 11: Volcanic Geomorphology (p. 355-387)
13	T, 11/15	“
	H, 11/17	Chapter 12: Tectonic Geomorphology (p.389-423)
14	T, 11/22	“
	H, 11/24	** NO CLASS -- Thanksgiving Break – say hello to your family.
15	T, 11/29	Chapter 13: Geomorphology & Climate (p. 425-460)
	H, 12/1	Chapter 14: Landscape Evolution (p. 461- 494) and open floor.
16	T, 12/6	“
	H, 12/8	** FINAL EXAM portion in class, and take-home portion due by 5 pm.