Geomorphology: Mountains, Rivers, Deserts
Geog 3200//5200 -- section 001

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Lectures//Class meetings: T, H 10:45-12:05 OSH Room 215 & all day field trip 4/14

Office Hours: T, H 9:30-10:45 am; 12:10-12:30 pm
** I am usually early in arriving to the class lecture & happy to chat then
** meetings may also be arranged by appointment
** any changes will be announced
** I am (usually) an email away…

U of U Catalog Entry

Geomorphology: Mountains, Rivers, Deserts (4 credits) Fulfills Physical/Life Science Exploration GENERAL EDUCATION

Meets with GEOG 5200. Graduate students taking GEOG 5200 will be held to higher standards and/or more work. 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.

Textbook: Arthur L Bloom. *Geomorphology: A Systematic Analysis of Late Cenozoic Landforms.* 3rd edition. The current prescribed edition of the textbook is an essential component of the course and will serve as an excellent resource for you. The text will be supplemented by other materials that will be supplied to you online (WebCT) or as handouts (also posted on WebCT).

Requirements: Basic internet fluency is necessary to access the online course resources via WebCT at U of U. The prerequisite courses for this class is GEOG 1000 and as such, students are expected to be geographically literate; if you find you are struggling, you may wish to consult the 1000 textbook (Christopherson's *Geosystems,* 6th edition). 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.

Accomodations: 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.

Introduction and Course Goals

This course focuses on the physical environment of Earth's surface, and provides an overview of the fundamental tools that scientists use to understand the major processes that shape landforms. This course takes an interdisciplinary approach and treats the Earth as a single, complex system, consisting of interlinked subsystems --the atmosphere, oceans, lithosphere, biosphere. Like any other complex system (e.g. the human body, the US economy), the Earth system is regulated by complex interactions among these subsystems and external forcings. Some mechanisms tend to promote system stability; others can result in rapid and devastating change. The Earth system is inherently dynamic: crustal plates shift, resulting in earthquakes and volcanoes; the climate system has flipped between glacial and interglacial states; weather fronts sweep through the Midwest; hurricanes batter coastlines; and the oceans and atmosphere ceaselessly circulate energy from the tropics to the poles. This course will address how various PROCESSES have affected the MATERIALS comprising the Earth's surface over various spatio-temporal SCALES, and those CYCLES that subsequently create and modify landforms.

Why take this class?

What can you say about the world around you? What do you see in the landscape? What are all the stories behind all the scenery? This class will train your eye as you develop a scientific fluency in geomorphology, the study of Earth's changing landforms. Geomorphologists are the luckiest scientists on the planet, because their lab is all around them – and they get paid to go outside and hike around while pondering our planet's most neato places.

This course will interest those of you who collect pretty picture postcards, and those persons who regularly settle into the National Geographic or Discovery Channels… You'll like this class if you hike/bike/ski through lovely Utah or you always try to sit in the window seat so that you can look at the places you're flying over. And those of you want to go new places, and discover what is unique about each place…might end up even more like Dora the Explorer (which is NOT a bad thing…). Taking this class is a good start in developing your appreciation for the art of landforms. As you unleash your own inner-geographer, you will want to get to know your backyard a bit better!

This class presents the basics inherent to a geological and interdisciplinary science approach. It emphasizes the scientific methodologies and mentions recently published, current research in geomorphology. Much of the course is structured around Utah's scenic landforms such as those in the National Parks (e.g., Bryce Canyon, Zion, Dinosaur, Capitol Reef, Arches, Canyonlands, Grand Canyon), State Parks (e.g., Goblin Valley, Coral Pink Sand Dunes, Antelope Island), and other scenic recreation areas (Cottonwood Canyon, Monument Valley, Garden of the Gods, Henry Mountains…). At last count, the lecture presentations include examples using photos from more than 150 places in 30 countries.

Structure & Purpose of Lectures, Readings, Assessments and Assignments:

Two lecture periods are scheduled for each week; attendance is essential. Lectures, readings and assignments complement and reinforce each other. Lectures provide the structure of the course, discussion of key issues, and additional material not found in the textbook. The content of the lectures will be at the discretion of the professor, and will not simply recap the suggested readings. Some notes regarding the content of the lecture will be posted online the WebCT after each lecture; these are not intended to substitute for the lecture itself. Each lecture is dynamic and involves dialogue in the Socratic method; for example, we will engage in various discussions and interpretation exercises and discuss specific case studies. If you miss the lecture, you will miss all the excitement!!

Occasional guest appearances by other faculty members may occasionally be scheduled; students are expected to learn this material as well.

Careful and critical reading of the text is important. Students should aim to finish the suggested readings in advance of the schedule specified in the topical outline. The text examines 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. Concepts presented in the text may be tested, whether they are covered in lecture (or not). Assignments provide practice with methods, concepts and topics introduced in the lectures and readings. The assignments will vary throughout the semester, and will usually be problem sets or essay questions that develop your critical thinking. The essays will be marked according to content AND grammar.

Course Pedagogy (i.e, teaching approach)

This course uses an inquiry-based approach that emphasizes teacher-directed lectures and student-centered learning. What is an inquiry-based approach? Well, to sum up -- it is the basic pedagogy used to promote abstract thinking, and to enhance problem-solving and decision-making skills. Examples of the inquiry-approach in action: Students will be polled at the start of the class in regards to their intentions (in the class, and in life) and primary questions and reasons for taking the class, thereby enabling the instructor to design aspects of the course. During the semester, there are several interpretation-based

assessments so that progress can be judged; for example, assessment exercises (pdf file) asks students to describe what they see in pictures of various landscapes projected in powerpoint. This style of assessment will be repeated throughout the course, and helps the instructor to gauge each student's perspective prior to and after the relevant lectures that will (hopefully) better train the students in landscape interpretations. The professor then reviews the assessment exercise to model an effective approach, and she solicits discussion from the students to engage their perspectives and help develop interpretation skills. A similar assessment exercise is presented at the close of the course after the relevant material was covered, thereby providing a benchmark comparison.

A key aim of this course is to encourage and foster critical thinking. To this end, this classroom is modeled on the tutorial system at the University of Oxford (UK), where the professor formerly worked. Her classroom employs Socratic dialogue, case studies, and presents ongoing research by active colleagues, local examples (e.g. pictures of the Wasatch Fault near Provo), and common experiences and models (e.g. shaking a can of soda = exsolution pressure in a magma chamber inside a volcano). Several exercises in the class will be based on photo-interpretation at various scales (e.g., Landsat images, aerial photography, ground-based snapshots of scenery) and students are encouraged to develop hypotheses regarding the landscape components (e.g., which feature in this landscape came first, and how can you tell?). All the exercises and exams are openly reviewed, critiqued and assessed by the class and the instructor. Student polls for feedback are routinely solicited, and these are held confidential.

Course Organization and Scope

This is a survey course, and covers a lot of ground (as it were) in a single semester. Students interested in obtaining a deeper understanding of the Earth system are encouraged to take additional courses in physical geography. The topical range of the 3200/5200 course is organized into three main parts: 1) Mountains; 2) Rivers; and 3) Deserts. The first 10 lectures will review the primary controls on landscapes, including the ascendant processes affecting relief (e.g., orogenesis or mountain-building). The next 10 lectures focus on the genesis of specific landforms. The last third of the class builds into a capstone field excursion; we will discuss the specifics of the landscape evolution in Utah, which is an excellent natural laboratory for Earth Scientists. The course coverage and readings list is attached.

Group-Led Discussion Sessions

A highlight of the course (according to former students) is the student group-led discussions on aspects of geomorphology that will be held in March. Some of the topics are quite controversial and offer a great platform for debate. See the FAQ (attached and posted on WebCT) for an overview of what is expected; I have posted several related journal papers, popular articles, urls and other resource materials by topic. Everyone in the class can access all the materials on each topic, and everyone is encouraged to read widely. This part of the course has a few goals: 1) expose students to scientific literature and library resources; 2) encourage critical thinking and civic engagement regarding real

world political issues that current science can help address; 3) provide opportunities for collaborative group work; and 4) develop skill sets in regards to presentations, debates, and discussion-moderation.

Walk-About

Weather-dependant, one of our class periods will include a Walk-About that will visit some geomorphic features on campus. We will end up in the Crimson Room in the Student Union, where there are great views (**inversion-dependant, of course) of the former shorelines of the famous Ancient Lake Bonneville.

April Field Trip

To better familiarize you with the local landscape (and to provide a chance to learn about and enjoy the outdoors), this course presents a capstone exercise and a field trip. The trip will be held late in the semester (all day Saturday April 14) and will feature some interesting landforms in beautiful Utah. The precise details will be weather-dependant and further details will be announced in class as the event approaches. Some possibilities for the bus trip include mountain and glacial features (Uinta mountains if the road is open in April; otherwise Fremont River near Fish Lake); the Colorado Plateau-Great Basin junction north of St George; a transect across the Book Cliffs south of Vernal… Field Trip attendance is mandatory. A trip report will be required; details on this will be announced prior to the trip.

Grading and Policies thereof

Grading will be based upon two exams, assignments and problem sets, field trip report, group presentation, and participation; further details are presented later in this document.

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 & Field Trip Exercise 100 points total
4. Participation, group-led discussions & quizzes 100 points**

`Total 400 points **The Professor may decide to (but is not obligated to) drop the lowest score

Exams are typically in a short-answer and essay-question format and will emphasize the material covered since the previous exam, as specified in the timetable outline. Typically the exam will test applied concepts, and may present real-world scenarios that one might face while employed as an environmental consultant, for example.

Academic Conduct

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 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.

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 the proctors. 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 supporting materials during the administration of exams, tests or quizzes. Students in attendance must not write on themselves or on their clothing or personal effects that could be consulted to facilitate their performance. Sunglasses, hats and/or caps may not be worn while any student in this class is taking an exam or quiz. Students may not and must not allow others to copy their work. Students may not listen to iPods or MP3 players or other media during the exam period. Students must come to the exam room with devices silenced – they may not look at or answer pagers, phones, blackberries or other media devices during the exam period, *unless otherwise noted by the instructor <u>in writing</u>.*

Students are advised that 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

Participation assessment will be based on attendance, in-class exercises, homework assignments, and active engagement during the scheduled lecture meetings and discussion sessions.

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

How much work does this class entail?

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.

Other bits

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

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. Please, dear students, *do not ask for* extra credit.

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.

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 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, blackberries, or tape recorders unless they have sufficient accomodation.

Students who distract the lecture 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.

Cameras may be brought to the field trips. Persons wishing to capture video footage should inform the Professor so that appropriate permissions are obtained in advance.

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, via the WebCT online discussion forum, 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 for advice.

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 do poorly or (gasp) fail.

Student Athletes should follow the university rules. They must not advocate their service to effect special treatment, or place the Professor in an awkward situation where she must uphold standards of fairness and consideration to all the other (busy) students.

Prior to the third lecture, students must print out & sign a statement that they have read and understand the policies outlined.

Modifications to this document may be made at the discretion of the instructor. Announcements will be announced in class and, if applicable, shall be posted online to update all students enrolled in the course.

Details regarding the Discussion Sessions

In March, we will begin to have some discussion sessions in the class (see dates below). Each person has been assigned to a topical session, based upon their interests as indicated on the questionnaire that was circulated at the beginning of the course.

If your name is NOT on the list below, please do not panic at this stage – it simply means that I must add you to a group. Apols!! See me on the 27 Feb to sort it out.

- **Her Pants were Floods -- 8th March**
  - J Livingston, G Heward, V Hoover, J Hill

  TOPIC STATEMENT: There are no such things as natural disasters (e.g., floods), and insurance programs waste taxpayer money.

- **Shakin' Bakin (Seismic Utah) – 8th March**
  - P Jensen, A Williams, M Baxter, N Gilian, S Woodall

  TOPIC STATEMENT: No cause to worry – there are minimal (or no) seismic threats in the state of Utah.

- **To Ski (or Not To Ski) Environmentally – 13th March**
  - M Adams, D Donaldson, M Steele, J Wolf

  TOPIC STATEMENT: Ski resorts and snowmobiling are inherently anti-environmental.

- **Free to be wild Uinta (U, oil companies & me) – 13th March**
  - T Young, G Campbell, C Ironroad, G Begin

  TOPIC STATEMENT: The Uinta Mountains are a wilderness that should be protected and preserved from oil & gas development.

- **Water Q n' Q – 15th March**
  - K Robinson, M Hammond, R Mendes, B Sims

  TOPIC STATEMENT: In Utah, the issue is water QUALITY, not Quantity. People should be able to use as much water as they wish to, as they are willing to pay. The State should not mandate limitations on personal use; they should instead impose more regulations on the polluters.

- **Nuclear (what a waste!) Or is it? - 15th March**
  - S Devine, A Fought, A Ellowitz, M Knight

  TOPIC STATEMENT: Nuclear Waste storage in Tooele County is safe by design and poses no threat to communities along the Wasatch Front.

How will the Discussion Sections work?

-- I will post some suggested readings and a little "blurb" on each topic (as I see it) FYI. Check the relevant folders on WebCT; I have arranged them by topic. Read some of the papers that I post, and check out some of the links that I suggest for you. Please do some research on your own as well. You will be required to consult (and list) two additional sources of information beyond those I suggest; this will be asked on the form that will be due the day of your presentation. (See "grading section")

-- The goal is for each group to prepare a short (i.e., 10) minute presentation that focuses on a controversial aspect of the topic, as it might be presented in a debate, public hearing, courtroom, NPR "All Things Considered," Larry King/Bill Maher episode, or Sunday morning news analysis program. Your group will also field questions from the rest of the class for 5 minutes.

-- Your group can decide HOW and WHAT to present, and in what manner. You can use powerpoint, present a handout, pretend to be in a roundtable, or other creative thing. Obviously the content of your presentation is important, but the entertainment value is also valuable. You want your arguments to be snappy, and therefore to engage people's interest. For example, the monetary or safety issues loom large for many people, as so you might want to emphasize that component. Also, think about LOCAL issues and the impact here in UTAH. How does it matter to nearby communities?

-- Meet with your group during the scheduled class period on 20 February. As I mentioned in the class on 2/15, I will not be present during this class lecture (and the room might be locked, actually). However, I want you to use this time period (since I know you are formally scheduled to meet anyhow) to get with your people and plan a way forward.

-- I suggest that you find a place in the student union (or another building) to have a 60 minute chat. You should also exchange information (emails etc) and plan to get together again.

-- At the first meeting, you may wish to brainstorm some ideas about the topic. For example, does anyone have strong opinions about the topic? Think about how you might go about dividing your group up to attack the topic. You could, for example, decide to pick two sides of the issue or the position statement, and arrange your people to research one side.

-- In the groups that have 5 people, you might wish to assign one person as the moderator and design a presentation around that.

-- You may adjust the Topic Statements as you like; I only present something as a place to start. You might wish to focus down the topic a bit more than what is presently

written. Please let me know what your final topic discussion statement in advance of your presentation. We will begin the presentations on the 6th March

What is involved in a good presentation?

-- It should be PLANNED through adequate research.
-- It should be CLEAR, CONCISE and present GOOD (EFFECTIVE) CONTENT.
-- It should not run over the time allotted (NB: I will moderate that).
-- EACH person should have an active role in the group dynamic. If a person is not active within the delivery presentation, they should have "pulled their weight" in the rest of the development.
-- The best discussions are FOCUSSED but COMPLETE in that they involve issues at multiple levels that affect people's interests.
-- For something to be INTERESTING, the impact and RELEVANCE of what is being discussed should be obvious to the audience.
-- A good presenter usually has mastered the subject knowledge, and is able to have fun with the material - this usually comes across to an audience.

How will this exercise be graded?

Prior to each group's presentation, each person will hand in a summary sheet that will ask about the content learned, and some questions regarding their participation in the group. THIS FORM AND ITS CONTENTS WILL BE HELD IN THE STRICTEST CONFIDENCE. This form will be posted online 1 March

Your group will be given a mark based upon a poll of the rest of the class, and each person's mark as individual will reflect in the group will also reflect some input from the CONFIDENTIAL poll as to the effectiveness of their group. This aspect of the grade will only hurt someone who does not participate fully in the process. So… you are encouraged to engage with your group. If you are slacking and do no work to help your group, your team mates can and should let me know (in case I couldn't tell myself), so as to preserve all the truth justice & the American Way.

If your presentation involves (or mentions) any geomorphic aspects, especially those that demonstrate effective learning of geomorphology… then you (and by token the rest of the class) will be given extra brownie points.

What do I do if I am overwhelmed or terrified of speaking in public?

Well, clearly it would be best if you could grow out of this kind of anxiety because it is not healthy. This represents a good opportunity for you to move forward, and you should remember that we are a great and supportive audience. If your anxieties are completely daunting you, speak to your group and try to emphasize your efforts on the preparation end. Also, arrange to see me privately so that we can strategize.

READING LIST: GEOG 3200/5200: Mountains, Rivers, Deserts: Intro to Geomorphology of Earth Processes

Week	Date 2007	Description of Topic	Related Reading (Bloom)
1	T, 9 Jan	Intro to Course; Meet & Greet; POLL #1	Ch 1
	H, 11 Jan	L1 - We Begin, Philosophy & history of geomorphology. Why is this relevant?	Ch 1. Some handouts. Problem set #1
2	T, 16 Jan	L2 - Geomorphic systems: Some Essentials of Theory, concepts and fundamentals of the 'science'	Ch 2, 3
	H, 18 Jan	L3 - Tectonics & Factors of landscape development & change.	Ch 3, 5, posted article. Some in Ch 15
3	T, 23 Jan	L4 – Faults + tectonic geomorphology	[Ditto the above.]
	H, 26 Jan	L5 – Oh No, Volcano!	Ch 6
4	T, 30 Jan	L6 – More plate tectonics, volcanics//hot spots & Afar Case Study	Ch 3, 6
	H, 1 Feb	L7 – Rock weathering basics; POLL #2	Ch 7
5	T, 6 Feb	L8 – Kung Fu weathering, time => rates	Ch 7 again.
	H, 8 Feb	L9 – On Scales, Dating, Time, Stratigraphy	A bit of Ch 4.
6	T, 13 Feb	L10 - Equilibrium.& Landform assessment exercise 1	A bit of Ch 4.
	H, 15 Feb	Class Discussion of Landscape Assessment Exercise & Details of exam presented. Discussion section details	
7	T, 20 Feb	Groups meet to Plan Class Discussions	Assigned readings posted on WebCt by topic group
	H, 22 Feb	** MID-TERM EXAM	
8	T, 27 Feb	Recap of Exam; Dialogues; How to Answer Questions	
	H, 1 Mar	Dissolution//Karst and caveworms that glow	Ch 8 & 9
9	T, 6 Mar	Gravity, erosion. Plus a bit on sediment transport & soils ; It's a Slippery One: HillSlope systems & mass movement landforms; POLL #3	Ch 9, 15
	H, 8 Mar	Fluvial systems & processes. Flyfishing, rafting, and…	Ch 10, 11, 12
10	T, 13 Mar	And the river runs through it. Sediment transport & landforms. Floods, feasts, & famine and.	Same as above.
	H, 15 Mar	Fluvial topics continue like the English monarchy.	More from Ch 10, 11, 12
11	T, 20 Mar	Happy Spring Break – no class!!	
	H, 22 Mar	… more break – no class meeting	
12	T, 27 Mar	Glacial & Peri-processes & landforms	Ch 14, 16 & 17
	H, 29 Mar	Coastal processes & landforms – inland waterways, lakes, shores	Ch 19 & 20
13	T, 3 Apr	Intro Aridlands & Aeolian processes & other x-lent desert landforms; POLL #4	Ch 13, 15, 18
	H, 5 Apr	Local regional – CO Plateau & Rockies	TBD
14	T, 10 Apr	This is the place. Basin & Range. Weather-dependant walkabout around campus	TBD
	H, 12 Apr	Review, Recap; Field Trip Prep	
****	**SAT 14 Apr**	FIELD TRIP Departs 7:45 am, planned return 6 pm	Details TBA
15	T, 17 Apr	AAG Meeting – Details TBA; Online Assessment #2	Details TBA
	H, 19 Apr	AAG Meeting – Details TBA	Details TBA
16	T, 24 Apr	** FINAL EXAM DISCUSSION; field trip recap	Field exercises due.

FYI: Important Dates

Tuition payment due	Monday, January 22
Census deadline	Monday, January 29
Grades Available	Tuesday, May 15
TERM LENGTH CLASSES	
Classes begin	Monday, January 8
Last day to drop (delete) classes	Wednesday, January 17
Last day to register, elect CR/NC, or audit classes	Monday, January 22
Last day to withdraw from classes	Friday, March 2
Last day to reverse CR/NC option	Friday, April 20
Classes end	Wednesday, April 25
Reading day	Thursday, April 26
Final exam period	Fri-Thurs, April 27-May 3
GRADUATION	
Annual University Commencement/Convocation Exercises	Friday, May 4
Graduation Exercises for College of Law	Friday, May 11
Graduation Exercises for School of Medicine	Saturday, May 19
HOLIDAYS	
Martin Luther King Jr. Day	Monday, January 15
Presidents' Day	Monday, February 19
Spring break	Mon.-Sat., March 19-24

Student Handbook Online http://www.acs.utah.edu/sched/handbook/toc.htm

University policies
University Regulations http://www.admin.utah.edu/ppmanual/8/8-10.html
Scholastic Standards Code http://www.sa.utah.edu/advise/ss.shtml
Attendance Policy http://www.acs.utah.edu/sched/handbook/attend.htm

Student Resources
Disabilities Services http://disability.utah.edu/
Tutoring Services http://www.sa.utah.edu/tutoring/
University Counseling Senter http://www.sa.utah.edu/counsel/

Official "Accomodation statement": The University of Utah seeks to provide equal access to its programs, services, and activities for people with disabilities. If you need accommodations, you must register with the Center for Disability Services (162 Olpin Union, tel 581-5020 V/TDD). The CDS office will work with you and the instructors of your class to make arrangements. Please note that reasonable prior notice need to be given in order to secure any accommodation. With prior notice, all this written information is available in another format.

Besides Your Text Book -- Other Geographical Resources of potential interest:

Chorley, R.J. (1962) Geomorphology and general systems theory. *USGS Professional Paper*, 500B, B1-B10.

Church, M. (1980). Records of recent geomorphological events. In: R. A. Cullingford, D. A. Davidson & J. Lewin (eds.), *Timescales in Geomorphology*. John Wiley & Sons Ltd. pp. 13-29.

Coates, D.R. & Vitek. J.D. (1980). *Thresholds in Geomorphology*. Allen & Unwin, 498 pp.

Cooke, R.U. & Doornkamp, J.C. (1990a). Aeolian Processes and Hazards. In: *Geomorphology in Environmental Management*, Clarendon Press, Oxford. pp. 239-268.

Cooke, R. U. & Doornkamp, J.C. (1990b). *Geomorphology in Environmental Management*. Clarendon Press, Oxford.

Kellerhals, R., Church, M. & Bray, D.I. (1975). Classification and analysis of river processes. *Journal of the Hydraulics Division*, 102(HY7), 813-828.

Lancaster, N. (1995). *The geomorphology of desert dunes*. Routledge, New York, 290p.

Lewis, D. W. & McConchie, D. (1994). Texture of detrital sediments. Ch. 5 In: *Practical Sedimentology*, 114-126.

Masselink, G. & Short, A.D. (1993). The effect of tide range on beach morphodynamics and morphology: a conceptual model, *Journal of Coastal Research*, 9, 785-800.

Nanson, G. C. & Croke, J. C. (1992). A genetic classification of floodplains. *Geomorphology*, 4, 459-486.

Schumm, S. A. & Lichty, R. W. (1965). Time, space and causality in geomorphology. *American Journal of Science*, 263, 110-119.

Short, A.D. (1991). Meso-macro tidal beach morphdynamics: an overview, *Journal Coastal Research*, 7, 417-436.

Strahler, A. N. (1957). Quantitative analysis of watershed geomorphology. *Transactions of the American Geophysical Union* 38 (6), 913-920

Wolman, M. G. & Miller, J. P. (1960). Magnitude and frequency of forces in geomorphic processes. *Journal of Geology*, 68, 54-74.