University of Nevada, Department of Geography
Geography 431-631: Landforms **Spring 2011**
Dr Peter Wigand
Room 321 Mackay Science Hall **Thursday** **11:00 am – 12.15 pm**

Course Description

This course will deal heavily with the geomophological (landscape shaping) processes at work on the surface of the earth. Within the northern Great Basin we have examples of most of the major landforms present on the earth's surface. We will discuss the many diverse landforms that are found in a variety of topographic and climatic environments. We will discuss their origins with respect to surficial processes, i.e., weathering, erosion, and deposition. This discussion will naturally lead to how they are described and classified, and their distribution across the landscape. Although we will primarily discuss the geomorphic processes that operate in the environment, we will show how one landform usually flow from one into another across the landscape. We will discuss their dynamics from birth, through maturity , through old age. Changing erosional and depositional processes, give rise to, and shape these landforms, and lead to their final demise when the dominance of one processes gives way to another. Finally we will discuss their relationship to environmental and resource management problems in the United States. We will indicate how landforms provide evidence of surficial processes that can effect everything from resource management and utilization, to sighting of man-made structures, and eventually what may happen to all of these when changes in global circulation, precipitation and temperature resulting from global warming, effect change upon the surficial processes that characterize various regions around the world.

This will be accomplished using a combination of introductory lectures on Thursday of every week, followed by an occasional voluntary field trip to a nearby location to view examples of the landforms that have been discussed to that point.

Although the first month or so of this course may coincide with bad weather, we will try to work around this and conduct an occasional field trip.

The field trips will serve both as an introduction to the landforms found in the Intermountain West, but also the landforms encountered should provide examples of when knowledge of these landforms and the geomorphic processes involved could have assisted in the sighting of structures, infrastructure, etc.

Sometime after the middle of the semester there will be a voluntary (though highly recommended) three or four-day field trip (either just before or just after Spring break…the exact timing to be worked out in class with the students). The four-day field trip will provide an introduction to the geomorphic features found in the valleys on the east slope of the Sierra Nevada Mountains, and the northern Mojave Desert down to the Granite and Providence ranges south of I-15 at Baker, CA. During the trip we will visit lacustrine, and fluvial landforms around Mono Lake and glacial features lying just east of Mono Lake. We will examine stratigraphic columns that contain glacial and volcanic deposits and examine other lacustrine, and fluvial deposits as far south as Fossil Falls. From there we will go to Red Rock Canyon State Park to examine fluvial and lacustrine deposits dating from the lower to upper Miocene. Continuing to Emigrant pass near

Tecopa Hot Springs (via Death Valley), we will examine coastal deposits and karstic landforms. The limestones reflect the transition from a warm shallow sea dating from the upper Pre Cambrian through a deep ocean basin dating to the upper Cambrian. From there we will continue south passing the Dumont Dunes complex, and on to the Granite Range where we will stop to view the huge Kelso Dune complex found there. On the final day we will examine additional karstic landforms and view the caves at Mitchell Caverns State Park. In addition to the landforms we will see along the route, there will be an opportunity to observe the geology of the Basin and Range Province, and the great variety that characterizes the modern vegetation and climate. I will, when useful, address what is known of the vegetation history, paleoclimatology, glacial record, recent and past volcanism, and late Quaternary lake fluctuations.

Schedule
Lectures will be held every Thursday from 11:00 am to 12:15 pm in room 321 on the third floor (the floor just above the one where the Geography Department office is located) of Mackay Science Hall (southeast corner of the Quad).

Field trips will be announced a week ahead (so we can use the 10-day forecast to determine what the weather may be for a Saturday field trip). We will meet in the parking are south of the Quad around 8 am and will usually be back before 2 pm. We will meet at 7:00 am on the first day of the extended field trip in the same area where we meet for the half-day field trips.

Office Hours
By appointment. Phone: 775-677-2306 (you can leave a message there); Email: pewigand@gmail.com).

Readings
There is no text, but journal articles will be assigned throughout the semester. The articles will be online on WebCT in ".pdf" format for all to access.

Optional field notebook
If you come along on the field trips it might be very useful for each of you to have a rugged field notebook in which observations can be recorded. Although anything appearing on a test will be presented in the lectures, I am sure that your understanding of what has been presented in class will be clarified by what we see in the field. That is why additional notes taken in the field might be very helpful when studying for a test.

In order to preserve this record, you should probably use a pen with indelible, black ink. You might also have a roll of scotch tape handy for collecting small plant samples and taping them into your notebook.

Clothing and equipment on the field trips
Although we will try to keep an eye on the weather reports to avoid really nasty days, we may still encounter some bad weather - dress appropriately. That is:

- sturdy, water-proof walking shoes (preferably light boots)
- work type clothing (layer your clothing so that you can shed or add layers if you need to), and that you can get dirty
- a light day pack to carry your gear

- rain gear
- sun hat, Kufia, or whatever you wish
- bring sunscreen and insect repellent
- bring at least 1 quart of water on each trip (you will need it)
- finally a snack if you need a sugar fix late in the day

Optional equipment includes:

- binoculars
- camera
- flashlight (just in case, or if we encounter a cave) You will need one on the extended field trip
- field guides
- gloves, and/or scarf

Participation

Participation in the field trips, though optional, is highly recommended. I always find that if I can see something real and touch it in the field, I always understand it better. Just coming to lectures to learn about landforms, is sort of like having seven vision impaired people describe an elephant from what they have learned from their perspective.

Three to Four-day field trip

This field trip is not required, but If you miss this trip you will actually lose out on having what you have learned in class re-enforced though actually seeing it. Also you will miss out on some of the greatest field cooking found at UNR. The department will supply transportation and cooking equipment. Students are required to supply their own tents, sleeping bags, and eating utensils (plates, bowls, cups, and silverware etc will be supplied so that we can dispose of them and not have to spend time in the evening washing dishes…other than a few pots and pans). Food costs and camping fees will be shared among all of us. I will do the cooking although I may occasionally draft a few students to help out here and there. Cleaning chores will be shared among all students. Please bring up any questions (diet restrictions, etc.) that you may have regarding the field trip during the class before the trip.

Research papers

One project report is required. You can select the topic and get it approved by me. Try to use an actual journal article format (Quaternary Research, or Journal of Arid Environments, for example).

Your report should include:

- a statement of the research problem citing the appropriate literature;
- if you are doing something that may relate to your own research, you should include
  - a description of the methods;
  - a presentation of the results;
  - a discussion that includes your thoughts on what the results suggest regarding problem you set out to answer.
  - And a brief, concise set of conclusions.

- If you are simply doing a research paper, you should include a clear discussion, and conclusion section.

The reports will be graded on the clarity of writing, the quality of discussion and interpretation of the data. When doing research, there is often no definitive answer. What is important is that you clearly state your problem, (and if you are presenting your own research, adequately present your methods and results), and make a convincing argument regarding your interpretation of these results.

Oral presentation
Each student will be required to give an oral Powerpoint®™ presentation at the last class session. This report is intended to inform others in the class on one of your specific research topic. It will be 5-10 minutes in length. This will be given during our final exam period.

Midterm
A one-hour (or less) test on the material presented in lecture. This will be sometime during the last quarter of the semester.

Final
The project presentations will be given during this period.

Grading
Your final course grade will be based on the combined scores of participation, reports, and the two tests. In this course, a grading scale with pluses and minuses will be used. Your grade will be based on the percentage of the total possible points that you achieve.

Components of the Course Grade:	Points (%)
Research Paper	200 (36%)
Oral presentation	100 (18%)
Midterm exam	150 (27%)
Attendance/Participation	100 (18%)
	550 pts