GEOLOGY 151
GEOMORPHOLOGY
Fall 2003

Instructor: Paul Bierman, Geology Department, Room 203B, 656-4411
(OFFICE HOURS: TUES, 11:30-12:30 and WED 11:00-12:00)

GTF: Luke Reusser, 6-3398
(OFFICE HOURS: MON 11:00-12:00 and TUES 11:30-12:30)

CLASS MEETS IN ROOM 200 and in the PERKINS COMPUTER LAB

email: pbierman@zoo.uvm.edu (absolute best way to find me since I'm teaching two courses and doing lots of child care for our little ones!) Luke is lreusser@zoo.uvm.edu

***Class Web Page*:** http://geology.uvm.edu/morphwww/classes/morph/

Office hours: Luke and I will announce our office hours after the semester begins. If you need to chat, feel free to stay after class, or better yet email or call us for an appointment. I often work at home writing in the mornings.

Landscapes surround us all and often seem to be static, unchanging backdrops for our day-to-day activities. Yet, if we begin to look closely, landscapes are anything but static features; they are continually evolving at a variety of time and length scales.

So, what then is Geomorphology? Narrowly, it is the study of landscapes, their forms and the history of their development. Broadly, it is what I hope to show you this fall. I'll argue that Geomorphology is one of the most synthetic of geologic sub-disciplines. Properly done it must consider any number of processes and Earth characteristics: structure, lithology, tectonism, volcanism, weathering, hydrology. My goal for you as students was best expressed by one of my colleagues, "After this class you'll never look at a landscape the same way again. You'll always stop and wonder how and why the land looks the way it does..."

We will use a variety of tools and approaches to learn more about Earth's surface. Monday classes will be devoted to activities and reduction of data collected the week before. Some Mondays, I'll illustrate topics with slides and Powerpoint presentations. Wednesday, we will take fieldtrips and gather data. For those of you whose Earth Science may be a bit rusty, any of the introductory Geology texts held by the library should serve you well as a source of information.

Expectations and Responsibilities for the course:

You will be responsible for completing a variety of assignments over the course of the semester. There will be occasional readings in John McPhee's book, *The Control of Nature*, readings that we will discuss in class. There will be journal papers to read as well as book chapters. There will be assignments related to the fieldtrips and each of you will be part of a group research project. There will be in class exercises to do. I expect that all readings will be done prior to coming to class – without the readings, you'll find yourself quite lost in our discussions.

Group Research Projects:

The research project is an integral part of this class. It will be done in groups of two and will require the collection of data, and the analysis and interpretation of the your data in the context of the published work of others. The purpose of this project is many-fold including: an introduction to the geologic literature, experience in data collection and interpretation, honing your writing and presentation skills, and practice in collaboration and hypothesis testing. All parts of the research project should be submitted using Adobe Acrobat as PDF files (this allows full cross platform readability). We'll show you how to make a PDF the first day of class and help you as needed through the semester. The final presentations will be done in PowerPoint. Ask us if you need help.

Grading:

Grades will be calculated as follows. Assignments are due promptly at the beginning of class. Late assignments are very strongly discouraged and will lose one letter grade for each day they are late unless arrangements have been made with me or Luke prior to the due date of the assignment. That means if an assignment comes in after class has started or within the next 24 hours, it will lose a letter grade. After 24 hours, it will lose a second letter grade. After 48 hours a third and so on. We will get all assignments back to you within a week of submission. There will be no exams during the semester and your performance will be evaluated as follows:

fieldtrip reports and exercises (drop lowest)	40%
project	40%
reading sheets	10%
participation, attendance, and effort	10%

Luke will be grading your laboratory assignments and reading sheets. I will grade your projects. We will grade your project presentations together.

Readings:

There are three required texts for the course; all will be available at the bookstore.

McPhee, J., *The Control of Nature*
Van Rose and Mercier, *Volcanoes*
Leopold, *Water, Rivers and Creeks*

There is no text book for the course this year due to suggestions from the last 10 years of students. Rather, I have compiled a group of readings that you will need to download from electronic reserve in the library. For each reading, there is a sheet of questions that you should download from the class web site and answer as you read. The questions are designed to focus your reading and thinking and provide a vehicle for in-class discussion of material.

For those who prefer the written word, I will leave copies of Bloom and Ritter (general geomorph texts) on the shelves outside my office. These books should NOT leave the building and should return to my shelf when you are done with them.

Field Trips:

Field trips make up an integral part of this course. All trips will include some amount of walking and sturdy shoes are a necessity. Of course, since it will be fall in Vermont, the weather will be cool and clear but make sure you are prepared for cold, wet conditions. Unless the weather is

extreme enough to present a hazard, we will go out in the, rain, fog, snow, wind. For each trip you MUST have:

Waterproof raingear
Sturdy footwear
a sweater or fleece for warmth
a waterproof field notebook and pencil
perhaps a small knapsack to carry all this.
Money for bakery and store stops

Please get an email account ASAP if you don't have one and email me a message at pbierman@zoo.uvm.edu so I can compile a class list. You will also be receiving important class information via email. Most of your assignments will be due electronically so email is a must. Reading sheets can be downloaded from the class web site and should be sent to Luke by email before class (if they arrive late and are time stamped after class has started, they will lose a grade).

Attendance in this course is required and will be graded. If you know in advance that you will miss a class, please let me know. Also, I will abide by and hold you all to the Arts and Sciences guidelines for class room behavior. Respect and courtesy are top priorities. Get ready for a fun semester!

Course Goals

We have structured both the classroom and field portions of this course to give you the best chance of achieving the following specific goals by the end of the class:

- Understand and be able to interpret the landscape of Vermont in which you live in terms of both geologic history and surface process,
- Recognize and explain geologic processes and environments very different from Vermont including deserts and volcanic terrains,
- Improve your ability to read, understand, and discuss scientific literature relevant to the topics and places we study,
- Improve your ability to do, document, and present independent and original scientific research,
- Experience the power of peer review and revision in the production of high quality scientific reports and presentations,
- Learn and be able to explain important topics and tools of Geomorphology as a field of study,
- Master data collection techniques with wide application including surveying and GPS,
- Increase you ability and comfort with quantitative calculations,
- Improve your ability to collect quantitative and qualitative field data in adverse conditions,
- Recognize the value of simple models to represent physical systems and apply such models to data we collect or situations we observe,
- Improve your ability to reduce field data and write meaningful summaries of your observations,
- Begin to understand linkages between processes active at Earth's surface with processes in the deep Earth.