GEOMORPHOLOGY
Southern Illinois University, Carbondale
Geology 474
Spring 2016

Class Times:  
MW  3:00 - 3:50  Lectures  Park. 110
R    12:00 - 2:50  Lab  Park. 110

Instructor:  
Laura O’Connell
Office: Parkinson 301-E (end of that hallway on the right)
Email: laura.oconnell@siu.edu
Office Hours:  Mon. 4-5 and Wed. 4-5 
    or by appt. (please email for appointments in advance)

TA:  
Jason Williams  Email: jasbfree@siu.edu

Text:  
(used copies of older versions are fine).  Selected other readings will also be assigned.

Required Materials: field notebook only used for this class (preferably Rite in the Rain waterproof notebook—order it now, if you do not have one!), proper outdoor apparel (hiking boots, rain gear, etc.), hand lens, calculator (other than on your cell phone-please no phones out during labs or in the field)

Grading:  
Mid-term Exam .... 15%
Quizzes ......... 10%
Labs & Exercises ...... 35%
Student Seminars. ...... 25%
Final Exam ......... 15%

Exams:  
Mid-term: week before spring break
Final: 2:45-4:45 pm Friday May 13

Quizzes: Students are expected to complete assigned readings by the dates announced throughout the class and to take concise, well organized notes. Quizzes will be closed-book, but open-note. Students may look at any hand-written notes (pen and pencil) they have taken in lectures and seminars or while reading (so be advised not to only write notes on printed copies of readings or on your computers). Absolutely no make-up quizzes will be given, but the lowest quiz grade will be dropped in lieu of one excused absence.

Field Trips: Field trips are a major component of this class. Several trips will be taken during the scheduled lab time on Thursday afternoons. Some of these trips will run a bit longer and I will try to warn you about these in advance. Please let me know if you have a regular conflict (like a job or another class) that would require you to be back on campus before 5pm on Thursdays. Please bring field notebooks, pencils, erasers, hand lenses, rulers/scale bars, warm
clothes/layers, sunscreen/hats, rain gear, hiking boots, backpacks to keep gear organized, lunch/snacks, and water.

**Student Seminars:** Student seminar presentations will take place throughout this course. Each student will present a summary and lead a discussion about a particular topic or case study area related to the course. These topics will compliment and go greater into depth about topics covered in lectures and labs. The topics will be discussed during the first few weeks of class and students will choose their topics and the timings of their presentations accordingly. A grading rubric will be made available to aid you in preparing your presentation and discussion and to give you feedback on your work. Part of your seminar grade will be based on how well you prepare for and participate during other students’ seminar discussions as well as your own.

**Course Goals:**
1. Students will develop skills in 4-dimensional thinking, with the fourth dimension being geological time.

2. Students will learn how to evaluate a landscape (and its landforms) and the processes that have affected it. Hypotheses and inferences on these processes will be made using a variety of data sources: (1) observations and data collected in the field, (2) observations made from use of aerial and satellite imagery, (3) topographic maps paired with geological maps, and (4) data about underlying rock types, geological histories, climate, etc. of the region.

3. Students should be able to predict general areas that would be poor or good choices for human development based on knowledge of geomorphic processes and how they impact people.

4. Students should gain confidence in public speaking and open-ended discussions, as well as increase field collaboration skills.

**Course layout:**
Lectures and in-class discussions will focus on the landforms and processes of building up and breaking down. Case studies (examples of these landforms and processes) will be analyzed in detail to provide a background for comparison with other landscapes you will encounter in the lab, on field trips, and throughout your life.

Labs will incorporate analysis of datasets, aerial and satellite imagery, maps, and data collection techniques. We will take these techniques ‘into the wild’ of southern Illinois several times during lab periods to test them out in real life.
## Course Schedule

(order of labs and topics subject to change)

<table>
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<th>Week of</th>
<th>Topics</th>
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| Jan. 20 | The all-encompassing “Process Geomorphology”  
Lab: Physiographic provinces of North America |
| Jan. 25 | Building up: tectonics, orogenesis, isostacy and Physiographic provinces of North America review  
Lab: Isostacy |
| Feb. 1 | Landforms associated with tectonics  
Lab: Topographic maps |
| Feb. 8 | Ancient tectonics; volcanic processes and landforms  
Lab: Topographic maps and orienteering |
| Feb. 15 | Breaking down: Weathering and climate  
Lab: Using aerial and satellite imagery to study Earth |
| Feb. 22 | Chemical weathering, karst, and terrestrial carbonates  
Lab: Weathering of diverse rock types |
| Feb. 29 | Mass wasting and slopes  
Lab: Field sites menagerie |
| Mar. 7 | More on weathering and Midterm review  
Lab: Midterm Exam |
| Mar. 14 | Spring Break |
| Mar. 21 | Fluvial landforms, channel patterns, and equilibrium  
Lab: Fluvial processes and landforms (using imagery) |
| Mar. 28 | Fluvial processes and deltas  
Lab: Field trip to mass wasting site |
| Apr. 4 | Coastal and marine processes and landforms  
Lab: Field trip- The Mighty Mississippi |
| Apr. 11 | Coastal and marine processes and landforms  
Lab: Sea level indicators |
| Apr. 18 | Eolian processes and landforms; start glacial processes  
Lab: Field trip to modern features and Devil’s Backbone |
| Apr. 25 | Glacial processes and landforms  
Lab: Glacial processes and change through time |
| May 2 | Geomorphic processes through time and space and Final Exam Review  
Lab: Field trip to the Cache River region or the streets of Giant City |
| May 13 | Final Exam from 2:45-4:45 pm May 13 |