

Geology 202: Geomorphology
Syllabus— Fall, 2006

Lecture: T, Th 10:55-12:40 (Olin 307)	Instructor: Dr. Donald T. Rodbell
Lab: Thursdays 1:55-4:45 (in field or Olin 307)	Office: Olin 314 email: rodbelld@union.edu Phone: 388-6034 (w); 377-8262 (h)

course web page: <http://www1.union.edu/%7Erodbelld/courses/geomorph/geomorph.htm>

reading: 1- *Process Geomorphology 4th Edition* by Ritter, Kochel, and Miller 2002, W. C. Brown
2- six published articles to be handed out on the first day of class.

PART I. RIVERS, HILL SLOPES, COASTS AND WIND

Week	Date	Lecture Topic(s)	Reading
1	Sept. 7	<ul style="list-style-type: none"> o course introduction o slope hydrology o drainage basins 	Chapter 1; 5 (p. 135-150)
1	<i>Lab 1</i>	<i>clast fabric—in field</i>	
2	Sept. 12	<ul style="list-style-type: none"> o storm hydrographs o basin hydrology o flood prediction 	Chapter 5 (p. 154-173)
2	Sept. 14	<ul style="list-style-type: none"> o channel initiation o sediment yield and basin denudation 	Chapter 5 (p. 173-188)
2	<i>Lab 2</i>	<i>Fluvial erosion in Little Falls, NY—in field</i>	
3	Sept. 19	<p style="text-align: center;">Lab (#1) Figures and Tables Due</p> <ul style="list-style-type: none"> o sediment transport and deposition o Discussion of Bull article (GSAB 90 453+) <p style="text-align: center;">SP2</p>	Chapter 6 (p. 195-214)
3	Sept. 21	<p style="text-align: center;">Lab (#2) Figures and Tables Due</p> <ul style="list-style-type: none"> o channel patterns and depositional sequences 	Chapter 6 (p. 214-225)
3	<i>Lab 3</i>	<i>fluvial terraces—Plotterkill: climate change or base level? (report combined with lab 4) —in field</i>	
4	Sept. 26	<p style="text-align: center;">Lab (#1) Report Due—SP2</p> <ul style="list-style-type: none"> o stream mechanics o equilibrium, base level, and fluvial terraces o floodplains 	Chapter 6 (p. 190-195) Chapter 6 (p. 225-231) Chapter 7 (p. 233-248)
4	Sept. 28	<ul style="list-style-type: none"> o the piedmont: pediments and alluvial fans 	Chapter 7 (p. 248-264)
4	<i>Lab 4</i>	<i>fluvial terraces and the Scotia delta (report combined with lab 3)— in field</i>	<i>Be sure to read all of Chapter 2!</i>
5	Oct. 3	<p style="text-align: center;">LAB (#2) Report Due—SPI</p> <ul style="list-style-type: none"> o physical weathering processes o predicting hillslope stability/instability o Discussion of Merritts et al. article (JGR 99 14031+) SP3 	Chapter 4 (p. 80-92) Chapter 4 (p. 92-102)
5	Oct. 5	<p style="text-align: center;">Lab (#3/4) Figures and Tables Due</p> <ul style="list-style-type: none"> o infinite slope model o mass movements and hillslope profiles 	Chapter 4 (p. 102-133)
5	<i>Lab 5</i>	<i>stream mechanics—in field</i>	
6	Oct. 10	eolian processes	Chapter 8 (p. 271-282)
6	Oct. 12	<p style="text-align: center;">midterm exam</p> <p style="text-align: center;">(all above chapters and labs)</p> <p>eolian erosional and depositional and landforms</p>	Chapter 8 (p. 282-295)
6	<i>Lab 6</i>	<i>fluvial incision and slope stability—the case of the Plotterkill preserve— in field</i>	

PART II. SOILS, ICE, KARST, AND CLIMATE

Week	Date	Lecture Topic(s)	Reading
7	Oct. 17	<p>Lab (#3/4) Report Due—SP2</p> <ul style="list-style-type: none"> ○ chemical weathering ○ soil properties 	Chapter 3 (p. 42-65)
7	Oct. 19	<p>Lab (#5) Figures and Tables Due</p> <ul style="list-style-type: none"> ○ factors of soils formation ○ application of soils to glacial geology and neotectonics 	Chapter 3 (65-78)
7	Lab 7	<i>sand dunes in the Capital District—age, origin, and paleoclimatic significance— in field</i>	
8	Oct. 24	<p>Lab (#5) Report Due—SP2</p> <ul style="list-style-type: none"> ○ aerial photographs and topographic maps 	
8	Oct. 26	<p>Lab (#6) Figures and Tables Due</p> <ul style="list-style-type: none"> ○ karst processes ○ Discussion of Sridhar <i>et al</i> article (<i>Science</i> 313 345+) SP2 	Chapter 12 (p. 407-413)
8	Lab 8	<i>soils— field description (report combined with Lab 9)— in field</i>	
9	Oct. 31	<p>Lab (#6) Report Due—SP2</p> <ul style="list-style-type: none"> ○ karst hydrology 	Chapter 12 (p. 413-418)
9	Nov. 2	<p>Lab (#7) Figures and Tables Due</p> <ul style="list-style-type: none"> ○ karst landforms ○ Discussion of Singer <i>et al</i> article (<i>QI</i> 34-36 243+) SP2 	Chapter 12 (p. 418-432)
9	Lab 9	<i>soils—lab analyses (report combined with Lab 8) — indoors</i>	
10	Nov. 7	<p>Lab (#7) Report Due—SP3</p> <ul style="list-style-type: none"> ○ periglacial processes 	Chapter 11 (p. 359-377)
10	Nov. 9	<p>Lab (#8/9) Figures and Tables Due</p> <ul style="list-style-type: none"> ○ periglacial landforms ○ Discussion of Frumkin article (<i>QR</i> 46 99+) SP2 	Chapter 11 (p. 377-405)
10	Lab 10	<i>karst—bedrock control on cave orientation—in field</i>	
10	Nov. 14	<p>Lab (#8/9) Report Due—SP2</p> <ul style="list-style-type: none"> ○ climatic controls on rates of geomorphic change ○ Discussion of Marsh (<i>QR</i> 49 149+) SP2 ○ course evaluations 	Chapter 2 (p. 34-41)

Grades: Grades will be based according to the following: midterm exam (20%), labs (45%), presentations (10%), and comprehensive final exam (25%).

Labs: Labs are scheduled for Thursdays from 1:55-4:45 PM. I have scheduled 8 weekly labs to be outdoors “in the field”. For all field trips you will need a small field notebook, a sharp pencil, sturdy boots, and clothes that will keep you dry and warm. Outdoor labs that need to be postponed due to the weather will be done so via email and on the web page (check your mail frequently!), and will be replaced by one of the indoor labs. Lab reports will be graded for content and writing. Consult the Lab Report Guidelines carefully when writing your reports.

Presentations: The ability to present a scientific “paper” orally is a skill that you will all need regardless of your eventual field of work. Unfortunately, most of us are not naturally good speakers and the only way to learn to present anything orally in a clear and effective manner is by *just do(ing) it!* To give you an opportunity to hone your speaking skills, we will be presenting our own lab findings to the class on the days when lab reports are due. Also, you will each review one published paper to evaluate how the pros do it! The **SP** denoted above refers to student presentations and the number following the **SP** is the number of students who will speak on that day. These **SP** sessions will also afford us the opportunity to discuss the lab results about which you have just written. Speakers may use Powerpoint and/or overheads with photographs taken from the field trip to illustrate their oral presentations. You will be graded on content and delivery *as evaluated, in part, by your fellow students*. Speakers will have a maximum of 7 minutes to present their lab reports and 15 minutes to review a published paper. Consult the Oral Report Guidelines carefully as you prepare your oral presentation.