

APPLIED ENVIRONMENTAL GEOMORPHOLOGY

Dr. Kochel

GEOL 310

Spring 2008

TENTATIVE SYLLABUS

<http://www.facstaff.bucknell.edu/kochel/>

Week	Topic (<i>Readings TBA – in box Room 102</i>)	Lab
Jan. 14	Introduction, Perspectives on Applied Geomorph. Course Logistics and Potential Projects Applied Geomorphic Mapping	No Lab - time off for long labs
Jan. 21	Process linkages in Earth surface systems - learning from some case examples in Illinois - Little Grassy Cr., Sexton Cr., Cache River	Grays Run Mapping 1 – long trip -- weather permitting PROJECT #1 due Feb. 7
Jan. 28	Climate Change and Geomorphic Response -- San Diego CA; Madison R. MT, AK photos Jan 31 st - ATTEND PANEL – FOCUS the NATION - 8:00 am – Harvey Powers Theater (Coleman) “Obstacles to Change”	Route 15 Landslide – long trip
Feb. 4	Landslides - general - Team #1	Musser Dam deconstruction -- Middle Creek (Gerritts thesis) PROJECT #2 due March 27
Feb. 11	Stream Channelization -- Channel alterations – general -- Impact of Dams - Team #2	Musser Dam – Middle Creek Field survey continued
Feb. 18	Stream Restoration - Natural Channel Design and Issues	Musser Dam project - 15 yr post survey
Feb. 25	Stream restoration continued	S Stream Restoration Site Evaluations Muncy Cr (2 sites), Fishing Cr, White Deer Cr, Big Bear (Loyalsock)
Mar. 3	Land Use Impact on River Systems – Team #1 Drury Creek, IL Wolf Creek, IL Buffalo Cr. PA Tully, Forsburg theses – PA and MA	Land Use Impacts on Streams -- Penns Creek or similar
Mar. 10	SPRING BREAK	No Lab
Mar. 17	Floods – Impacts, Spatial and Temporal Variability -- Flood Control	Musser Dam project
Mar. 24	Paleoflood Hydrology	Susquehanna Gorge (full long day) Paleofloods (Thurs or Sat-Mar 29) - kayak access to bedrock islands PROJECT #3 Project #5 due April 10
Mar. 31	Paleoflood Hydrology -- HEC-RAS and flow modeling	HEC RAS Flow Modeling (inside) (or weather makeup field lab – TBA)

Apr. 7	Debris Flows and Alluvial Fan Mapping and Hazards Coastal Hazards and Storms	4-day Trip to Outer Banks, NC and Blue Ridge, VA (Apr. 3-6) PROJECT #4 Project due April 24
Apr. 14	Coastal Trip Follow-up and Analysis Geomorphic Dating Techniques -- landforms, landform activity, events	Project Research Time (inside) (or weather makeup field lab – TBA)
Apr. 21	Tectonic Geomorphology - Team #2	PROJECTS POSTER SESSION
Apr. 28	Watershed Ethics and Sustainability - discussion	

Note -- long trips will leave early and/or get back late or will be rescheduled for weekends

Discussion Seminars (led by class teams)

Team Responsibilities for Class-led Seminars:

- 1) Discussion Questions Due: One class prior to seminar
 - 6-8 questions to stimulate discussion (e-mail to me)
- 2) Readings for Seminar Due: Two classes prior to the seminar
 - 2-3 research papers (journal articles or book chapters)
 - research on your own first, **then discuss your choice of potential articles with me first**
- 3) Leading Seminar discussion

Tentative Schedule of Class-led Seminars

(each team will lead two)

Date	Leaders	Seminar Discussion Topic
Feb. 7 1 class session	Team #1	Landslides
Feb. 14 1 class session	Team #2	Impact of Dams (construction/deconstruction)
Mar 4, 6 2 class sessions	Team #1	Impact of Land Use on Fluvial Systems
Apr. 22, 24 2 class sessions	Team #2	Tectonic Geomorphology - applications to seismic hazards

Important Course Information:

***** all labs are tentative due to weather issues in Spring – stay tuned for adjustments *****

Grading: Most of your grade in this class will come from your participation in field trips, project research, and project reports and presentation. Significant will also be your participation and leadership in discussing the assigned literature in class.

Participation/Discussion and Seminars = 25%

Research Projects and Poster Presentations (6) = 60%

Misc. Labs, Field Trips and smaller assignments = 15%

Readings: There is no text for this course. Thus, we will rely heavily upon reading from the scientific literature. Reading lists will be distributed and/or posted frequently for each of the topics discussed in class, as well as for the class-led seminars. Readings will be available in the Seminar Room in a bin labeled GEOL 310. **YOU ARE EXPECTED TO READ THESE ARTICLES CAREFULLY AND TAKE NOTES AS THESE ARTICLES WILL SERVE AS YOUR TEXT FOR THE COURSE.**

Potential Class Research Projects:

- the alternative to the series of short projects is one in-depth research project, culminating in a poster for the GSA (national or regional – this may be the Musser Dam project)

1. Land-use impact on fluvial systems – Grays Run Model
 - a. Apply to other watersheds such as: Penns Creek, Loyalsock, Muncy, White Deer
 - b. Mainstream Susquehanna River – West Branch
2. Musser Dam Deconstruction – Impact on Middle Creek (Gerritts plus 15 yrs)
3. Impact of Dams – Roaring Creek
4. Impact of Coal Mining – Mahanoy Creek near Lavelle?
5. Montandon Wetlands Reclamation Design
6. Stream Restoration
 - a. Evaluation of several sites – detailed geomorphic analysis
 - i. Upper Muncy – new, Fishing Creek, Mid Muncy – Gavitt, Bear, White Deer, Rapidan, etc.
 - b. Possible plans for Bull Run
 - c. Work with BCWA or LPCWA in planning restoration/guidelines
7. Paleoflood Reconstruction
 - a. Lower Gorge – HW Mark survey, Erratics Survey, Coring SWD and Ponds
 - i. Run HEC-RAS if Ben can help (have old maps for x-sections)
 - ii. GIS - Ben
 - b. Penns Creek floods
 - c. Buffalo Creek floods
 - d. West Branch Susquehanna floods
8. Hatteras Fan Project Extension