

Geog 4/527: Fluvial Geomorphology

Spring 2018, Prof. Patricia McDowell
Tues. & Thurs., 2:00-3:20pm, 201 Condon

Course content and goals: Four themes: a) processes that shape river channels; b) ecological interactions in the channel and riparian zone; c) how channels and floodplains evolve through time; and d) human impacts on river channels. Prerequisites: MATH 111 and 112 or higher, plus one of the following: GEOG 322, GEOG 425, or GEOL 334.

Learning objectives: 1) Understand and be able to apply basic concepts of river behavior such as channel-flow interactions, sediment transport, channel morphology, channel-ecological interactions, etc.; 2) Analyze river hydrology, sediment transport and morphology using spreadsheets and simple models; 3) Understand and be able to apply basic field skills in fluvial geomorphology; 4) Effectively use relevant web pages and geospatial tools to collect information and solve problems about rivers; 5) Demonstrate effective written, verbal and graphic communication skills.

Course requirements: Readings from the textbook and outside readings; two tests based on material presented in readings, lectures and discussions, quizzes/short assessments of learning, and lab assignments. Attend one field trip; other field trip is strongly encouraged. *Graduate students are required to complete an extra lab assignment and to complete additional readings and discussions of scientific literature,*

Grading: Test 1 20%, Test 2 16%, quizzes 16%, exercises 48% (6 labs @ 8 pts each). For undergrads, your lowest lab score will be dropped. For grad students, all 7 labs will count and your score is calculated on that basis.

Textbook: R. Charlton, *Fundamentals of Fluvial Geomorphology*, (Routledge); plus additional readings (posted on Blackboard). A copy of the text is on reserve (4 hour reserve) at Science Library.

Instructors:

Prof. Pat McDowell, pmcd@uoregon.edu, office at 152 Condon Hall, office hours Tues. 3:30-4:30pm, Wed. 1:30-2:30pm. Other times by appointment.

GE Syler Behrens, sylerb@uoregon.edu, office at 105 Condon Hall. Office hours Thurs. noon-1:00 pm.

Field trips: There will be field trips for Lab 5 and Lab 7. They will be on Friday, Saturday or Sunday (to be determined). If you have a conflict with the Lab 5 or 7 field trips, you can elect to drop one of these labs. These field trips will be by van, and a transportation fee will be charged.

Expected effort: The course consists of a mixture of lecture/discussion and lab meeting for 3 hours per week, plus the field trips listed above. The table below shows typical effort for the course components.

Lecture/discussion/lab class meeting	3-4 hours/week
Required labs and field trips	About 18 hours total
Lab homework	3 hours/lab for seven labs
Reading, review of lecture notes, study for tests	5 hours/week

Academic honesty: All the work (tests and labs) that you turn in for a grade must be your own work, in your own words, and produced exclusively for this course. Some labs may be assigned as a group project in teams of 2-3 students. Violations of academic integrity, such as cheating and plagiarism, will not be tolerated. Violators may receive an F or N, and violations or suspected violations will be reported to the Director of Student Conduct. For the consequences of academic misconduct, or if you are in doubt regarding what constitutes academic misconduct, please consult the Student Conduct Code at conduct.uoregon.edu, or ask the instructor or GE.

GEOG 4/527 Schedule for 2018

Notes:

- In general, Tuesday class meetings are lectures with discussion, and Thursday class meetings are part lecture, part lab.
- If you have a notebook computer (with Excel or similar spreadsheet program), bring it on Thursdays.
- Reading assignments are listed for each lecture/discussion. Readings should be done *before* the class meeting. For some lectures there will be a recorded lecture to watch *before* the class.
- Readings listed by chapter or page number are from Charlton (2008), *Fundamentals of Fluvial Geomorphology*.
- AR indicates additional reading, outside of the textbook. These will be posted as pdfs on Blackboard.
- This schedule is subject to change.

Week	Tuesday Class	Thursday Class	Field trips
1: 4/3, 5	Introduction to course; Ch. 1, 2	Flow regime Ch. 3 Lab 1	
2: 4/10, 12	Sediment sources Ch. 4	Sediment in the watershed Ch. 5, AR Lab 2	
3: 4/17, 19	Flow in channels 1 Ch. 6 p, 69-80, AR	Flow in channels 2 Ch. 6, p. 80-92 Lab 3	
4: 4/24, 26	Sediment in channels 1 Ch. 7, p. 93-108	Sediment in channels 2 Ch. 7, p.108-116	
5: 5/1, 3	Channel form and behavior 1; Ch. 8, p. 117-133; Lab 4	Channel form and behavior 2 Ch. 8, p. 117-133, AR	
6: 5/8, 10	TEST 1	Lab 5 training	Lab 5 Fri. or Sat. field trip
7: 5/15, 17	Reach classification p. 137-8, AR	Channel planform Ch. 8, p. 133-156, AR; Lab 6	
8: 5/22, 24	Channel ecology and large woody material; AR	River restoration 1; Lab 7 Ch. 10, AR Floodplains;	Lab 7 Fri. or Sat. field trip
9: 5/29, 31	River restoration 2 & human impacts;	Ch. 10, AR Longitudinal profile; AR, Ch. 9	
10: 6/5, 6	Longitudinal profile and response to change; Ch. 9	??	
Mon., 6/11	TEST 2 , 12:30-2:00pm		

Lab schedule: The schedule is preliminary and subject to change. Labs are due seven to ten days after the start. Due dates will be posted on each lab. (Most labs are due the following week at noon Friday.)

Lab number	Topic	Start date or field trip date
1	Discharge	Tues. week 1
2	Sediment budget	Thurs. week 2
3	Flow and resistance	Thurs. week 3
4	Sediment entrainment and transport	Tues. week 5
5	Channel cross-section (field trip)	Fri., Sat. or Sun. wk 6
6	Reach analysis	Thurs. week 7
7	Restoration (field trip)	Fri. or Sat. week 8

Accommodations: If you anticipate needing accommodations in this course, please let Pat McDowell know soon, Bring a notification letter from the Accessible Education Center or discuss it with Pat.