GEOL 375-01 Fluvial Geomorphology
Syllabus and Lecture Schedule

***Credits**:* 3.0
CRN : 579
Lecture meets: MW, 1:00-1:50 p.m., 205 Science 1
Lab meets: W, 2:00-3:50 p.m., 205 Science 1
Prerequisite: 3 s.h. of 200 level Geology course

Instructor

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Textbook (required): *Fluvial Processes in Geomorphology*, by Luna Bergere Leopold, Markley Gordon Wolman, John Preston Miller, 1964. This is an old text, but remains a classic work. ISBN 0-486-68588-8.

This course uses **Angel** (https://angel.oneonta.edu/) to transmit information such as the syllabus and lecture schedule, lecture notes, lab exercises, grades, and links to online information. You will use your university email ID and password to access course information on Angel.

Course Description (from the Undergraduate Catalog)
Stream flow, flow frequency, river hydraulics, stream development, sediment transport and storage, channel shape and stability, and landforms associated with rivers are covered. Applications of fluvial principles to river management and stream restoration are emphasized. The course will meet for two hours of lecture and two hours of laboratory activities per week. (LA)
Prerequisite: 3 s.h. of 200-level GEOL.

Overview and Setting for the Course

In recent decades, a heightened awareness of the crucial role rivers play in maintaining the health of the environment has focused attention on how we manage and use rivers. Understanding how rivers transport sediment and respond to disturbances remains a central issue for river management and restoration projects. This course will provide future fluvial geomorphologists, hydrologists, land use planners, and policy-makers with the necessary background to understand how river flow, sediment supply and transport, and channel form are related. The course will investigate these topics through lectures and class discussions, individual topical studies, and field trips to local rivers to observe and measure river form and process.

Specific course objectives

This course focuses on stream flows, erosion, transport, and storage of sediment in watersheds, and how these processes interact to create the current river form. Students will investigate basic controls of river form, including floods and hydrology, substrate erodibility, and sediment movement in the river system. After this course, students will know how to delineate watersheds, measure stream flows and measure channel geometry, identify stable and unstable channel features, characterize stream flow recurrence from stream gage data, and utilize sediment transport theory to estimate sediment mobility and transport rates. Students will confront current issues with stream restoration and management, and be familiar with current stream restoration practices.

Grading

Grades for this course will be a combination exercises, midterm exams, and a final exam.

Exercises will consist of hands-on exercises during lab sessions and field trips, and virtual explorations online. Students will need to prepare for lab by reviewing the lab materials before lab and taking an online quiz. Exercises which involve a presentation or write-up will be graded by a rubric, where separate aspects of the exercise will receive a mark ranging from excellent to no credit. Each aspect will have a weight (content and analysis is more important than spelling, for instance). Aspects of an exercise might include grammar, scientific writing style, content, analytical treatment, overview of the problem, summary of the project, recommendation for action, and the like. Grades for rubric-assessed exercises will be rescaled to the standard university curve and combined with other components of your course grade as below.

Exams will consist of short answer essay questions, multiple choice, and true-false questions. Mid-term exams are weighted much less heavily than the final, so that students can use the midterms as a learning tool. The final exam is cumulative, and will be based on mid-terms and exercises. Note that the final is worth a very large portion of the grade for the course. A philosophy of learning, based on repetition, improvement, and recapitulation is a central approach to mastery of material in this course.

Here's the breakdown on grading:

10%	Lab Exercises
10%	Quizzes
20%	Mid-term exams
60%	Final exam
100%	

Late work will be marked down exponentially, with a decay rate of -0.25 per day, up to a limit of 5 days, at which point your grade ceases to decay, but the damage is done, so to speak. The equation is: $G(t) = G_0 e^{\lambda t}$, where $G(t)$ is your grade after it has decayed over time, G_0 is your grade if you submit your work on time, λ is the decay rate, e is Napier's constant (≈2.71828), and t is time in days. For example the table below shows the value of a report up to five days past due:

Days Late	Value of report
0	100%
1.0	78%
2.0	61%
3.0	47%
4.0	37%
5.0	29%

Note that labs are worth A LOT, so even if you are 5 days or more late, you will still get something for the lab, and this is often the difference between a passing or failing mark for the course. **Do the labs in the time allotted! You won't regret it!**

Rubrics for Course Exercises

A rubric identifies key parts of an exercise which will be evaluated, or ranked, based on a scale from 0 = no credit to 4 = excellent. What does each rank mean? This will vary based on what is being evaluated. In general:

0 = **No Credit**. This applies to an effort that would not receive a passing mark (below D-). There might be information provided, but the information is seriously flawed and the method of portraying that information (graphs, charts, maps, etc) obscures the true nature of the subject material.

1 = **Poor**. This applies to an effort that would receive a passing mark in the D range, and while passing, still has significant problems. *Some necessary information* is conveyed, but is missing pertinent details. The *method of portrayal* (graphs, charts, maps, etc.) is sloppy, and lacks definition and order. The *analysis of the data*, if one is asked for, is shallow and cursory.

2 = **Fair**. This applies to an effort that would receive a mark in the C range. The effort provides *necessary and sufficient content* to characterize the information, but it *lacks a thorough analysis* of the data, may not provide complete *background information* and needs improvement. *Organization and portrayal of the information* (graphs, charts, maps, etc.) could be improved.

3 = **Good**. This applies to an effort that would receive a mark in the B range. The effort provides *necessary content in a meaningful context*, an *adequate analysis in a clear fashion*, and a *useful portrayal* of information (graphs, charts, maps, etc.).

4 = **Excellent**. This applies to an effort that would receive a mark in the A range. The effort displays *clear, concise, accurate information* that is *organized and presented well*, *portrays the information clearly* (graphs, charts, maps, etc), and provides a *thorough and insightful analysis* of the results.

The rubric score will be re-scaled to the University curve according the following ranges: A: 100-87.5%, B: 87.5-62.5%, C: 62.5-37.5%, D: 37.5-8.3%, E: < 8.3%. The equation to rescale is $Grade_{university} = 0.3801 \times Grade_{rubric} + 56.386$, which yields a score as a percentage for the final grade assignments given by the standard University curve given below.

Percent	Grade	Percent	Grade	Percent	Grade	Percent	Grade
93-100	A	87-89.9	B+	77-79.9	C+	67-69.9	D+
90-92.9	A-	83-86.9	B	73-76.9	C	63-66.9	D
< 60	E	80-82.9	B-	70-72.9	C-	60-62.9	D-

Lecture Schedule (This schedule is subject to modification during the course of the semester—some topics may require more time to cover adequately)

Week	Monday 1-1:50 pm	Wednesday 1-1:50 pm	Wednesday, Lab 2:00-3:50 p.m.
Jan 14-16	No Class	Intro; Drainage basin characteristics	Drainage basin characteristics
Jan 21-23	Long term erosion by rivers	Examples of stream development	Examples of stream development
Jan 28-30	Examples of stream development	Examples of stream development	Examples of stream development
Feb 4-6	Geomorphic events	Flood recurrence intervals	Recurrence intervals
Feb 11-13	Hydraulic geometry	At a station hydraulic geometry	**Exam 1**
Feb 18-22	**Spring Break I**		
Feb 25-27	Regional Hydraulic Geometry	Regional Hydraulic Geometry	Regional Hydraulic Geometry
Mar 4-6	Navier-Stokes	Drag and hydraulics	Drag and hydraulics
Mar 11-13	Shear stress	Sediment mobility	Sediment mobility
Mar 18-20	Sediment transport NE GSA	Sediment transport rates NE GSA	Sediment transport rates NE GSA
Mar 25-29	**Spring Break II**		
Apr 1-3	Spring Break II	Floodplains: Field Trip	Floodplains: Field Trip
Apr 8-10	Channel forms	Channel forms: Field Trip	Channel forms: field trip
Apr 15-17	Alluvial-Bedrock channels	Alluvial-Bedrock: Field Trip	Alluvial-Bedrock: Field Trip
Apr 22-24	River classification (Rosgen et al.)	River Classification: Field Trip	River Classification: Field Trip
Apr 29-May 1	Stream restoration	Stream restoration: Field Trip	Stream Restoration: Field Trip
May 6-8	**Exam 2**	Review for Final	
Final Exam: Friday, May 10, 2:00 p.m.-4:30 p.m.			

Spring 2013 Calendar

January 13-15	Sunday-Tuesday	New Student Arrival & Orientation
January 16	Wednesday	Classes Begin
February 15	Friday	College Closes After Last Class
February 25	Monday	Classes Resume
March 22	Friday	College Closes After Last Class
April 2	Tuesday	Classes Resume
May 8	Wednesday	Follow Monday Class Schedule
May 9-15	Thursday-Wednesday	Finals
May 18	Saturday	Commencement

FINAL EXAM WEEK CLASS SCHEDULE
MAY 9 - 15, 2013
During the last week of the semester, day classes will meet for two and a half hour periods according to the schedule below. These periods are to be used for instruction and/or examination.

Date and Time	Thursday May 9	**Friday May 10**	Monday May 11	Tuesday May 14	Wednesday May 15
8:00am-10:30am	10 Tu Th	10 MWF	9 MWF	8:30 Tu Th	8 MWF
11:00am-1:30pm	2:30 Tu Th	12 MWF	11 MWF	1 Tu Th	2 MWF
2:00pm-4:30pm	11:30 Tu Th	**1 MWF**	4 MW	4 Tu Th	3 MWF

Note: All Evening Classes (Starting at 5:00pm or later only) will meet at their regularly scheduled times.

Policy on Academic Dishonesty

Academic dishonesty results in a loss of trust and open-ness which is the heart and soul of student-mentor relations. Plagiarism and cheating will not be tolerated in this course. Please see the Code of Student Conduct for definitions and repercussions of Academic Dishonesty (http://www.oneonta.edu/development/judicial/code.pdf).

ADA (Americans With Disabilities Act) Statement

All individuals who are diagnosed with a disability are protected under the Americans with Disabilities Act, and Section 504 of the Rehabilitation Act of 1973. As such, you may be entitled to certain accommodations within this class. If you are diagnosed with a disability, please meet with Student Disability Services (SDS), 209 Alumni Hall, ext. 2137. All students with the necessary supporting documentation will be provided appropriate accommodations as determined by the SDS Office. It is your responsibility to contact SDS and provide the teacher with your accommodation plan before a test.

Emergency Evacuation/Shelter-in-Place Procedures

In the event of an emergency evacuation (i.e. fire or other emergency), classes meeting in **Science 1** are directed to **reassemble at the Chase Gymnasium** so that all persons can be accounted for. Complete details of the College's emergency evacuation, shelter-in-place, and other emergency procedures can be found at http://www.oneonta.edu/security .

Course Expectations and Guidelines

I expect you to follow the guidelines for behavior below:

- Attend all classes and arrive punctually.
- If unavoidably late for a class, enter quietly and unobtrusively, and behave in other required ways to minimize distraction.
- Remain alert and attentive during lectures, discussions, and other class/lab activities.
- Avoid unnecessary conversation during lectures, discussions, and other class/lab activities.

- **Contribute to class experiences by asking relevant questions,** offering relevant examples or views, adequately answering questions posed by others, **engaging in critical and independent thought, and challenging both the instructor and the curriculum materials assigned for the course**.
- Demonstrate courtesy and respect in dealing with instructors and classmates.
- Recognize and seek to understand diverse points-of-view.
- Plan to spend 2 to 3 hours out-of-class time in academic study for every one hour of class attendance.
- Thoroughly plan and prepare for classes.
- Notify the instructor in advance, if possible, or in a timely fashion, if unable to attend a class or lab, take a scheduled exam or quiz, submit a scheduled assignment, or remain in the classroom for the entire class meeting because of unavoidable circumstances.
- You are expected to read each chapter before we cover it in class. This will allow you to formulate questions concerning material that is not clear, or that you would like to have covered in greater detail. I use lectures to focus on the most important aspects of the topic. I strongly encourage you to ask questions during lecture. There are no 'dumb' or 'stupid' questions. Often the questions you have are shared by others. You should view lectures as the time and place for discussion, and I welcome your thoughts and questions!
- Any reasonable accommodation will be provided for students with physical, sensory, learning, or psychiatric disabilities. Please contact me for assistance as early as possible.
- If English is not your primary language and you would like to have additional time in which to take the exams, let me know. Anyone who needs additional time for the exams will be extended the same courtesy.
- Academic dishonesty will not be tolerated and those engaging in it will be prosecuted. See the Academic Honesty & Dishonesty pamphlet published by the Dean of Students Office for further information.
- **Finally, turn off cell phones before coming to class!** A ringing (or singing!) phone is almost impossible for others to ignore. Especially the lecturer, who may wander so far off course that everyone will get upset...Of course, medical conditions can override this request.

Alternate Suggested texts.

Fluvial Hydraulics, by S. Lawrence Dingman, Oxford University Press, 2009. ISBN 978-0-19-517286-7.

Fluvial Forms and Processes: A New Perspective, by David Knighton, John Wiley and Sons, 1998. ISBN13: 9780340663134

Applied Fluvial Geomorphology for River Engineering and Management, by C. R. Thorne (Editor), Richard D. Hey (Editor), Malcolm D. Newson (Editor), John Wiley and Sons, 1998. ISBN: 978-0-471-96968-6

Fundamentals of Fluvial Geomorphology, by Ro Charlton, Routledge, 2007.

Additional journal articles may be used as supplemental reading.