

GEOG 3334A Geomorphology of River Channels
Course Outline: Section 001 Fall 2018**1. Course Information**

1.1. Classroom Location:

Class Location and Time:

Lecture Monday 10:30a.m. – 12:30 p.m SSC 1302

Lab: Tuesday 1:30 pm – 3:30 pm SSC 1302 Contact Information:

Instructor: Dr. Peter Ashmore

Office: SSC 1405

Office Hours: please schedule with instructor

Phone: 661-2111 x8502611111

Email: pashmore@uwo.ca

2. Calendar Description

2.1. Course Description

The geomorphology of rivers, including fluvial hydraulics, fluvial erosion and sediment transport, river channel morphology and dynamics, channel and floodplain sedimentation, the response of rivers to human activities and environmental change, and applications to river channel management

2 lecture, 2 laboratory hours, 0.5 course

Antirequisite(s):None

Prerequisite(s): One of Geography 2310A/B, Geography 2320A/B or Geography 2330A/B, or at least 3rd year standing in an Environmental Science or Earth Sciences program. Prerequisite checking is the student's responsibility

2.2. Senate Regulations

Senate Regulations state, “unless you have either the requisites for this course or written special permission from your Dean to enroll in it, you will be removed from this course and it will be deleted from your record. This decision may not be appealed. You will receive no adjustment to your fees in the event that you are dropped from a course for failing to have the necessary prerequisites.”

3. Textbook

The primary textbook is:

Ro Charlton. Fundamentals of Fluvial Geomorphology, Routledge, 2008, ISBN 9780415334549.

There are copies in the Campus Bookstore.

I will assign a few other short readings for some topics and for the lab project.

A more advanced book that you may find useful on specific topics is:

E. Wohl. Rivers in the Landscape: Science and Management. Wiley-Blackwell, 2014.

ISBN: 978-1-118-41489-7

References to more general texts on geomorphology may also help. I recommend:

Process Geomorphology by D.F. Ritter (4th or 5th edition) which has two or three chapters on rivers and fluvial processes.

Key Concepts in Geomorphology (2014) P.R. Bierman and D.R. Montgomery. Chapters 4, 6, 7. A new text book with some excellent diagrams and up-to-date concepts

4. Course Objectives and Format

Rivers are agents of erosion and sediment transport. One of the outcomes of this is the development a variety of landforms which are the focus for fluvial geomorphology. But rivers are also dynamic: they are a hazard, a habitat and a resource. They are often managed and manipulated to reduce hazards or enhance their value. The understanding of natural fluvial processes and forms is vital to their effective utilization and protection. The general objective of the course is to describe and explain the geomorphic processes and landforms associated with river systems and their geographic variation. The course approaches some elements quantitatively, using physical principles of water flow and sediment transport in stream channels as the foundation. The course also looks at applications of fluvial geomorphology to river management and conservation / restoration. Some of the practical work and project assignment involves using data in Excel and doing some statistical analysis. Geography 2210 (or equivalent) will be an asset here, but is not a necessity or a requirement. The course is taught as both lecture and practical laboratory exercises and includes several fieldwork sessions at Medway Creek (near campus) to learn fundamentals of river channel description and survey, and application of principles covered in lectures and readings.

Topic	Reading in Charlton book
The fluvial system.	Ch 1 and 2 & 3-5
Fluvial processes: flow, erosion and sediment transport in rivers.	Ch 6 & 7
River morphology: bedforms and channel form	Ch 8 117-133
Channel pattern types and sedimentary processes	Ch 8 117-133
Floodplain formation and sedimentology	Ch 8 133-156
River channel change	Ch 9
River management, restoration and applications of fluvial geomorphology	Ch 10

5. Learning Outcomes

At the conclusion of the course you will be able to:

1. recognize, describe and explain the origins of common fluvial landforms and river morphology
2. understand the physical analysis of the processes of flow and sediment transport in rivers
3. explain the relationship between fluvial processes and fluvial landforms
4. explain, using examples, the physical effects of environmental change and human intervention on fluvial processes and landforms
5. describe applications of fluvial geomorphology to river management and other fields of fluvial science
6. apply techniques of data analysis and map and air photo reading to the solution of problems in fluvial geomorphology
7. give some case examples of river morphology, dynamics and consequences of human intervention from rivers around the world

6. Evaluation

There are five components of evaluation:

1. Midterm test: Monday, October 22nd in class.

2. “My river”. Case study report on geomorphic characteristics of a river of your choice. A short written report plus participation in class discussion session about your rivers. Details in a separate handout and in class.

3. Lab Report

The lab component of the course consists of:

- a) Some practical exercises designed to allow opportunity for discussion and learning. This will include 3-4 sessions doing field-work on Medway Creek.
- b) A short project report in the form of a summary analysis of the geomorphology of Medway Creek based on your field results. Several of the lab sessions will be devoted to this project and you will be required to spend additional time on the project outside the lab times. This will be graded at the end of term and constitutes your grade for the lab component of the course.

The lab work will include elements of both individual and group work, but the assessment will be individual.

4. Applied Geomorphology Case Study

A short report on one case study of the impact of human activity on river channel morphology and dynamics or applications of geomorphology to river management, river ‘design’ and restoration. This will be based mainly on your review of one published article from a research journal. You will hand in a short summary to be graded and there will be a class session to summarize the collective results from the whole group.

5. Final Examination

Evaluation Components	Percentage of Course Grade	Assignment Schedule
Mid term test	20%	Oct 22 in class
‘My River’ case study	10%	Nov 6
Lab Project report	30%	Nov 27
Applied geomorphology case study	10%	Dec 10
Final exam	30%	TBA

Students are responsible for material covered in the lectures as well as the assigned chapters/sections in the text. Students must complete all components of the evaluation to pass the course.

Non-medical absences from tests and exams will be dealt with in consultation with the instructor and may require documentation. Accommodation may be provided with sufficient reason. Late assignments may be subject to a grade penalty.

Students are directed to the [Policy on Accommodation for Illness](#).

For Western's Policy on Accommodation for Medical Illness and a downloadable Student Medical Certificate please refer to the [Academic Handbook](#).

Students seeking academic accommodation on medical grounds for any missed tests, exams, participation components and/or assignments worth 10% or more of their final grade must apply to the Academic Counselling office of their home Faculty and provide documentation. Academic accommodation cannot be granted by the instructor or department.

Grades will not be adjusted on the basis of need. It is important for you to monitor your performance in the course. Remember: *You* are responsible for your grades in this course.

7. Make-up Examinations

Makeups will be granted with approved documentation only. All documentation for missed exams must be provided the Academic Counselling Office and Instructor within 48 hours of the scheduled exam. For missed exams, you must take your documentation to Academic Counselling within 48 hours of the exam. Otherwise, the instructor will assign a grade of zero. The format and content of make-ups may differ substantially from the scheduled test or examination. The Geography Department conducts regular make-up exam sessions. Please consult the undergraduate program counsellor for details when needed (alucaci@uwo.ca).

8. Use of Electronic Devices

No electronic devices will be allowed during tests and examinations.

9. Academic Offences

Scholastic offences are taken seriously and students are directed to read the appropriate policy, specifically, the definition of what constitutes a [Scholastic Offence](#).

10. Western's Commitment to Accessibility

The Department of Geography strives at all times to provide accessibility to all faculty, staff, students and visitors in a way that respects the dignity and independence of people with disabilities.

Please contact the course instructor if you require material in an alternate format or if you require any other arrangements to make this course more accessible to you. You may also wish to contact Services for Students with Disabilities (SSD) at 519-661-2147 for any specific question regarding an accommodation. Information regarding accommodation of exams is available on the Registrar's website. More information about "Accessibility at Western" is available.

11. Medical Issues

The University recognizes that a student's ability to meet his/her academic responsibilities may, on occasion, be impaired by medical illness. The Student Services website provides greater detail about the University's policy on medical accommodation. This site provides links to the necessary forms. In the event of illness, you should contact Academic Counselling as soon as possible. The Academic Counsellors will determine, in consultation with the student, whether or not accommodation should be requested. They will subsequently contact the instructors in the relevant courses about the accommodation. Once the instructor has made a decision about whether to grant an accommodation, the student should contact his/her instructors to determine a new due date for tests, assignments, and exams.

Students must see the Academic Counsellor and submit all required documentation in order to be approved for certain accommodation.

12. Mental Health

If you or someone you know is experiencing distress, there are several resources here at Western to assist you. Please visit Western's Health and Wellness website for more information on mental health resources.

13. Support Services

Student Support Services

Student Development Services

14. Important Dates

September 6: Classes resume

September 14: Last day to add a full course or a second term half course

October 8: Thanksgiving Holiday – Department Office Closed

October 9-23: Fall Reading Week (No classes; Department Office open)

November 12: Last day to drop a first term half course without penalty

November 30: Last day to drop a full course without academic penalty

December 7: Classes end

December 8 and 9: Study days

December 10-21: Examination Period

December 21: Fall term ends.