

# GGR 301H1F: Fluvial Geomorphology

University of Toronto

Department of Geography & Planning

Fall 2020

## Course Information

*Lecture Time:* Thursday 1:10 - 3 pm (Online, Toronto time/Eastern Time)

*Lab Time:* PRA5101 – Thursday 5:10 - 6 pm (Online)

PRA0101 – Friday 11:10 am - 12 pm (Online)

*Instructor:* Sarah Peirce

Assistant Professor, Teaching Stream

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*Teaching Assistant:* Pamela Tetford, pam.tetford@mail.utoronto.ca

## Course Description

Fluvial geomorphology examines the dynamic processes and landforms related to rivers and how they change spatially and temporally. This course uses lectures, laboratories, and a virtual field visit to address topics in fluvial geomorphology including the physical properties of water flow, sediment transport, channel pattern, environmental change, human impact on river systems, and applied geomorphology.

Prerequisite(s): GGR270H1 (or equivalent) and GGR201H1 or permission of instructor

Recommended preparation: 10.0 FCE's including JEG100H1/GGR100H1

## Learning Outcomes

This course, and the following learning outcomes, have been designed to enhance your knowledge of the forms and processes associated with river systems while also strengthening your analytical, writing, and communication skills. These skills are essential in the sciences and will be valuable regardless of what academic or career path you pursue in the future.

By the end of the course you will be able to:

- Identify and describe common fluvial landforms and river morphologies.
- Explain the fundamental relationships between fluvial processes and fluvial landforms.
- Apply and discuss various methods for observing, measuring, and analyzing forms and processes related to fluvial geomorphology.
- Explain, with examples, river responses to natural and human induced environmental change.

- Synthesize reliable sources related to fluvial geomorphology and its applications into oral, visual, and written formats, including developing a research question and proposal.
- Practice providing and receiving constructive peer feedback on written and oral work.

## Course Format and Expectations

### Online Delivery

This course is being offered online only. Until otherwise stated, lectures and laboratories for this course will be delivered live during the scheduled time (Toronto time/Eastern Time) using BB Collaborate and recorded for later (asynchronous) viewing.

You are encouraged to join lectures and laboratory sessions during the scheduled time to actively contribute to discussions, experiments, and workshops, although this is not required to complete or succeed in the course. Any necessary changes to the mode of delivery due to technical issues, community health guidelines, or other issues will be communicated through Quercus.

To succeed in GGR301, you are expected to be an active course participant. This includes reaching out and engaging with your teaching team and peers as well as scheduling an appropriate amount of time to complete course modules regularly.

### Quercus

This course will use the online teaching and learning platform, [Quercus](#), for providing you with important course materials including announcements, lecture slides, lecture and laboratory webinars and recordings, assignment guidelines, and grades.

Each week of class there will be a new Quercus module released dedicated to that week's topic. These modules contain lecture slides, helpful resources, practice quizzes, and a discussion forum for sharing comments and questions as well as connecting with your peers and teaching team.

It is *\*your responsibility\** to visit the website regularly to access important course information and materials.

### Laboratory Sessions

This course includes laboratory sessions which will be used for introducing assignments, flume demonstrations, TA support, and research support. Students are strongly encouraged to attend the online laboratory sessions synchronously to ask questions and participate in discussions with your peers and teaching team.

### Active Engagement

Active learning can improve student engagement and long-term retention of course material. This course uses activities like polls, activity sheets, practice quizzes, discussion

forums, and brainstorming to enhance the learning experience of you and your peers. Some of these activities can be completed during lecture time and others will be integrated into the weekly course modules. Please always be prepared to participate and to be respectful to your peers and instructors in this course.

## Course Materials

### Primary Textbook (Required)

Wohl, E. (2020). *Rivers in the Landscape: Science and Management*. Wiley Blackwell.

- The text is be available online through Quercus under 'Library Course Reserves' and at the U of T bookstore.

Other useful supplementary resources that have been made available through Quercus under 'Library Course Reserves' are below.

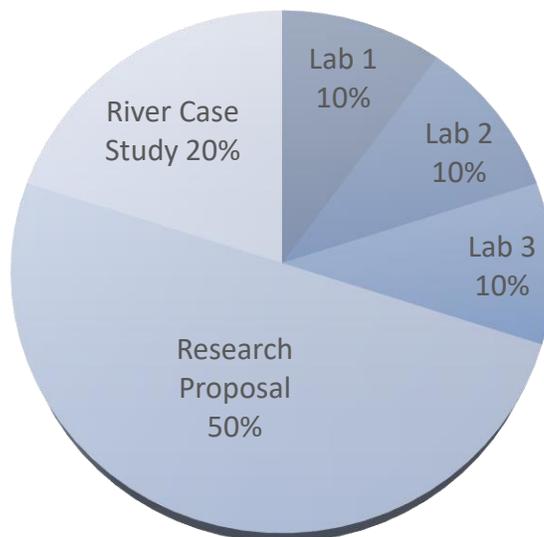
Charlton, R. (2008). *Fundamentals of Fluvial Geomorphology*. Routledge.

Rhoads, B.L. (2020). *River Dynamics Geomorphology to Support Management*. Cambridge University Press.

Shroder, J.F. (Ed.). (2013). *Treatise on Geomorphology*. Elsevier Inc.

Any additional course readings will be posted on Quercus or be available through the U of T library.

## Methods of Evaluation



\*\*Additional details for each assignment will be provided during lectures and available on Quercus. All assignments will be submitted electronically using Quercus (see schedule below). \*\*

## Lab Assignments

- Lab 1 (10%) – Due the day of your scheduled lab session in Week 4
- Lab 2 (10%) – Due the day of your scheduled lab session in Week 7
- Lab 3 (10%) – Due the day of your scheduled lab session in Week 10

These practical lab assignments are designed to introduce you to common analyses and interpretations done in fluvial geomorphology. Each lab includes a combination of computational analyses (e.g. Excel computations) and interpretation/discussion. You are encouraged to work on laboratory assignments collaboratively using the course discussion pages and synchronous lab time, but each student is expected to submit their own individual work.

## Research Proposal

- Part 1A (10%) – Research Question – Due October 8, 2020
- Part 1B (5%) – Peer Feedback on Research Questions – Due October 15, 2020
- Part 2A (10%) – Oral Presentation – Due October 29, 2020
- Part 2B (5%) – Peer Feedback on Presentations – Due November 5, 2020
- Part 3 (20%) – Final Research Proposal – Due December 3, 2020

The goal of this assignment is to have you write a research proposal for addressing a specific fluvial geomorphology problem. Lab time and workshops will be used to provide guidance and support on your research proposal (see schedule). You can complete this assignment in pairs or individually.

## River Case Study

- River Case Study (20%) - Due during the Final Assessment Period – December 17, 2020

Building on the skills practiced in the lab assignments and the throughout the course, you will investigate a river and describe its morphology, flow regime, and other local features.

## Assignment Submission and Late Penalties

- All assignments will be submitted electronically on Quercus.
- Lab assignments are due the date of your regularly scheduled lab date.
- Where applicable (see assignment guidelines for full details), term work must be submitted on Quercus by 11:59 pm (Toronto time/Eastern Time) on the date they are due. Late assignments will receive a deduction of 5% per day (including Saturday and Sunday). Late assignments will not be accepted after 7 days past the due date without an approved extension.
- Extensions without penalty can be granted for reasons of accommodation, illness, or emergencies. Please contact your instructor as soon as possible to discuss extensions.

## Turnitin.com

The following applies to all written assignments submitted through Quercus. Please contact me if you have any questions or would like to opt-out of using Turnitin.

Normally, students will be required to submit their course essays to Turnitin.com for review of textual similarity and detection of possible plagiarism. In doing so, students will allow their essays to be included as source documents in the Turnitin.com reference database, where they will be used solely for the purpose of detecting plagiarism. The terms that apply to the University's use of the Turnitin.com service are described on the Turnitin.com website.

## Course Schedule

Below is the anticipated course schedule. Please check Quercus regularly for any changes to readings and/or topics.

### Week 1 – September 10

- Topic – Introduction to Fluvial Geomorphology
- Textbook reading – Wohl (2020) Chapter 1
- No lab sessions

### Week 2 – September 17

- Topic – Channel Networks
- Textbook reading – Wohl (2020) Chapter 2

#### Lab - September 17 or 18

- Lab session - Introduction to Lab 1 - Hydrology

### Week 3 – September 24

- Topic – Hydrology
- Textbook reading – Wohl (2020) Chapter 3 – Section 3.2

#### Lab – September 24 or 25

- Lab session - Flume Demonstration

### Week 4 – October 1

- Topic – Flow Hydraulics
- Textbook reading – Wohl (2020) Chapter 3 – Section 3.1

#### Lab – October 1 or 2

- Lab session - Proposal Workshop
- Due date – Lab 1 – Hydrology

### Week 5 – October 8

- Topic – Sediment Sources and Transfer
- Textbook reading – Wohl (2020) Chapter 2 – Sections 2.1.2, 2.2.2, 2.3
- Due date – Research Proposal Part 1A – Research Question

#### Lab – October 8 or 9

- Lab session - Introduction to Lab 2 – Sediment Transport

### Week 6 – October 15

- Topic – Sedimentary Processes
- Textbook reading – Wohl (2020) Chapter 4 – Sections 4.1 – 4.4
- Due date – Research Proposal Part 1B – Peer Feedback on Research Questions

#### Lab – October 15 or 16

- Lab session – Flume Demonstration II

### Week 7 – October 22

- Topic – Sedimentary Processes II and Bedforms
- Textbook reading – Wohl (2020) Chapter 4 – Sections 4.5 – 4.10

#### Lab – October 22 or 23

- Due date – Lab 2 – Sediment Transport
- No lab sessions

### Week 8 – October 29

- Topic – Channel Forms
- Textbook reading – Wohl (2020) Chapter 6 – Sections 6.1 – 6.4
- Due date – Research Proposal Part 2A – Oral Presentation

#### Lab – October 29 or 30

- Lab session – Introduction to Lab 3 – Channel Patterns

### Week 9 – November 5

- Topic – River Response to Change
- Textbook reading – Wohl (2020) Chapter 6 – Sections 6.5 – 6.8
- Due date – Research Proposal Part 2B – Peer Feedback on Presentations
- No lab session

### Fall Break – November 9 –13

### Week 10 – November 19

- Topic – Extra-Channel Environments
- Textbook reading – Wohl (2020) Chapter 7

#### Lab November 19 or 20

- Due date – Lab 3 – Classification of Rivers

- No lab sessions

### Week 11 – November 26

- Topic – River Management
- Textbook reading – Wohl (2020) Chapter 8 – Sections 8.1 – 8.5
- No lab sessions

### Week 12 – December 3

- Topic – Restoration
- Textbook reading – Wohl (2020) Chapter 8 – Sections 8.5 – 8.7
- Due date – Research Proposal Part 3 – Final Research Proposal
- No lab sessions

### Final Assessment Period

- Due December 17, 2020 – River Case Study

## Course Policies and Statements

### Accessibility

Students with diverse learning styles and needs are welcome in this course. If you have a disability or health consideration that may require accommodations, please approach me and/or the Accessibility Services Office as soon as possible at 416-978-8060 or <http://www.accessibility.utoronto.ca/>.

### Equity Statement

The University of Toronto is committed to equity, human rights and respect for diversity. All members of the learning environment in this course should strive to create an atmosphere of mutual respect where all members of our community can express themselves, engage with each other, and respect one another's differences. U of T does not condone discrimination or harassment against any persons or communities.

### Communication and Email

You are encouraged to ask course-related questions during class and office hours, on course discussion forums, and using Quercus Inbox or email. When using email, you must use your U of T account as other email addresses may be filtered as spam. Also, please include GGR301 in the subject heading, and your full name in the text.

I will typically respond to Quercus Inbox messages and emails within 24 hours, excluding weekends and holidays. Emails received after 5 pm will typically be replied to the following business day. Please follow up with your teaching team if you have not received a response within 2 business days.

## Accommodations

If you are seeking accommodation for late term work, you should submit a request for special consideration to the instructor or academic unit as soon as possible and no later than one (1) week after the assignment or quiz due date.

The University is temporarily suspending the need for a doctor's note or medical certificate for absences from academic participation. Please use the Absence Declaration tool on ACORN to declare an absence if you require consideration for missed academic work. You are responsible for contacting your instructors to request the academic consideration you are seeking. Record each day of your absence as soon as it begins, up until the day before you return to classes or other academic activities.

Please alert the instructor as soon as possible, and at least two weeks in advance, if term work due dates conflict with religious observances so that reasonable alternate arrangements can be made.

## Grade Change

Re-marking requests of assignments or quizzes must be made to the instructor within two (2) weeks of receiving the grade, after which the mark is considered final. Please provide a written document or email with your name, the course code, and a short explanation what you would like re-graded and why. Your material will be re-graded by the person who originally graded it (either TA or instructor). Please note that your mark can increase or decrease as a result of re-grading.

## Academic Integrity

**\*\* If you have any questions about what is or is not permitted in this course, please do not hesitate to contact me. \*\***

The University of Toronto's [Code of Behaviour on Academic Matters](#) outlines the behaviours that constitute academic misconduct, the processes for addressing academic offences, and penalties that may be imposed. Potential offences include, but are not limited to:

- In papers and assignments:
  - Using someone else's ideas or words without appropriate acknowledgement.
  - Submitting your own work in more than one course without the permission of the instructor.
  - Making up sources or facts.
  - Obtaining or providing unauthorized assistance on any assignment (this includes working in groups on assignments that are supposed to be individual work).

- Misrepresentation:
  - Falsifying or altering any documentation required by the University, including (but not limited to) doctor's notes.
  - Falsifying institutional documents or grades.

All suspected cases of academic dishonesty will be investigated following the procedures outlined in the *Code of Behaviour on Academic Matters*.

## Copyright

Lectures and course materials prepared by the instructor are considered by the University to be an instructor's intellectual property covered by the Copyright Act, RSC 1985, c C-42. Course materials such as PowerPoint slides and lecture recordings are made available to you for \*your own study purposes\*. These materials **cannot** be shared outside of the class or "published" in any way. Posting recordings or slides to other websites without the express permission of the instructor will constitute copyright infringement.

## Additional Resources

Below are some helpful resources for this course. Click on each the link to find out more information.

### Online Learning

- [Getting Ready for Online](#)
- [Recommended Technology Requirements for Remote/Online Learning](#)

### Library and Writing Support

- Library services are available online at: <https://onesearch.library.utoronto.ca/ask>
- [Writing at the University of Toronto](#)
  - [How Not to Plagiarize](#)
  - [Advice on Academic Writing](#)

### Support Services

- [Office of the Faculty Registrar](#)
- [Student Services and Support](#)

### Mental Health

If you or someone you know is experiencing distress, there are resources on campus and off-campus to assist you including:

- [Safety & Support](#)
- [Health & Wellness](#)