

## GGR201H1F – Geomorphology

Department of Geography  
University of Toronto

**INSTRUCTOR:**

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**Office Hours:** Tuesdays and Thursdays 1–3 p.m.  
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**TEACHING ASSISTANTS:**

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**LECTURES:**

Tuesdays and Thursdays 10 am – 12 pm; MP 137

**LABORATORIES**

Tuesdays and Thursdays 12–1 pm and 1–2 pm; ES1062; see detailed schedule

**Course Structure:** A one term course with lectures and eight laboratory sessions, including four (4) short assignments. A field trip will be scheduled for June, including a field trip report. An alternative assignment may be offered for students unable to attend the field trip.

**Required Text:** *Key Concepts in Geomorphology* 2013. W.H. Freeman & Co (MacMillan), 500 p. by  
**Paul R. Bierman and David R. Montgomery**

**Objectives:**

- (a) To introduce the basics of earth surface processes and landforms;
- (b) To introduce techniques used in the interpretation and analysis of earth surface features;
- (c) To introduce major concepts regarding landscape development and human impacts on the physical landscape.

Geomorphology is an "interface" science involving the lithosphere, atmosphere, hydrosphere and biosphere. It is an integral part of both physical geography and physical geology, and it embraces a study of the internal and external forces that shape the configuration of the earth's surface. The internal forces are related to tectonism and volcanism, whereas the external forces are related to the action of weathering, soil formation, mass wasting, river flow, ice movement, and to the action of wind, waves and subsurface water. Human activity is an important component of landform development. The prime goal of geomorphology is an understanding of landforms created by the interaction of these forces and human modifications. Geomorphology has many applications in physical and environmental sciences.

**Course Website on Blackboard:** <http://portal.utoronto.ca>

**Recommended Preparation:** GGR100H

## PROGRAMME:

- (1) Lectures:** A detailed outline will be available online before the first class with the lecture schedule.
- (2) Laboratories:** There will be four laboratory exercises during the term (8 sessions detailed in the schedule below). Students are to sign an attendance sheet in each lab session. Collaborative effort in working out assignments is encouraged although individual reports must be submitted.
- (3) Field Trip:** Assuming that weather permits, there will be a full-day field trip during the term to investigate selected geomorphological sites. The trip will take place on a Saturday (or a Sunday). A fee of \$25 dollars will be required to cover transportation costs.
- (4) Examinations:** There will be a two-hour (2 hr) mid-term test given during the lecture period and a three-hour (3 hr) final exam held at the end of term.

|                    |                                 |            |
|--------------------|---------------------------------|------------|
| <b>Evaluation:</b> | Laboratory Exercises (4 x 7.5%) | 30%        |
|                    | Midterm Test                    | 20%        |
|                    | Field Trip Report               | 10%        |
|                    | Final Exam                      | <u>40%</u> |
|                    |                                 | 100%       |

### **Course Lecture Schedule (Summer 2018)**

|            |   |
|------------|---|
| May 8      | – Introduction to geomorphology and geoscience                    |
| May 10     | – Forces and earth structure                                      |
| May 15     | – Weathering and karst landscapes                                 |
| May 17     | – Hillslope form and processes                                    |
| May 22     | – Fluvial processes   |
| May 24     | – <b>Midterm test</b>   |
| May 29     | – Fluvial landforms and drainage basins                           |
| May 31     | – Fluvial deltas and coastal geomorphology                        |
| June 5     | – Aeolian geomorphology   |
| June 7     | – Glacial geomorphology   |
| June 12    | – Glacial cycles and ice ages                                     |
| June 14    | – Geomorphology scientific philosophy and geoscience applications |
| June 20–26 | – <b>University final examination period</b>                      |

### **Assignment Schedule (Summer 2018)** – (*Start dates* in brackets for lab sessions)

|   |                              |
|---|------------------------------|
| Lab 1A – Maps and Google Earth (May 10) | Lab 3A – Fluvial I (May 29)  |
| Lab 1B – Google Earth (May 15)          | Lab 3B – Fluvial II (May 31) |
| Lab 2A – Hillslopes I (May 17)          | Lab 4A – Aeolian (June 5)    |
| Lab 2B – Hillslopes II (May 22)         | Lab 4B – Glacial (June 7)    |
|   | Field Trip Report (June 9)   |

**PROFESSIONAL GEOSCIENCE:** GGR201S – Geomorphology is an accepted course contributing to registration with the Association of Geoscientists of Ontario (**APGO**) under Additional Foundation Geoscience (Group 2B) minimum knowledge requirements.

For more information about Professional Geoscience accreditation, students are encouraged to visit [www.apgo.net](http://www.apgo.net) and to sign-up for free as a student member.

## GGR-201F: COURSE POLICIES

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### SUBMITTING ASSIGNMENTS, LATE ASSIGNMENTS, AND MISSED EXAMINATIONS

See detailed schedule for lab dates and assignment deadlines. Assignments are due **in class** (lab or lecture) on the dates specified. If no class is scheduled on the due date, hardcopy assignments are to be submitted to the assignment drop box in the Earth Sciences department (Room 1066) by **5:00 pm**. Submitted assignments must include the student name, course number GGR201 with the lab time, **and the TA's name**.

**LATE ASSIGNMENTS** will be penalized **5% per day**, including weekends and holidays, and will not be accepted after assignments have been returned. Late assignments may be submitted to the assignment drop box in the Earth Sciences department (Room 1066). **All Lab assignments must be submitted in HARDCOPY. Emailed Lab assignments will NOT be accepted.**

The Earth Science department (drop box) is located in the Earth Sciences Centre Room 1066 (see Blackboard location guide), and is open during regular university business hours weekdays 9am-5pm.

**EXTENSION REQUESTS:** Extensions without penalty are only granted in cases of illness or family emergency. If accommodation is required for late submission of assignments or a missed midterm examination due to illness, students will be required to do the following:

- Inform the instructor by email within 24 hours of the due date (before or after); and
- Submit an **ORIGINAL HARDCOPY UofT Medical Certificate** (signed by a doctor) to the Instructor or Department of Geography **within 5 days** of the missed assignment or mid-term exam. Emailed photos, scans, or photocopies will NOT be accepted.

**FAMILY EMERGENCIES** will require an official "College Registrar's Letter;" and **DEFERRED FINAL EXAMS** are also dealt with by the Registrar's office of your college or faculty. Failure to comply with these policies can result in a grade of zero for the missed assignment or exam in question.

**Turnitin.com:** Only the Field Trip Report (or alternative assignment) will be submitted digitally online.

*Normally, students will be required to submit their course essays to Turnitin.com for a 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 web site.*

**COURSE DROP DEADLINE:** Tuesday **June 5<sup>th</sup>, 2018** is the deadline to drop Summer 2018 F courses without penalty. It is expected that the grades for Lab Assignments 1 and 2 (for 15% of final grade) and for the midterm exam (for 20% of final grade) will be available on or before the drop deadline.

**COMMUNICATION AND EMAIL:** Students are encouraged to ask questions in class and office hours. All emails must be from a UofT account, and include GGR201 in the subject heading with your full name signed in text. Emails will normally be returned within 48 hrs. Questions that require extensive responses are to be asked during office hours or in class, not via email.

**BLACKBOARD AND EMAIL ADDRESS:** Course information, assignments, and links to supplemental readings will be posted on the Blackboard system (<http://portal.utoronto.ca>). You **MUST** use a @mail.utoronto.ca or @utoronto.ca email address with Blackboard (**Please confirm on ACORN**).

**ENROLLMENT IN THE COURSE:** ACORN is the only indicator of course enrollment. The instructor cannot enroll students, and granted access to the course website on Blackboard is not an indication of course enrollment. Students on the waiting list should attend the first weeks of lecture and lab sessions at the beginning of the semester, as they will often be enrolled in by the second week.

**SWITCHING LAB SESSIONS:** It is expected that students will consult with the instructor and TA's prior to attending any lab session for which they are not registered on ACORN. Each Lab Session has a cap of **35 students**, which is reflected in the available lab resources and an expected TA to student ratio. At the discretion of the TA's, students may on rare occasion 'sit-in' on an alternate lab session—please ask for the TA's permission prior to the start of the lab time (and preferably by email at least 24 hours in advance). Students wishing to request a permanent switch of lab sessions must email the instructor; however, there is no guarantee that all requests will be accommodated. A final list of student names in each lab session will be compiled by May 15<sup>th</sup> to help TA's keep track of attendance and lab marking.

**ACADEMIC INTEGRITY:** Academic dishonesty, including plagiarism, will not be accepted. It is recommended that you consult the 'How not to plagiarize' website at:

<http://www.artsci.utoronto.ca/newstudents/transition/academic/plagiarism>

Please review the "Rules and Regulations" section of the Arts and Science Calendar for further information: [http://www.artsandscience.utoronto.ca/ofr/calendar/Rules\\_&\\_Regulations.html](http://www.artsandscience.utoronto.ca/ofr/calendar/Rules_&_Regulations.html)

**COLLABORATION:** For Lab assignments students are encouraged to work in groups; however, each student is responsible for submitting their own original assignment. Copies of identical graphs and tables submitted by multiple group members will not be accepted. Identical text and obvious paraphrasing between group members on written answers will also not be accepted. For additional writing resources: <http://www.writing.utoronto.ca/writing-centres/arts-and-science>.

**ACCESSIBILITY:** The University of Toronto is committed to accessibility. Students requiring accommodation are encouraged to discuss their needs with the instructor within the first two weeks of class, and should register with Accessibility Services (<http://www.accessibility.utoronto.ca>).

**ACCOMMODATIONS FOR RELIGIOUS OBSERVANCES:** Please alert the instructor at least 2 weeks in advance if assignment due dates or examinations conflict with religious holidays, so alternate arrangements can be made. For further policy information from the university see:

<http://www.viceprovoststudents.utoronto.ca/publicationsandpolicies/guidelines/religiousobservances.htm>

**CLASS CONDUCT:** Respectful behaviour towards the instructor and your classmates is mandatory during class and in all correspondences dealing with the course. This includes **arriving to class on time**, not talking during lectures, and limiting cell phone use (please set to silent). Use of laptop computers for note taking is acceptable. To avoid distracting other students, please limit internet browsing, email, and other social media during class time.

**COPYRIGHT IN INSTRUCTIONAL SETTINGS:** No photography, sound-recording, or video-recording will be permitted during lecture, laboratory sessions, or field trip presentations without permission. If a student wishes to reproduce lecture presentations, course notes, or other similar materials provided by the instructor and TA's, he or she must obtain the instructor's written consent beforehand. Otherwise, all such reproduction is an infringement of copyright and is absolutely prohibited. In the case of private use by students with accessibility needs, the instructor's consent will not be unreasonably withheld.

| GGR 201F                                     | <u>Detailed Class Schedule, Topics, and Reading List</u>   | Summer 2018 |
|--|--|-------------|
| May 8<br>No Lab<br>Readings:                 | Introduction to geomorphology and geoscience<br><br><b>Textbook:</b> Chapter 1 (pages 4–6 and pages 20–30)<br>Figures <b>1.8, 1.10, 1.11, 1.12</b>   |             |
| May 10<br><br><b>Lab 1A</b><br>Readings:     | Driving and resisting forces of geomorphology,<br>Earth structure and materials: diastrophism, tectonics, and volcanism<br><br><b>Topographic Maps</b><br><br><b>Textbook:</b> Chapter 1 (pages 6–14), Chapters 11 and 12 (355–359 and 389–392)<br>Figures <b>1.1, 1.2, 1.3, 1.4, 11.1, 11.2, 11.3, 12.6</b><br><b>Web Links:</b> NRC Website, see Lab 1 handout regarding topographic maps  |             |
| May 15<br><br><b>Lab 1B</b><br>Readings:     | Surface weathering and geochemical processes<br>Karst landscapes<br><br><b>GoogleEarth</b><br><br><b>Textbook:</b> Chapter 3 (pages 76–89) and Chapter 4 (pages 133–136)<br>Figures 3.1, 3.2, <b>3.3, 3.4, 3.5, 3.8, 3.10, 4.14</b>  |             |
| May 17<br><br><b>Lab 2A</b><br><br>Readings: | Hillslope form and processes<br>Mass wasting, colluvial landforms, and hillslope evolution<br><br><b>Earth materials &amp; hillslopes, Part I</b> (participations marks for attendance)<br><b>Note:</b> Data for Lab 2A to be submitted by email <b>due Friday May 18<sup>th</sup></b><br><br>★ <u>Lab 1 due (hardcopies only)</u> ★<br><br><b>Textbook:</b> Chapter 5 (pages 145–163)<br>Figures 5.1, <b>5.2, 5.3, 5.4, 5.5, 5.6, 5.7</b> |             |
| May 22<br><br><b>Lab 2B</b><br>Readings:     | Fluvial processes, including hydrologic processes of overland flow<br>Channel hydraulics, sediment transport, and hydraulic geometry<br><br><b>Earth materials &amp; hillslopes, Part II</b><br><br><b>Textbook:</b> Chapters 4, 5 (pages 111–114, 126–127, 170–172) and Chapter 6 (all)<br>Figures 4.2, 4.3, <b>4.9, 4.10, 4.13, 5.12, 6.1, 6.3, 6.5, 6.6, 6.7</b>  |             |
| May 24<br>No Lab<br>Readings:                | ☆ <b>Midterm test in MP 137</b> ☆<br><br>★ <u>Lab 2 due (hardcopies only)</u> ★<br><br>Review  |             |

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May 29 Fluvial landforms, channel morphology, and drainage basins

**Lab 3A Fluvial I lab**

Readings: **Textbook:** Chapter 6 (all)  
Figures **6.2, 6.4, 6.8, 6.9, 6.10**, 6.11, 6.12

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May 31 Fluvial deltas and coastal geomorphology

**Lab 3B Fluvial II lab**

Readings: **Textbook:** Chapter 7 (all) and Chapter 8 (pages 253–275)  
Figures 7.1, **7.2**, 7.3, 7.4, **7.5**, 7.7, 7.8, **7.9**, 7.10  
Figures **8.1**, 8.2, 8.3, 8.4, **8.5, 8.6**, 8.7, **8.8**, 8.9, **8.10, 8.11**

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June 5 Aeolian geomorphology  
Glacial cycles and climate, ice ages and glaciation of Canada

**Lab 4A Aeolian lab ★Lab 3 due (hardcopies only)★**

Readings: **Textbook:** Chapter 10 (pages 329–350)  
Figures 10.1, 10.2 (and 1.5), **10.3, 10.4**, 10.5, 10.6, 10.9,10.10, **10.11**, 10.12

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June 7 Glacial processes: mass balance, ice temperature, ice movement  
Glacial erosion, deposition, and landforms

**Lab 4B Glacial lab**

Readings: **Textbook:** Chapter 9 (pages 291–316)  
Figure 9.1, **9.2**, 9.3, **9.4, 9.5**, 9.7, **9.8, 9.9, 9.10**

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**Field-Trip: Saturday June 9 (details given in class)**

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June 12 Glacial cycles and climate, ice ages and glaciation of Canada

No Lab Work on Field Trip Reports **★Lab 4 due (hardcopies only)★**

Readings: **Textbook:** Chapter 13 (all)  
Figures **13.2**, 13.3, **13.4, 13.5, 13.6, 13.9, 13.10, 13.12**

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June 14 Geomorphology and scientific philosophy: complexity and scale  
Applied geomorphology, environmental geoscience, and natural hazards

No Lab **★ Field Trip Reports due Friday June 15<sup>th</sup> (Turnitin.com)★**

Readings: **Textbook:** Chapter 2 (all), review general topics in Chapter 14.  
Figures 2.1, **2.4, 2.5, 2.6**, 2.7, 2.8, 2.9, 2.10, 2.11

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