

DEPARTMENT OF GEOGRAPHY
University of Toronto
COURSE OUTLINE
2015-2016

COURSE: GGR 201S - Geomorphology

INSTRUCTOR: Roger Phillips
Office: Earth Sciences 2124
22 Russell Street, Toronto
Email: roger.phillips@utoronto.ca
Office Hours: By appointment
Before/after lecture
Online office hours

TEACHING ASSISTANTS:

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Course Website on Blackboard – Available January 2016; login at:
<http://portal.utoronto.ca>

Recommended Preparation: GGR100H

Lectures: Tuesdays, 6-8; SSH 2106

Laboratory: T8, W10, W11 (ES2119); W4, W5 (ES1062); see detailed schedule

Computer Labs: T8 (SS620); W10, W11, W4, W5 (PGB003); and general access

Course Structure: A one term course with lectures and eight laboratory sessions, including four (4) short assignments. A field trip will be scheduled for March, 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 landforms and processes;
- (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.

PROGRAMME:

- (1) **Lectures:** A detailed outline will be distributed at the first class (see basic outline below).
- (2) **Laboratories:** There will be four laboratory exercises during the term (see basic schedule below). Collaborative effort in working out assignments is encouraged although individual reports must be submitted. Carefully read the "Lab Guide to GGR 201S" for preparation.
- (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 \$20 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.

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

Assignment Submission: It is expected that assignments will be completed within two weeks after distribution, submitted in person at the beginning of the next lab session; however, please see detailed schedule for due dates. Electronic submissions will NOT be accepted. Late assignments may be submitted to the assignment drop box in the Earth Sciences department (ESC Room 1066, weekdays 9am-5pm) and will not be penalized until after 5 pm Thursday the week the assignment is due. After the grace period, late assignments will be penalized 5% per day and will not be accepted after assignments have been returned. Further details are given in "Lab Guide to GGR201S".

Course Lecture Schedule (2015)

- January 12 – Introduction to geomorphology and geoscience
- January 19 – Forces and earth structure
- January 26 – Weathering and karst landscapes
- February 2 – Hillslope form and processes
- February 9 – Fluvial processes and landforms I
- February 23 – **Mid-term test**
- March 1 – Fluvial processes and landforms II
- March 8 – Aeolian processes and landforms
- March 15 – Glacial processes and landforms
- March 22 – Coastal processes and landforms
- March 29 – Glacial geomorphology, climate, and ice ages
- April 5 – Geomorphology: scientific philosophy and application
- April 12-29 – **University final examination period**

Assignment Schedule (2016) – (*Start dates* in brackets)

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|---|----------------------------------|
| Lab 1 – Maps and Google Earth (Jan 19–20) | Lab 3 – Fluvial (March 1–2, 8-9) |
| Google Earth Workshop (Jan 26–27) | Lab 4A – Aeolian (March 15–16) |
| Lab 2A – Hillslopes I (Feb 2–3) | Lab 4B – Glacial (March 22–23) |
| Lab 2B – Hillslopes II (Feb 9–10) | Field Trip Report (March 26) |

Note: GGR201S – Geomorphology is an accepted course contributing to registration in the *Association of Geoscientists of Ontario (APGO)* under "Foundation or Core Geosciences" minimum knowledge requirements. For more information, students in earth sciences and physical geography should visit: <http://www.apgo.net/> .

GGR-201S: Detailed Course Policies

Submitting assignments, late assignments, and missed examinations: Except where otherwise specified, assignments are due two weeks after distribution; however, late assignments will not be penalized until after 5pm Thursday the week the assignment is due. 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 (ESC Room 1066, weekdays 9am-5pm), and must include the student name, course number GGR201 with the lab time, and the TA's name. All assignments must be submitted in hard copies; electronic or emailed assignments will not be accepted. Further details regarding course assignments are given in the "Lab Guide to GGR201S" to be distributed in class.

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 mid-term examination, students will be required to do the following:

- Inform the instructor by email within 24 hours of the due date; and
- Submit a UofT Medical Certificate to the Instructor or Department of Geography within 5 days of the missed assignment or mid-term exam.

Failure to comply with this policy can result in a grade of zero for the assignment or midterm in question. Deferred final exams and family emergencies are dealt with by the Registrar's office of your college or faculty.

Double-sided policy: GGR201S will be participating in the UofT double-sided printing initiative. To conserve paper, students are encouraged, wherever possible, to print their assignments and course materials double-sided (see: <http://printdoublesided.sa.utoronto.ca/>).

Returning marked assignments and course drop deadline: The instructor and TA's will make every effort to return marked Lab Assignments within two weeks after the submission date or students will be notified by email of the expected return date using the Blackboard class list. Please note that **March 13th, 2016** is the deadline to drop S courses. 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 Friday March 11th, 2016.

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 @utoronto.ca email address with Blackboard (**Please confirm yours is listed on ROSI !**)

Enrollment in the course: ROSI is the only indicator of course enrollment. Granted access to the course website on Blackboard is not an indication of course enrollment. The instructor has no means of manually adding students to the course. Students not enrolled are encouraged to put their names on the ROSI waiting list and to attend the lecture and lab sessions at the beginning of the semester. It is expected that some students may drop the course after the first week, so motivated students are encouraged to frequently check their enrolment status on ROSI in the first couple of weeks of class.

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 ROSI. Each Lab Session has a cap of 20 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 before January 31st 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://life.utoronto.ca/get-smarter/academic-honesty/>

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

For Lab Assignments in GGR201S, students are encouraged to work in groups; however, each student is responsible for submitting their own original work assignment. Copies of identical graphs and tables submitted by multiple group members will not be accepted. Obvious paraphrasing between group members on written answers will also not be accepted. Further information regarding expectations for referencing and standard documentation formats will be provided in the "Lab Guide to GGR201S" to be distributed in class. Additional resources for writing can be found at: <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 in the Robarts library, 1st floor, 130 St. George Street, Toronto (<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 in 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.

☆ **Students are responsible for knowing the contents of this syllabus** ☆

GGR 201S	Detailed Class Schedule, Topics, and Reading List	2015-16
January 12 No Lab Readings:	Introduction to geomorphology Textbook: Chapter 1 (pages 4–6 and pages 20–30) Figures 1.8, 1.10, 1.11, 1.12	
January 19 Lab 1, Jan 19-20 Readings:	Driving and resisting forces of geomorphology, Earth structure and materials: diastrophism, tectonics, and volcanism Topographic Maps & GoogleEarth (in ES2119 or ES1062) Textbook: Chapters 1 (pages 6–14), 11 and 12 (355–359 and 389–392) Figures 1.1, 1.2, 1.3, 1.4, 11.1, 11.2, 11.3, 12.6 Web: NRC Website, see Lab 1 handout regarding topographic maps	
January 26 Lab Jan 26-27 Readings:	Surface weathering and geochemical processes Karst landscapes GoogleEarth, computers T8 (SS620); W10, W11, W4, W5 (PGB003); Textbook: Chapters 3 (pages 76–89) and 4 (pages 133–136) Figures 3.1, 3.2, 3.3, 3.4, 3.5, 3.8, 3.10, 4.14	
February 2 Lab 2A, Feb 2-3 Readings:	Hillslope form and processes Mass wasting, colluvial landforms, and hillslope evolution Earth materials & hillslopes, Part I (in ES2119/1062) ★Lab 1 due ★ Note: Data for Lab 2A to be submitted by email <u>due Friday Feb 5th</u> Textbook: Chapter 5 (pages 145–163) Figures 5.1, 5.2, 5.3, 5.4, 5.5, 5.6, 5.7	
February 9 Lab 2B, Feb 9-10 Readings:	Fluvial processes, including hydrologic processes of overland flow Channel hydraulics, sediment transport, and hydraulic geometry Earth materials & hillslopes, Part II (in SS620 or PGB003) Textbook: Chapters 4, 5 (pages 111–114, 126–127, 170–172) and 6 (all) Figures 4.2, 4.3, 4.9, 4.10, 4.13, 5.12, 6.1, 6.3, 6.5, 6.6, 6.7	
February 15-19	Reading Week	
February 23 No Lab Readings:	★ Mid-term test (Tuesday Feb 23rd, 6-8pm, MS2172) ★ ★ <u>Lab 2 due</u> ★ Textbook: Chapter 7 (all) Figures 7.1, 7.2, 7.3, 7.4, 7.5, 7.7, 7.8, 7.9, 7.10	

March 1 Fluvial landforms and channel morphology
Drainage basins/networks, alluvial stratigraphy, and bedforms.

Lab 3, Mar 1-2 Fluvial processes & landforms (ES2119/1062)

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

March 8 Aeolian processes and landforms

Lab Mar 8-9 Lab 3 help session (ES2119/1062)

Readings: **Textbook:** Chapter 10 (pages 329–347)
Figures 10.1, 10.2 (and 1.5), **10.3, 10.4**, 10.5, 10.6, 10.10, **10.11**

March 15 Glacial processes: mass balance, ice temperature, ice movement
Glacial erosion, deposition, and landforms

Lab 4, Mar 15-16 Aeolian/Glacial processes & landforms (ES2119/1062) ★Lab 3 due ★

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

March 22 Coastal landforms, classifications, processes: waves, tides, and sea level
Estuary and deltas; erosional landforms

Lab Mar 22-23 Lab 4 help session (ES2119/1062)

Readings: **Textbook:** Chapter 8 (pages 253–275)
Figures **8.1, 8.2, 8.3, 8.4, 8.5, 8.6, 8.7, 8.8, 8.9, 8.10, 8.11**

Field-Trip: Saturday March 26 and/or Sunday March 27 (details given in class)*

March 29 Glacial cycles and climate
Ice ages and glaciation of Canada

No Lab Work on Field Trip Reports ★Lab 4 due ★

Reading: **Textbook:** Chapters 13 (all) and 10 (pages 347-350)
Figures **13.2, 13.3, 13.4, 13.5, 13.6, 13.9, 13.10, 13.12**, 10.9, 10.12

April 5 Geomorphology and scientific philosophy: complexity and scale
Applied geomorphology, environmental geoscience, and natural hazards

No Lab ★ **Field Trip Reports due Tuesday April 5th, at the start of lecture★**

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

* **Note:** Further reading and field trip details to be provided in class, on Blackboard course website, and by email.
