

## GEOG 2330A Geomorphology and Hydrology

### Course Outline: Fall 2022

#### 1. Course Information

Delivery Mode	Day & time	Location
In person lecture	Wed 1:30-3:30	UC 2110
In person lab	Thursday Section 1 2:30-4:30 Section 2 4:30-6:30	SSC 1302



Classes Start	Reading Week	Classes End	Study day	Exam Period
First class meeting is Sept 14 <sup>th</sup>	Oct 31-Nov 6	December 8	December 9	December 10 - 22

September 16, 2022: Last day to add a first-term half course

October 10, 2022: Thanksgiving Holiday

November 12, 2022: Last day to drop a first term half course without penalty



Course Instructor	Contact Information	Office Hours
<b>Dr Peter Ashmore</b>	Email address: pashmore@uwo.ca	By appointment

Teaching Assistant(s)	Contact Information	Office Hours
<b>Martha Paiz-Domingo</b>	mpaiz2@uwo.ca	TBA



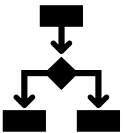
Office hours can be held remotely by arrangement

## 2. Calendar Description

Water and sediment cycles at the earth's surface and explanation of the resultant landforms; examples of response to environmental change; selected applications to environmental management.

0.5 course

**Prerequisite(s):** 1.0 course from [Geography 1100](#), [Geography 1200A/B](#), [Geography 1300A/B](#), [Geography 1400F/G](#), [Geography 1500F/G](#), [Geography 2131A/B](#), [Geography 2132A/B](#), [Geography 2133A/B](#), [Geography 2142A/B](#), [Geography 2152F/G](#), [Geography 2153A/B](#) (taken after September 2012); or 0.5 course from [Earth Sciences 1022A/B](#), [Earth Sciences 1070A/B](#), [Earth Sciences 1081A/B](#), or [Environmental Science 1021F/G](#); or enrolment in the Major in Physical Geography or in an Honours Earth Science Program for Professional Registration.



Prerequisite checking is the student's responsibility

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. Readings



Resources will be posted in OWL. I will post relevant resources each week as the course proceeds. Resources will include some recorded powerpoint slide shows. There is no required textbook but I will rely most on readings from: **Fundamentals of the Physical Environment by Smithson et al**, This is accessible as an *e-book* of the (3<sup>rd</sup> edition) from the Western Libraries catalogue. I will post a direct link on OWL.

## 4. Course objectives and format

The course as an introduction to aspects of hydrology and geomorphology in the larger context of physical geography. Course delivery emphasises active and interactive classroom sessions, and hands-on learning including field work along Medway Creek valley close to campus. All course material will be posted on OWL.

Note: [Google Chrome](#) or [Mozilla Firefox](#) are the preferred browsers to optimally use OWL; update your browsers frequently. Students interested in evaluating their internet speed, please click [here](#). [Using the right browser is important, especially when using different features integrated with OWL]

If students need assistance, they can seek support on the [OWL Help page](#). Alternatively, they can contact the [Western Technology Services Helpdesk](#). They can be contacted by phone at 519-661-3800 or ext. 83800.

## 5. Learning Outcomes

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

1. recognise, and describe the characteristics of, common landforms;
2. understand and explain the physical principles of common geomorphic and hydrologic processes, and the functioning of the water and sediment cascades;
3. explain landform development in relation to the relevant geomorphic and hydrologic processes and anticipate the effects of environmental change on both the processes and landforms;
4. discuss, with the help of case examples, the application of geomorphology and hydrology to environmental management;
5. apply simple techniques such as map analysis, air photo reading, exploratory data analysis and use of physical theory to the solution of geomorphic and hydrologic problems.



## 6. Course Content and Schedule

1. Introduction - the scope of physical geography as the science of the physical environment of the Earth's surface, the place of hydrology and geomorphology in systematic physical geography, spatial and temporal scales of study.
2. Geomorphology and hydrology as physical systems - energy and mass transfer and budgets, endogenic and exogenic processes, the relief of continental surfaces and their denudation, global water cycle.

3. Physical properties of earth materials and application to hillslope erosion - soil moisture and shear strength, processes of mass movement and their role in hillslope evolution, slope stability as a geomorphic hazard and its mitigation.
4. Hillslope and drainage basin hydrology - the water balance and water movement at the local scale. Components of the water balance and the physical processes of water transfer: interception and evapotranspiration; soil moisture storage, movement and infiltration; groundwater; generation of surface and subsurface stormflow; streamflow analysis; flooding and flood hazards; fluvial erosion on hillslopes. The effects of land-use change on hillslope hydrology and erosion.
5. Drainage basin geomorphology - the drainage basin as a fundamental unit for geomorphology, surface hydrology and environmental management; quantitative analysis of stream network and drainage basin morphology and development; the drainage basin sediment cascade; processes of stream channel initiation; physics of flow and sediment transport in stream channels; stream channel form; effects of climate, land use and flow regulation on stream systems.
6. Glaciation - the significance of glaciation to geomorphology and hydrology in Canada; glacier mass balance; physics of glacier flow, erosion and deposition; landforms of continental and alpine glaciation.



Week	Dates	Topic
1	Sept 14	Course introduction, earth systems
2	Sept 21	Uplift and denudation
3	Sept 28	Weathering and hillslope morphology
4	Oct 5	Mass movement and slope stability
5	Oct 12	Hillslope erosion by water & hillslope synthesis
6	Oct 19	Watersheds and stream networks
7	Oct 26	Midterm take-home assignment. <b>No lab session</b>
8	Oct 31-Nov 6	Reading Week. No classes.
9	Nov 9	Watershed and river processes & fluvial morphology
10	Nov 16	Rivers – environmental change
12	Nov 23	Glacial processes and landforms
13	Nov 30	Summary
14	Dec 7	Review

## Lab sessions and assignments

The lab component of the course will be based on field data collection and ‘desktop’ analysis of the Medway Creek watershed. Most of the field data collection will be done in September but weather-permitting we may go out later in the term also. Some of the field work may be done during lecture periods also. There will be lab work every week (except weeks of midterm and reading week) and when not in the field we will meet in SSC 1302, although some work may be completed independently. We will also be using Google Earth for some elements of the labs. If you are not familiar with it we will provide an introduction during labs and post a summary video on OWL.

There will be four assessed lab components which you will work on based on the field work and other information sources:

Activity assignment	Due date	Course grade
1. Valley topography and slope stability	Oct 20	10%
2. Discharge and flow regime	Nov 10	10%
3. River morphology and watershed topography	Nov 24	10%
4. Medway Creek summary vignette	Dec 8	10%

## 7. Communication



- Students should check the OWL site at least twice per week and especially before each lab session. New material will be added every week for both the lecture and lab components of the course. Especially look for new announcements that may contain updates on meeting locations and activities for the week.
- For any other communication, the centrally administered **e-mail account** provided to students will be considered the individual’s official university e-mail address. It is the responsibility of the account holder to ensure that e-mail received from the University at his/her official university address is attended to in a timely manner. You can read about the privacy and security of the UWO email accounts [here](#).
- Emails will be monitored daily; students will receive a response in 24 – 48 hours. Please include “Geog 2330” in the subject line.

## 8. Evaluation

Below is the evaluation breakdown for the course. Any deviations will be communicated.

Assessment	Format	Weighting	Due Date
Midterm	take home assignment, time-limited	20%	Week of Oct 24, Details tba
Lab assignments	4 Written reports – details above	40% (4 x 10%)	Oct 20 Nov 10 Nov 24 Dec 8
Final assignment	Take home assignment, time-limited	40%	During final exam period



Students are responsible for material covered in the lectures as well as the assigned chapters/sections in the text and online Resources.

### Information about late or missed evaluations:

- Late assessments without illness self-reports will be subject to a late penalty of 5%/day
- Late assessments with illness self-reports should be submitted within 48 hours of submission of the last illness self-report
- An assessment cannot be submitted after it has been returned to the class

## 9. Accommodation Policies

Students with disabilities work with Accessible Education (formerly SSD) which provides recommendations for accommodation based on medical documentation or psychological and cognitive testing. The accommodation policy can be found here: [Academic Accommodation for Students with Disabilities](#).

### Academic Consideration for Student Absence

Please contact me as soon as possible if you have any personal circumstances that affect your ability to complete academic work or attend the course. I will do all I can to accommodate you and allow you to make up missed work.

Please note that for any assignments totalling 10% or more you should contact your Faculty Dean's office.

The University recognizes that a student's ability to meet their academic responsibilities may, on occasion, be impaired by medical illness. Illness may be acute (short term), or it may be chronic (long term), or chronic with acute episodes. The University further recognizes that medical situations are deeply personal and respects the need for privacy and confidentiality in these

matters. However, in order to ensure fairness and consistency for all students, academic accommodation for work representing 10% or more of the student's overall grade in the course shall be granted only in those cases where there is documentation indicating that the student was seriously affected by illness and could not reasonably be expected to meet their academic responsibilities.

[Policy on Academic Consideration for Medical Illness - Undergraduate Students](#)

[Student Medical Certificate \(SMC\)](#)

### **Religious Accommodation**

Students should consult the University's list of recognized religious holidays, and should give reasonable notice in writing, prior to the holiday, to the Instructor and an Academic Counsellor if their course requirements will be affected by a religious observance. Additional information is given in the [Western Multicultural Calendar](#).

## **10. Use of Recordings**

Recording of any class sessions and lectures is not permitted except where recording is an approved accommodation, or the participant has the prior written permission of the instructor.

## **11. Continuity of Education Plan (in-person class pivoting to online learning)**

In the event of a COVID-19 resurgence during the course that necessitates the university to direct courses move away from face-to-face interaction, all remaining course content will be delivered entirely online, either synchronously (i.e., at the times indicated in the timetable) or asynchronously (e.g., posted on OWL for students to view at their convenience). The grading scheme will **not** change. Any remaining assessments will also be conducted online as determined by the course instructor.

## **12. Information on COVID-19**

### **Masking Guidelines**

Students will be expected to wear triple layer, non-medical, paper masks at all times in the classroom as per University policy and public health directives. Students who are unable to wear a mask must seek formal accommodation through Western Accessible Education, and present medical documentation.

Students are not permitted to eat or drink while in class to ensure masks stay in place. Students will be able to eat and drink outside of the classroom during scheduled breaks.

Students unwilling to wear a mask as stipulated by Western policy and public health directives will be referred to the Dean, and such actions will be considered a violation of the student Code of Conduct.

### 13. 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.

### 14. 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.

### 15. 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.

### 16. Support Services

Western's Support Services  
Student Development Centre

### 17. Important Dates

September 8: Classes resume

September 16: Last day to add a first term half course

October 10: Thanksgiving Holiday – Department Office Closed

October 31 to November 6: 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 penalty

December 8: Classes end

December 9: Study day

December 10-22: Examination Period