



Image by hosereed (<http://www.wikipedia.com>)

fall 2012-2013

Course Outline

v1.0 - 01 Sep 2012



Western
Department of Geography
University of Western Ontario

Course Instructor:

M. Van De Wiel
office: Room 2412, Social Sciences Centre
email: mvandew3@uwo.ca
telephone: 519 661-2111 ext.80161
office hours: Tuesday, 14:30 – 17:00 (SSC 2412)

Teaching Assistant:

to be confirmed

Lectures:

weekly

Wednesday, 12:30 – 14:30

room 3026, Social Sciences Centre

Labs:

Thursday, 14:30-16:30 or 16:30-18:30

room 2333, Social Sciences Centre

Attendance:

Attendance at lectures is optional, but recommended. The course material is cumulative, and you are expected to keep up with the material week by week. If you do not keep up with the material, you may find subsequent lectures difficult. Students are responsible for keeping up with course material of missed lectures.

Labs are mandatory.

Course Description:

This course explains the water and sediment cycles at the Earth's surface , including the description and explanation of the resulting landforms, the interconnection of geomorphic and hydrologic systems to environmental change, and applications to environmental management.

Course Prerequisites:

1.0 courses from:

Geography 1100

Geography 1300A/B,

Geography 01400 F/G,

Geography 1500 F/G or the former Geography 020E,

or 0.5 from Earth Sciences 1022A/B or 1081A/B;

or enrolment in the Major in Physical Geography;

or enrolment in an Honours Earth Science Program for Professional Registration.

NOTE: Unless you have either the requisites for this course or written special permission from your Dean to enrol 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.

Course Objectives:

At the end of the course, students should be able to:

- recognise, and describe the characteristics of, common landforms;
- understand and explain the physical principles of common geomorphic and hydrologic processes;
- understand and explain the functioning of the water and sediment cascades;
- explain landform development in relation to the relevant geomorphic and hydrologic processes;
- anticipate the effects of environmental change on both the processes and landforms;
- discuss, with the help of case examples, the application of geomorphology and hydrology to environmental management;
- 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.

Lectures will cover the following main topics:

- **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.
- **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.
- **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.
- **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.
- **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.
- **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.

The course takes a seminar-based approach, by which a different aspects of drainage basin morphology and basin research will be explored each week.

Lecture schedule

Wed, Sep 12:	Course introduction, earth systems
Wed Sep 19:	Uplift and denudation, regional landforms
Wed, Sep 26:	Hillslopes: weathering
Wed, Oct 3::	Hillslopes: mass movement
Wed, Oct 10:	Hillslopes: stability and water erosion
Wed: Oct 17:	Hillslope and streamflow hydrology
Wed, Oct 24:	Mid-term test (in class)
Wed, Oct 31:	Drainage basins and rivers
Wed Nov 7:	Drainage basins and rivers
Wed, Nov 14:	Drainage basins and rivers
Wed, Nov 21:	Glacial processes
Wed, Nov 28:	Glacial landforms
Wed, Dec 5:	Summary / Review / Prospect

NOTE: This scheduling of lecture topics is provisional, and may change depending on class dynamics during term.

In addition to the lectures, the course employs labs and field work for completion of a variety of exercises designed to consolidate and elaborate on the lecture material. Lab material will be incorporated into examinations. The labs are also used to teach and apply some simple practical skills in geomorphology and hydrology and are likely to involve short field excursions in the vicinity of the campus. There will be several field work sessions and some hands-on laboratory work.

The laboratory and field work sessions will be supervised by teaching assistants who will also be responsible for assessment of lab work. During the lab sessions you will often work and report in small groups. In many cases assessment will be 'formative' – i.e. you will receive feedback from the TAs but no formal grade that counts towards the course grade. Details will be given to you in the lab sessions, including dates for handing in the graded reports. Some lab exercises will require a calculator and in some cases labs will make use of computer-based exercises.

There is no laboratory manual for the course.

The first lab will be held on Thursday, September 13th.

There is no course textbook.

Lecture handouts, consisting of selected lecture material, will be provided online before each lecture, but students may find it helpful to take notes during the lectures to complement the handouts. In addition, weekly reading assignments will be placed online each week as we cover each topic. These will be excerpts from books, articles and various websites. The readings will be chosen to support, extend and provide cases related to each course topic and the lab assignments.

If you have not had much background in physical geography (e.g. have not taken GEOG1100 or GEOG1300), it will be useful to consult the relevant parts of an introductory textbook on Physical Geography. There are a few options:

- **“Fundamentals of the Physical Environment”**, by Smithson et al, 4th edition. This is an introduction to physical geography and chapters 1, 10, 13, 14, 15, 17 and 24 are especially useful for this course. There is also an e-book of the 3rd edition of this book accessible from the library catalogue
- **“An Introduction to Physical Geography and the Environment”**, by Joseph Hayden (editor), particularly chapters 11, 13,14 and 18.
- **“Canadian Geosystems”** by Christopherson and Byrne . This is the text that is assigned for GEOG1300. Especially parts or all of Chapters. 9, 12, 13, 14 and 17 are of interest.

There are several intermediate textbooks on geomorphology that you might wish to refer to. These include:

- **“Global Geomorphology”** by M.A. Summerfield. Chapters, 1, 6-9, 12 and 15 are most relevant for this course and might be useful as a supplement to the course notes and readings.
- **“Geomorphology; A Canadian Perspective”** by Alan Trenhaile. The Third edition (2007) and Fourth (2010) editions are best.
- **“Fundamentals of Geomorphology”** by Richard Huggett, 2nd Edition. 2007.

Some of the assigned readings may come from these books as well.

Evaluation of the course will be based on the following components:

Field report: 20 %

A summary report and accompanying maps/illustrations on the geomorphology and hydrology of Medway Creek valley adjacent to campus. This will be the culmination of several weeks of field work and other information gathering and analysis. **Due November 18th**

Lab reports: 20 %

Two short laboratory reports based on individual lab sessions and done during the lab session. Exact date and assignment details will be given in the lab sessions.

Mid-term Exam: 20 %

A short written answer mid-term test is scheduled for Wednesday, **October 24th**, during class hours.

Final exam: 40 %

The final exam will be held during the official University examination period. The final exam will a 2 hour exam with both short answers and essay type questions. The final examination will cover all aspects of the course, including the lab component and readings. Do not make any firm travel plans until you know the exact date of the final exam.

NOTE: Simple calculators are permitted, but no other electronic devices will be allowed during tests and examinations

NOTE: The mark awarded by an instructor in a course at UWO is only final when students receive it from the Registrar.

Late Policy:

All assignments must be handed in before the allocated deadline. Late submissions will be penalized at a rate of 10% per day for the first seven days. A mark of 0%-mark will be recorded if work is submitted more than a week late.

Extensions:

If you have genuine extenuating circumstances and will not be able submit an assignment on time, you may submit a written request for extension, clearly outlining why you should be granted an extension. This request must be submitted to the course instructor at least seven days before the assignment is due.

Accommodation:

If you have genuine extenuating circumstances and failed to submit an assignment on time, you must submit a signed doctor's letter or other legitimate documentation explaining why you failed to meet the deadline. This documentation should be submitted directly to the Dean's Office, not the course instructor. It is the Dean's Office that will determine if accommodation is warranted.

NOTE: Also see UWO's Policy on Accommodation for Medical Illness (<https://studentservices.uwo.ca/secure/index.cfm>).

Illness:

If you have an illness during the term that affects your work or ability to write exams or to complete work on schedule, please contact me as soon as you can, so I that can help with any accommodation. Also, please refer to Western's Policy on Accommodation for Medical Illness:

http://www.uwo.ca/univsec/handbook/appeals/accommodation_medical.pdf.

You can download a Student Medical Certificate (SMC) from: <https://studentservices.uwo.ca> under the Medical Documentation heading.

Academic Conduct: Students should be familiar with the University Academic Policies and Regulations, and with the Academic Rights and Responsibilities in the Academic Calendar on the Registrar's website.

<http://www.westerncalendar.uwo.ca/2012/pg37.html>

Scholastic Offences are taken seriously and students are directed to read the appropriate policy, specifically, the definition of what constitutes a Scholastic Offence, at the following Web site:

<http://www.uwo.ca/univsec/handbook/appeals/scholoff.pdf>.

Plagiarism refers to the inclusion or submission of someone else's work (published or unpublished) without giving credit to the original author. Students must write their essays and assignments in their own words. Whenever students take an idea, or a passage from another author, they must acknowledge their debt both by using quotation marks where appropriate and by proper referencing such as footnotes or citations. Plagiarism is a major academic offence (see Scholastic Offence Policy in the Western Academic Calendar).

NOTE: All submitted reports and papers may be subject to submission for textual similarity review to the commercial plagiarism detection software under license to the University for the detection of plagiarism. All papers submitted for such checking will be included as source documents in the reference database for the purpose of detecting plagiarism of papers subsequently submitted to the system. Use of the service is subject to the licensing agreement, currently between The University of Western Ontario and Turnitin.com (<http://www.turnitin.com>).

Geography Undergraduate Assistant:

Angelica Lucaci
SSC 2322A

Registrarial Services:

<http://www3.registrar.uwo.ca/index.cfm>

Student Development Services:

<http://www.sdc.uwo.ca/>

Social Sciences Academic Counselling:

<http://counselling.ssc.uwo.ca/>
SSC 2105

Accessibility:

The University of Western Ontario is committed to achieving barrier free accessibility for persons studying, visiting and working at Western. 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 661-2111 x 82147 for any specific question regarding an accommodation.

Mental Health:

If you or someone you know is experiencing distress, there are several resources at Western to assist you. Please visit <http://www.uwo.ca/uwocom/mentalhealth/> for more information on these resources and on mental health.