

GEOGRAPHY 3333B **Drainage Basin Geomorphology**

winter/spring 2014-2015

Course Outline

v1.0 - 14 Dec 2014



Department of Geography – Western

Lamar River, Yellowstone NP



Course Instructor:

Nathaniel Bergman

office: Room 2404, Social Sciences Centre

email: nbergma@uwo.ca

office hours: Tuesday, 11:00 - 13:00 (SSC 2404) or by email appointment

Teaching Assistant:

none

Lectures:

weekly

Tuesday, 8:30 – 10:30

room 259, Weldon Library

Practicals:

irregular

Thursday, 8:30-10:30

room 1059, Social Sciences Centre

Attendance:

Attendance at lectures and practicals is optional, but recommended. Students are responsible for keeping up with course material of missed lectures and practicals. Submission deadlines for assignments apply regardless of attendance.

Course Description:

Drainage basins are sediment transfer systems, where sediment erosion, transport and deposition operate and interact over a range of scales to produce a complex, evolving landscape. The course aims to provide an overview of the major geomorphological processes that are active in drainage basins (hillslope erosion and fluvial sediment transport), and to illustrate the analytical techniques which can be used to analyse them. Not only the processes themselves will be studied, but also the factors controlling them, as well as the implications for environmental and geomorphological problems.

The course approaches the explanation of drainage basin morphology and dynamics quantitatively, using fundamental physical principles of Newtonian mechanics, water flow and sediment transport as the foundation. Thus, students can expect to use some simple mathematics and elementary physics in parts of the course, and in some of the practical exercises. These fundamental principles will be introduced and explained during the course.

Course Prerequisites:

One of Geography 2310A/B, 2320A/B or 2330A/B; or at least 3rd year standing in an Environmental Science or Earth Sciences program.

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

- understand the geomorphological dynamics of drainage basins
- perform quantitative analyses of drainage basin morphometry
- perform qualitative and quantitative analyses of drainage basin sediment transfers
- participate in scientific dialogue and debate on drainage basin dynamics
- present scientific data in an understandable and informative manner
- read, understand and create scientific graphics
- read and understand contemporary scientific papers on drainage basin geomorphology

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

Tue, January 6:	Introduction
Tue, January 13:	Drainage Basin Morphometry
Tue, January 20:	Stream Network Analysis
Tue, January 27:	Stream Network Evolution
Tue, February 3:	River Heads
Tue, February 10:	Hill Slopes
Tue, February 17:	<i>[Reading week]</i>
Tue, February 24:	Alluvial Valleys
Tue, March 3:	Sediment Transfer
Tue, March 10:	Sediment Budgets
Tue, March 17:	Vegetation Effects
Tue, March 24:	Impacts on Society
Tue, March 31:	Computer Modelling
Tue, April 7:	Catching Up / Review

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

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

Assignments: 35 %

Some lab classes will consist of assignments to be completed outside of scheduled lab hours. Deadlines apply to each lab assignment and these will be strictly enforced. Detailed lab assignment instructions will be provided in the lab classes.

Mid-term Exam: 15%

The mid-term exam is provisionally scheduled on Thursday, February 27th 2014. The mid-term exam will be a 2-hour exam and will include both short-answer and short essay-type questions. The answer to one of the short essay-type questions (student's choice which one), must be defended in a oral interview with the course instructor.

Final exam: 50 %

The final exam will be held during the official University examination period. The final exam will be a 3-hour exam and will include both short-answer and short essay-type questions. Depending on the students' evaluation of the mid-term oral exam component, a similar oral exam component might be included in 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 5pm on the due date. 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.

There is no course textbook.

Handouts of selected lecture material will be provided electronically (via OWL) before each lecture, but students may find it helpful to take notes during the lectures to complement the handouts. The course material is cumulative, *i.e.* 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.

Additional reading, to be assigned during term, will consist of selected scientific papers from academic journals to which the University subscribes (in print or online), such as *Geomorphology*, *Catena*, *Earth Surface Processes and Landforms*, *Hydrological Processes*, *Journal of Hydrology* and *Water Resources Research*.

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 required 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 x82147 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.