Geography 300

Geomorphology and the Southern Ontario Environment

Spring 2017 EV2 rm 2002 1:30-2:20 Thursday, Note: 5 field trip dates with start at 1:30 to 5:20 and one to 6:20 to accommodate Long Point field trip

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Instructor

I. McKenzie EV1 rm 222. Office hours Thurs. 12:00 to 1:00 and Friday 12:00 to 1:20.

Calendar Description

Study of the origin and evolution of landforms with emphasis on southern Ontario. Analysis of Geomorphic processes. Study of human impact on geomorphological landscapes. The lectures will be supplemented by field trips and field work required for term projects. Field trip fee: $73.45 [$65.00 + HST 13% $8.45]

Overview

This course is for students who have a working knowledge of geomorphology and are interested in furthering their skills in field identification of landforms. The course attempts to bridge the gap between theoretical knowledge and practical experience. It will familiarize students with some field and laboratory methods at their disposal for geomorphological research. You will learn how to identify geomorphic problems and to interpret the results.

Objectives

To develop a working knowledge of the geomorphology of southern Ontario.

To understand human and natural geomorphological landscape change.

Text and Readings

Suggested reading.

Chapman, L.J., and Putnam, D.F.

1984: The Physiography of Southern Ontario; Ontario Geological Survey, Special Volume 2, 270p. Accompanied by Map P. 2715 (coloured), scale 1:600,000.

Karrow, P.F.

1987: Quaternary Geology of the Hamilton-Cambridge Area, Southern Ontario; Ontario Geological Survey Report 255, 94p. Accompanied by Maps 2508 and 2509, scale 1:50,000 and 4 Charts.

Journal articles and reports**.**

Student Evaluation: Course grading will reflect participation in written work, field trips, labs and student assignments.

Assignments Due		Percent of Grade
May 18	Review of journal article I (from list provided)	11%
June 1	Field trip report I	20%
June 22	Field trip report II	25%
July 6	Review of journal article II and class presentation (Article 12%, presentation 6%)	18%
July 6 and 13	*Geomorphological materials*, Lab 1: Sieving Lab 2: Particle morphology and lithology	12% 12%
July 20	Class discussion: Geomorphology – Urban Growth, Climate Change, Landscape Protection	2%

Lecture, field trip and lab schedule

Week No. 1 May 4
Introduction; Course requirements; Geology and Geomorphology of Ontario; Depositional Environments and Materials. Guidelines for field trip reports and reviews of journal articles. Readings: *Chapman and Putnam*, *1984* p.1-5, Bedrock; p. 9-41 Glacial Geology; moraines, spillways, drumlins, eskers, kames ,glacial lakes; p. 43-53 Moraines, note: Waterloo Moraine, Milverton, Tillsonburg, Paris, Galt, Oak Ridges and Trafalgar moraines; *Karrow, 1987*; p. 5-6, Introduction; p. 9-15, Paleozoic Geology; p. 16- 20, Cenozoic Geology, Quaternary; p. 20-29, Outwash Plains, Terraces, Shorelines.

Week No. 2 May 11
Introduction to field studies in the southern Ontario Landscape, field themes and study locations; observations and field notes; Shorelines of the Great Lakes: Ancient, Contemporary and Future; readings: *Chapman and Putnam, 1984*; p. 55-56, Drumlins; p.58-61, Eskers; p. 61-64, Shorelines, L. Whittlesey, L. Warren; *Karrow, 1987*; p. 53-54 Bogs Swamps.

Week No. 3 May 18 (all field trips meet at school bus loading area below Hagey Hall hill, Ring Road, opposite H parking lot)
Field Trip: Rockwood and Environs, bedrock and glaciofluvial morphology. Article I due

Week No. 4 May 25
Field Trip: Paris, Galt and Guelph Moraines, Freelton Esker, Westover Drumlin Field, Beverly Swamp.

Week No. 5 June 1
Field Trip: Grand River Valley, Bridgeport to Cambridge. *Chapman and Putnam 1984*. p. 80 Loess, p. 94-95, River Valleys and Lake Erie drainage. *Karrow, 1984*; p. 30-42, Stream Terraces and Tills, p. 57- 60, Wisconsinan
Field trip report I due

Week No. 6 June 8
Field Trip: Geomorphology of the shore zone, Lake Erie.

Week No. 7 June 15
Field Trip: Landscapes and Conflicts on the Waterloo Moraine and environs.

Week No. 8 June 22
Introduction to the importance and statistical parameters of grain size; measurements and geomorphological significance of shape and roundness of rock particles; pebble lithology.
Field trip report II due

Week No. 9 June 29
Particle size analysis of till or fine material using the hydrometer. Identification of glacial sequences and materials. Course review quiz.

Week No. 10 July 6
Class presentations of recent journal articles related to the Geomorphology of Ontario, Article II and Lab 1 due

Week No. 11 July 13 Continuation of individual class presentations Geochronology and dating of sediments; collection of specimens for radiocarbon dating; pollen in sediments; varves; dendrochronology; lichenometry, Lab 2 due

Week No. 12 Tues. July 20
Class discussion -- New Problems for Geomorphology – Urban Growth, Climate Change and Landscape Protection

♦ Unclaimed assignments will be retained for one month after term grades become official in quest. After that time, they will be destroyed in compliance with UW's confidential shredding procedures.

♦ **Academic Integrity:** In order to maintain a culture of academic integrity, members of the University of Waterloo community are expected to promote honesty, trust, fairness, respect and responsibility. **www.uwaterloo.ca/academicintegrity/**

♦ Students who are unsure what constitutes an academic offence are requested to visit the on-line tutorial at **http://www.lib.uwaterloo.ca/ait/**

♦ **Research Ethics:** Please also note that the 'University of Waterloo requires all research conducted by its students, staff, and faculty which involves humans as participants to undergo prior ethics review and clearance through the Director, Office of Human Research and Animal Care (Office). The ethics review and clearance processes are intended to ensure that projects comply with the Office's Guidelines for Research with Human Participants (Guidelines) as well as those of provincial and federal agencies, and that the safety, rights and welfare of participants are adequately protected. The Guidelines inform researchers about ethical issues and procedures which are of concern when conducting research with humans (e.g. confidentiality, risks and benefits, informed consent process, etc.). If the development of your research proposal consists of research that involves humans as participants, the please contact the course instructor for guidance and see http://iris.uwaterloo.ca/ethics/

♦ **Note for students with disabilities:** The AccessAbility Office located in Needles Hall, Room 1132, collaborates with all academic departments to arrange appropriate accommodations for students with disabilities without compromising the academic integrity of the curriculum. If you require academic accommodations to lessen the impact of your disability, please register with the AccessAbility Office at the beginning of each academic term.

♦ **Mental Health:** The University of Waterloo, the Faculty of Environment and our Departments consider students' well-being to be extremely important. We recognize that throughout the term students may face health challenges - physical and / or emotional. **Please note that help is available**. Mental health is a serious issue for everyone and can affect your ability to do your best work. Counselling Services (www.uwaterloo.ca/counselling-services) is an inclusive, non-judgmental, and confidential space for anyone to seek support. They offer confidential counselling for a variety of areas including anxiety, stress management, depression, grief, substance use, sexuality, relationship issues, and much more.

♦ **Religious Observances:** Student needs to inform the instructor at the beginning of term if special accommodation needs to be made for religious observances that are not otherwise accounted for in the scheduling of classes and assignments.

♦ **Grievance:** A student who believes that a decision affecting some aspect of his/her university life has been unfair or unreasonable may have grounds for initiating a grievance. Read Policy 70 - Student Petitions and Grievances, Section 4, www.adm.uwaterloo.ca/infosec/Policies/policy70.htm. When in doubt please contact your Undergraduate Advisor for details.

♦ **Discipline *(as noted above under 2a)*:** A student is expected to know what constitutes academic integrity, to avoid committing academic offence, and to take responsibility for his/her actions. A student who is unsure whether an action constitutes an offense, or who needs help in learning how to avoid offenses (e.g., plagiarism, cheating) or about "rules" for group work/collaboration should seek guidance from the course professor, academic advisor, or the Undergraduate Associate Dean. For information on categories of offences and types of penalties, students should refer to Policy 71, Student Discipline, www.adm.uwaterloo.ca/infosec/Policies/policy71.htm. For typical penalties, check Guidelines for Assessment of Penalties, www.adm.uwaterloo.ca/infosec/guidelines/penaltyguidelines.htm

♦ **Appeals:** A decision made or penalty imposed under Policy 70 - Student Petitions and Grievances (other than a petition) or Policy 71 – (Student Discipline) may be appealed if there is a ground. A student who believes he/she has a ground for an appeal should refer to Policy 72 (Student Appeals) www.adm.uwaterloo.ca/infosec/Policies/policy72.htm