## General Information

**Course Title:** ENVS\*2160/2200 Glacial Geology

**Course Description:**

This course is designed to give students an introduction to the processes, landforms and deposits of glacial environments. This includes basic principles of glaciology, the landforms and deposits found in various glacial and periglacial environments, and the nature of past glaciations in Earth history. Ancient to recent glacial deposits from the Great Lakes region and other international locations will be examined. A field trip will be scheduled.

**Credit Weight:** 0.50

**Academic Department (or campus):** School of Environmental Sciences

**Campus:** Guelph

**Semester Offering:** Winter 2016

**Class Schedule and Location:**

**Lectures**: ALEX 218; Monday Wednesday & Friday 1:30-2:20

**Lab (ENVS 2200 only)**: ALEX Rm. 024/020; Monday 2:30-5:20

## Instructor Information

Instructor Name: Emmanuelle Arnaud

Instructor Email: earnaud@uoguelph.ca

Office location and office hours: Alex 126, by appointment via email.

## GTA Information

GTA Name: Elisha Persaud

GTA Email: epersaud@uoguelph.ca

GTA office location and office hours: TBA

Instructional Assistant: Steve Sadura, sadura@uoguelph.ca, Alexander Hall Room 221

## Course Content

### Specific Learning Outcomes:

In this course, students will be able to:

1. Distinguish the different types of modern glacial landscapes and ancient glacial periods in Earth history
2. Explain the basic processes responsible for the movement of glaciers and the erosion and deposition of glacial sediments.
3. Identify and describe glacial sediments and sedimentary rocks found in different glacial settings and explain the different processes responsible for their formation
4. Apply the knowledge above to interpret ancient glacial deposits and reconstruct the nature of past climatic conditions and glacial processes
5. Resolve scientific and environmental questions using their knowledge of glacial settings and glacial deposits
6. Demonstrate the ability to:
	1. find and critically evaluate literature on a specific topic in glacial geology (ENVS 2160)
	2. organize and summarize scientific information into a coherent and convincing written report (ENVS 2160)
	3. classify glacial sediments and sedimentary rocks using standard terminology (ENVS 2200)
	4. analyse data and airphotos to extract information about modern and ancient climatic and glacier fluctuations (ENVS 2200).

### Lecture and Lab Content:

| ****DATE**** | ****TOPICS**** | ****READINGS**** ****in Martini et al. 2001**** | ****Lab Schedule**** | ****DUE DATES (% of final grade)**** |
| --- | --- | --- | --- | --- |
| Jan. 11-15 | The glacier system | Chapter pp. 24-56, 64-66, Box 3.1 | NO LAB | **\*\*ENVS 2200 labs due Monday in lab/class**  |
| Jan. 18-22 | Glacial erosion | Chapter 4 | Lab 1 | **\*\*ENVS 2160 submit in D2L dropbox by 5pm** |
| Jan. 25-29 | Glacial deposition | Chapter 6 | Lab 1 |  |
| Feb. 1-5 | Ice marginal env.  | Chapter 6, pp. 140-144 | Lab 2 | ENVS 2200 Lab 1 (10%)  |
| Feb. 8-12 | Glaciofluvial env. | Chapter 7 | Lab 2 | ENVS 2160 Outline and Bibliography (15%)  |
| Feb. 15-19 | MIDTERM BREAK | NO CLASSES | NO LAB |  |
| Feb. 22-26 | Marine/lacustrine environments  | ****MIDTERM TEST IN CLASS Wed Feb 24th**** | NO LAB  | ****MIDTERM TEST (25%)**** ENVS 2200 Lab 2 (10%) |
| Feb 29-Mar 4 | Marine/lacustrine environments | pp. 155-170, pp. 170-184, 263-271 | Lab 3 |  |
| Mar. 7-11 | Periglacial environments | pp. 193-199, Chap 10; Hugh French chapter in Eyles 1997 (on reserve) | Lab 3 | ENVS 2160 optional draft  |
| Mar. 14-18 | Cenozoic/Quaternary glaciations | pp. 239-256, 293-299, 303-314 | Lab 4 | ENVS 2200 Lab 3 (15%); ****FIELD TRIP** SATURDAY MARCH 19th, 9-3pm** |
| Mar. 21-23 | Global abrupt climate change  | Chapter 15 | Lab 4 | **NO CLASS on FRIDAY** |
| Mar. 28-Apr 1 | Pre Quaternary glaciations  | Chapter 14 | NO LAB | ENVS 2200 Lab 4 (10%); ENVS 2160 final paper due (30%) |
| Apr. 4-8 | Review  |  | NO LAB |  |

### Course Assignments and Tests:

| **Assignment or Test** | **Due Date** | **Contribution to Final Mark (%)** | **Learning Outcomes Assessed** |
| --- | --- | --- | --- |
| Lab 1 (ENVS 2200) | Feb 1, 2016 in lab | 10 | 6d, 4 |
| Lab 2 (ENVS 2200 | Feb 22, 2016 in class | 10 | 3, 4, 5, 6c |
| Lab3 (ENVS 2200) | Mar 14, 2016 in lab | 15 | 6d |
| Lab 4 (ENVS 2200) | Mar 30, 2016 in class | 10 | 3, 4, 5, 6c |
| Paper outline and Biblio. (ENVS 2160) | Feb 8, 2016 in D2L dropbox | 15 | 6a, 6b |
| Final Paper (ENVS 2160) | Mar 30, 2016 in D2L dropbox | 30 | 6a, 6b |
| Midterm (all) | Feb 24, 2016 in class | 25 | 1, 2, 3, 5 |
| Final Exam (all) | Apr. 22, 2016, TBD | 30 | 1, 3, 4, 5,  |

### Final examination date and time: April 22, 2016 7:00-9:00pm

### Final exam weighting: 30%

Final Examination regulations are detailed at: [Examination Regulations](https://www.uoguelph.ca/registrar/calendars/undergraduate/current/c08/c08-exam.shtml)

## Course Resources

### Recommended Texts:

Martini, I. P., Brookfield, M. E., Sadura, S. 2001. Principles of Glacial Geomorphology and Geology. Upper Saddle River, NJ: Prentice Hall, 381 pp. (Available at library reference desk).

### Other Resources:

de Löe, R. 2002. Guidelines for preparing effective essays and reports, 25pp. (available online-D2L site)

Additional in-course resources and information available on the courselink D2L course website. Login with your email login and password at <http://courselink.uoguelph.ca/index.html>

### Field Trips:

Field trip (Guelph area) by bus, March 14th, 9AM-3PM, 10$ will be collected in class.

## Course Policies

### Grading Policies:

Labs 1 and 2 (ENVS 2200) are due in the lab on Mondays at 2:30; Labs 3 and 4 are due in class on Monday at 1:30.

Assignments (ENVS 2160) are due by MONDAY at 5pm using Dropbox on the D2L course site.

Keep paper and/or other reliable electronic back-up copies of all out-of-class assignments: you may be asked to resubmit work at any time.

If you cannot meet a course requirement, let me know via email as soon as possible and preferably before the due date. Late assignment will be penalized 10% per day and will no longer be accepted a week after the due date.

[Undergraduate Grading Procedures](https://www.uoguelph.ca/registrar/calendars/undergraduate/current/c08/c08-grds-proc.shtml)

### Course Policy on Group Work:

Group work is encouraged when completing in class labs though students have to write their own individual lab report.

### Course Policy regarding use of electronic devices and recording of lectures:

Electronic recording of classes is expressly forbidden without consent of the instructor. When recordings are permitted they are solely for the use of the authorized student and may not be reproduced, or transmitted to others, without the express written consent of the instructor.

## University Policies

### Academic Consideration:

The University of Guelph is committed to supporting students in their learning experiences and responding to their individual needs and is aware that a variety of situations or events beyond the student's control may affect academic performance. Support is provided to accommodate academic needs in the face of personal difficulties or unforeseen events in the form of Academic Consideration.

Information on regulations and procedures for Academic Consideration, Appeals and Petitions, including categories, grounds, timelines and appeals can be found in [Section VIII (Undergraduate Degree Regulations and Procedures) of the Undergraduate Calendar](https://www.uoguelph.ca/registrar/calendars/undergraduate/current/c08/c08-ac.shtml).

### Academic Misconduct:

The University of Guelph is committed to upholding the highest standards of academic integrity and it is the responsibility of all members of the University community, faculty, staff, and students to be aware of what constitutes academic misconduct and to do as much as possible to prevent academic offences from occurring.

University of Guelph students have the responsibility of abiding by the University's policy on academic misconduct regardless of their location of study; faculty, staff and students have the responsibility of supporting an environment that discourages misconduct. Students need to remain aware that instructors have access to and the right to use electronic and other means of detection. Please note: Whether or not a student intended to commit academic misconduct is not relevant for a finding of guilt. Hurried or careless submission of assignments does not excuse students from responsibility for verifying the academic integrity of their work before submitting it. Students who are in any doubt as to whether an action on their part could be construed as an academic offence should consult with a faculty member or faculty advisor.

Detailed information regarding the Academic Misconduct policy is available in [Section VIII (Undergraduate Degree Regulations and Procedures) of the Undergraduate Calendar](https://www.uoguelph.ca/registrar/calendars/undergraduate/current/c08/c08-amisconduct.shtml).

### Accessibility:

The University of Guelph is committed to creating a barrier-free environment. Providing services for students is a shared responsibility among students, faculty and administrators. This relationship is based on respect of individual rights, the dignity of the individual and the University community's shared commitment to an open and supportive learning environment. Students requiring service or accommodation, whether due to an identified, ongoing disability or a short-term disability should contact the Student Accessibility Services (SAS), formerly Centre for Students with Disabilities (CSD), as soon as possible.

For more information, contact SAS at 519-824-4120 ext. 56208 or email sas@uoguelph.ca or visit the [Student Accessibility Services website (http://www.uoguelph.ca/csd/)](http://www.uoguelph.ca/csd/).

### Course Evaluation Information:

End of semester course and instructor evaluations provide students the opportunity to have their comments and opinions used as an important component in the Faculty Tenure and Promotion process, and as valuable feedback to help instructors enhance the quality of their teaching effectiveness and course delivery.

While many course evaluations are conducted in class others are now conducted online. Please refer to the [Course and Instructor Evaluation Website](https://courseeval.uoguelph.ca/) ****for more information.****

### Drop period:

The drop period for single semester courses starts at the beginning of the add period and extends to the Fortieth (40th) class day of the current semester (the last date to drop a single semester courses without academic penalty) which is listed in [Section III (Schedule of Dates) of the Undergraduate Calendar](https://www.uoguelph.ca/registrar/calendars/).

The drop period for two semester courses starts at the beginning of the add period in the first semester and extends to the last day of the add period in the second semester.

Information about Dropping Courses can be found in [Section VIII (Undergraduate Degree Regulations and Procedures) of the Undergraduate Calendar](https://www.uoguelph.ca/registrar/calendars/undergraduate/current/).

## Additional Course Information

**Course expectations:** All students are expected to attend lectures and read the assigned chapters before class. **The course notes will NOT be posted on the D2L course website.**It is the responsibility of the student to obtain class notes if they miss a lecture. All students should check the D2L website regularly for additional course materials and notices regarding exams, assignments, and labs. Students will be able to access their marks on the D2L course website.