

**ENVS\*2240 Fundamentals of Environmental Geology**

Fall 2018

Section(s): C01

School of Environmental Sciences Credit Weight: 0.50

Version 1.00 - September 04, 2018

# Course Details

## Calendar Description

This course introduces the concepts and real-world examples of environmental issues related to plate tectonics, natural resources and igneous, metamorphic and sedimentary processes and rocks, groundwater and structural geology. Students will develop laboratory skills in rock and mineral identification, geological map interpretation and site characterization.

### Pre-Requisite(s): Restriction(s):

* 1. **Timetable**

GEOG\*1300 ENVS\*1050

Lectures: MW 1:30-2:20 in ALEX 218

Labs: W 2:30-5:20 **OR** F 2:30-5:20

## Final Exam

Final examination date and time: December 8, 2018; 11:30-1:30pm. Check Webadvisor for location to be posted later in the semester.

# Instructional Support

## Instructor(s)

### Emmanuelle Arnaud Email:

**Telephone: Office:**

[earnaud@uoguelph.ca](mailto:earnaud@uoguelph.ca)

+1-519-824-4120 x58087

ALEX 126

### Office Hours:

By appointment via email

## Instructional Support Team

### Lab Co-ordinator: Email:

**Telephone: Office:**

Alyson Brown [alysonb@uoguelph.ca](mailto:alysonb@uoguelph.ca)

+1-519-824-4120 x53393

ALEX (AXEL) 221

## Teaching Assistant(s)

### Teaching Assistant: Email:

**Office Hours:**

**Teaching Assistant: Email:**

**Office Hours:**

James Hommersen [jhommers@uoguelph.ca](mailto:jhommers@uoguelph.ca)

TBD-see courselink for announcement

Nazia Nawrin [nnawrin@uoguelph.ca](mailto:nnawrin@uoguelph.ca)

TBD-see courselink for announcement

# Learning Resources

## Required Resource(s)

### Physical Geology Today (Textbook)

Nance, D. and Murphy, B. (2016). Physical Geology Today. Oxford University Press, 752 pp.

### Fundamentals of Environmental Geology (Lab Manual)

*Laboratory manual:* Fundamentals of Environmental Geology, University of Guelph.

## Other Resources

The textbook will be available on reserve in the library. You need to buy laboratory manual at your first lab during the 2nd week of classes (20$).

All other course materials including lecture related information, marks, etc. will be posted on CourseLink.

# Learning Outcomes

## Course Learning Outcomes

By the end of this course, you should be able to:

* + 1. Name and identify major rock types and minerals, and describe their genesis and basic physical properties
    2. Describe various plate tectonic settings, and explain how this determines the distribution and properties of rocks and resources as well as the nature of seismic hazards.
    3. Explain how rocks are deformed over time and how this impacts the 3D distribution of rocks in various settings
    4. Characterize various sites Canada in terms of their geological composition and history.
    5. Identify and explain properties of geological substrates that impact groundwater quality.
    6. Interpret and use various geological maps from different settings
    7. Integrate various geological information (rock types, deformation histories, glacial history, tectonic setting and maps) to create a geological site conceptual model for a site to be used in environmental applications

# Teaching and Learning Activities

## Lecture

### Week 1

**Topic(s):**

Introduction to Geology/Plate Tectonics (week 1 starts Sept 10)

### Reference(s):

**Week 2**

Chapters 1 (skip 1.6 and 1.7), 2, 9.4-9.6

### Topic(s):

Minerals

### Reference(s):

**Week 3**

Chapter 3

### Topic(s):

Igneous Rocks

### Reference(s):

**Week 4**

Chapter 4

### Topic(s):

Igneous rocks / sedimentary rocks

### Reference(s):

**Week 5**

Chapt 6

### Topic(s):

**Week 6**

Sediments and Sedimentary rocks

### Topic(s):

Chemical and biochemical rocks and fossils

### Reference(s): Week 7

Chapter 8

### Topic(s):

Fossils; Midterm, Oct 24

### Reference(s):

**Week 8**

Chapter 8

### Topic(s):

Metamorphic rocks

### Reference(s):

**Week 9**

Chapter 7

### Topic(s):

Geologic structure and maps

### Reference(s):

**Week 10**

Chapter 10

### Topic(s):

Groundwater and geology

### Reference(s):

**Week 11**

Chapter 14

### Topic(s):

**Week 12**

Geological history and site conceptual models

### Topic(s):

* 1. **Lab**

**Week 1**

review

### Topic(s):

**Week 2**

**Topic(s): Reference(s):**

**Week 3**

**Topic(s): Reference(s):**

**Week 4**

Topographic maps (week 1 starts Sept 10)

Minerals Ch. 3

Igneous Rocks Ch. 4

### Topic(s):

Lab Quiz 1; Clastic sediments and sedimentary rocks

### Reference(s):

**Week 5**

Chap 6

### Topic(s):

Carbonate rocks

### Reference(s):

**Week 6**

**Topic(s):**

Ch. 6

Fossils

### Reference(s):

Chap. 8

### Sat, Oct 27, 9:00 AM - 3:00 PM

**Topic(s):**

**Week 8**

**Topic(s): Reference(s):**

**Week 9**

Field trip

Metamorphic rocks Ch. 7

### Topic(s):

Lab 2 Quiz, Geologic maps and structures

### Reference(s):

**Week 11 Topic(s):**

Ch. 10

Lab Exam

# Assessments

## Assessment Details

### GeoOnline (20%)

**Due:** Wed, Nov 14, 5:00 PM, Dropbox

### Lab quiz 1 (5%)

**Date:** Oct, 3/5, ALEX 024

### Lab Quiz 2 (5%)

**Date:** Nov 7/9, ALEX 024

### Lab Exam (20%)

**Date:** Nov 21/23, ALEX 024

### Midterm (20%)

**Date:** Wed, Oct 24, 1:30 PM, in class

### Final Exam (30%)

**Date:** Sat, Dec 8, 11:30 AM - 1:30 PM, TBD

# Course Statements

## 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 courselink course website.*** It is the responsibility of the student to obtain class notes if they miss a lecture. Attendance at all labs is mandatory. It is the responsibility of the student to contact their lab TA if any labs are missed. All students should check the course website regularly for additional course materials and notices regarding exams and labs. Students will be able to access their marks on the courselink course website.

## Other Resources

* + - Check the **course D2L website** for additional in-course resources and information. Login with your email login and password at <http://courselink.uoguelph.ca/index.html>
    - The textbook also has online content at (see link in courselink): <http://global.oup.com/us/companion.websites/9780199965557/student/>
    - Lab manual should be purchased during the first lab (20$)
    - We will be using the textbook. if you would prefer to buy an e-version of the textbook, See the link in courselink to purchase the EBOOK at [https://www.vitalsource.com/](http://www.vitalsource.com/).

## Grading policies

All assignments are to be submitted through Dropbox on the D2L course website by the due date (please check the schedule posted on the D2L site for your due date). If you cannot meet a course requirement, let me know by 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.

*\*Please note that these policies are binding unless academic consideration is given to an individual student.*

## Group Work

Group work is encouraged when completing in class labs though students will have to write individual lab tests making it essential that individuals complete their own labs throughout the course.

## Additional costs

* + - A small fee will be collected the week before the trip to offset the cost of transportation.
    - lab manual (20$)

## Course evaluations

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. I use these comments every year to improve the course so feel free to provide constructive feedback based on your experience this year. You will be sent instructions to submit feedback online through the course and instructor evaluation website.

# University Statements

## Email Communication

As per university regulations, all students are required to check their e-mail account regularly: e- mail is the official route of communication between the University and its students.

## When You Cannot Meet a Course Requirement

When you find yourself unable to meet an in-course requirement because of illness or compassionate reasons please advise the course instructor (or designated person, such as a teaching assistant) in writing, with your name, id#, and e-mail contact. The regulations and procedures for [Academic Consideration](https://www.uoguelph.ca/registrar/calendars/undergraduate/current/c08/c08-ac.shtml) are detailed in the Undergraduate Calendar.

## Drop Date

Courses that are one semester long must be dropped by the end of the fortieth class day; two- semester courses must be dropped by the last day of the add period in the second semester. The regulations and procedures for [Dropping Courses](https://www.uoguelph.ca/registrar/calendars/undergraduate/current/c08/c08-drop.shtml) are available in the Undergraduate Calendar.

## Copies of Out-of-class Assignments

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

## Accessibility

The University promotes the full participation of students who experience disabilities in their academic programs. To that end, the provision of academic accommodation is a shared responsibility between the University and the student.

When accommodations are needed, the student is required to first register with Student

Accessibility Services (SAS). Documentation to substantiate the existence of a disability is required, however, interim accommodations may be possible while that process is underway.

Accommodations are available for both permanent and temporary disabilities. It should be noted that common illnesses such as a cold or the flu do not constitute a disability.

Use of the SAS Exam Centre requires students to book their exams at least 7 days in advance, and not later than the 40th Class Day.

More information: [www.uoguelph.ca/sas](http://www.uoguelph.ca/sas)

## 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.

The [Academic Misconduct Policy](https://www.uoguelph.ca/registrar/calendars/undergraduate/current/c08/c08-amisconduct.shtml) is detailed in the Undergraduate Calendar.

## Recording of Materials

Presentations which are made in relation to course work—including lectures—cannot be recorded or copied without the permission of the presenter, whether the instructor, a classmate or guest lecturer. Material recorded with permission is restricted to use for that course unless further permission is granted.

## Resources

The [Academic Calendars](https://www.uoguelph.ca/registrar/calendars/) are the source of information about the University of Guelph’s procedures, policies and regulations which apply to undergraduate, graduate and diploma programs.