

# Engineering Geoscience

## ERTH 2404 - Winter 2019

### Course Objectives:

1. Explain the different properties of earth minerals and rocks.
2. Relate how geologic structures influence engineering design.
3. Analyze the source of energy behind natural hazards.
4. Explain the impact of natural disasters on people, infrastructure, and engineering design.
5. Outline the engineering mitigation strategies applied to minimize the impact of natural hazards.

### Important Information:

Professor: Dr. Maurice Lamontagne, P.Eng. (mauricelamontagne@cunet.carleton.ca)

TAs: TBA (will be posted on CuLearn).

Lectures: Fridays from 08:35 to 11:35  
University Center 231  
Jan 11 – April 5, 2018 (Winter Break on Feb. 22<sup>nd</sup>)

Availability: I will respond to emails within 2 business days.  
Please send a reminder if I have not responded.  
I am always available 15 minutes before the beginning of lectures.  
Please direct your questions regarding labs to Dr. Geoff Pignotta

Labs: Herzberg Building, room 2110.  
There is a lab component to this course.

CuLearn: All course material will be provided through CuLearn.  
This includes lecture notes, quizzes, announcements (announcements will also be emailed) and marks. For problems with CuLearn, go to:  
<http://www5.carleton.ca/culearnsupport>

## Textbook and Lab Manual:

1. Kehew, Alan E. 2006. Geology for Engineers & Environmental Scientists. 3rd Edition. Prentice Hall.

Note: the textbook is not mandatory. The textbook is available on reserve in the library. If needed, you can also buy secondhand books. The lecture material provides all material subject to examination.

2. Engineering Geoscience Lab Manual  
Available in Room 118, Steacie building

## Evaluation:

Exams: Exams are closed books.  
The exam cover materials presented during the lectures.  
Exams are MANDATORY.  
A passing grade in the exams must be achieved to pass the course.

Labs: A passing grade in the lab work must be achieved to pass the course.  
TA's will maintain lab attendance and grades will be posted on CuLearn.  
Switching lab sessions is not permitted.

Material Covered			% of final grade
Lecture Exams	Midterm Exam	Lectures 1-5	30%
	Final Exam	Lectures 6-12	40%
Lab Work	Lab Exercises	Labs 1-4 (1.25% each)	5%
	Lab Exam	Covers Labs 1-4	15%
	Lab Exercises	Labs 5-10 (4% each)	20%
Total			100%

## Lecture Schedule:

Date	Lecture	Topic	Chapters in KeheW
Jan. 11	1	Introduction & Geologic Time	1, 2
Jan. 18	2	Minerals & Igneous Rocks	3, 4
Jan. 25	3	Sedimentary and Metamorphic Rocks	5, 6
Feb. 01	4	Plate Tectonics and Soils	2, 10
Feb. 08	5	Volcanoes and Volcanic Hazards	4
Feb. 15 08:35-10:00	In-class Midterm	Covers Lectures 1-5	
Feb 15 10:00:-11:25	6	Structures	8
Feb. 22		<b>No class Winter Break</b>	
March 1	7	Earthquakes and Engineering Seismology	8
Mar. 8	8	Rock Mechanics and Mass Movement	7, 13
Mar. 15	9	Weathering, Erosion and Groundwater	9, 11
Mar. 22	10	Rivers, Oceans and Glacial Processes	14, 15, 16
Mar. 29	11	Resources and Geophysics	---
Apr. 5	12	Geomagnetic Hazards and Review	---

## Lab Sections:

Section	Day and Time	Location
L1	Tuesday 14:35 – 17:25	<b>Herzberg Room 2110</b>
L2	Tuesday 18:05 – 20:55	
L3	Thursday 11:35 – 14:25	
L4	Wednesday 18:05 – 20:55	
L6	Monday 18:05 – 20:55	
L7	Thursday 18:05 – 20:55	
L8	Tuesday 11:35 – 14:25	

## Winter 2019 Laboratory Schedule:

Week	Date	Topic	Lab Weight
1	01/07-01/10	No Labs	
2	01/14-01/17	Physical Mineralogy	1.25
3	01/21-01/24	Igneous Rocks	1.25
4	01/28-01/31	Sedimentary Rocks	1.25
5	02/04-02/07	Metamorphic Rocks	1.25
6	02/11-02/14	LAB PRACTICAL EXAM	15
7	02/18-02/22	Winter Break	
8	02/25-02/28	Topographic Maps and Aerial Imagery	4
9	03/04-03/07	Geologic Structures and Geologic Maps	4
10	03/11-03/14	Plate Tectonics	4
11	03/18-03/21	Earthquakes and Earthquake Hazards	4
12	03/25-03/28	Soils and Slope Stability	4
13	04/01-04/04	No labs	

## Appropriate use of Technology in the Classroom:

- Cell phones must be turned OFF at all times.
- Laptops and tablets are to be used only to look and annotate the lecture note

## Academic Integrity:

It is your responsibility to review Carleton's policy on Academic Integrity -Section 14 of the Calendar.

<http://calendar.carleton.ca/undergrad/regulations/academicregulationsoftheuniversity/academicintegrity/>

In particular, please consider:

### 12. Tests and Examinations

The University is committed to ensuring fairness and consistency in the completion of examinations. As part of this commitment, students are required to follow proper examinations procedures. A student who commits a violation of this Policy on an examination, test, or takehome examination, or obtains or produces an answer or unfair advantage are subject to sanction under this Policy.

This includes but is not limited to:

- bringing to the examination/test room any unauthorized material;
- writing an examination or part of it, by consulting any person or materials outside the confines of the examination room without permission to do so;
- intentionally leaving answer papers exposed to view;
- attempting to read other students' examination papers;
- speaking to another student (even if the subject matter is irrelevant to the test);
- disrupting or delaying a test or examination;
- failing to comply with the instruction of a University official administering an examination.

A violation of this Policy may also occur by breaching one of the Rules and Procedures of Examinations.

## Course Outline (Syllabus) Information on Academic Accommodations

### **Requests for Academic Accommodation**

You may need special arrangements to meet your academic obligations during the term. For an accommodation request, the processes are as follows:

#### **Pregnancy obligation**

Please contact your instructor with any requests for academic accommodation during the first two weeks of class, or as soon as possible after the need for accommodation is known to exist. For more details, visit the Equity Services website: [carleton.ca/equity/wp-content/uploads/Student-Guide-to-Academic-Accommodation.pdf](https://carleton.ca/equity/wp-content/uploads/Student-Guide-to-Academic-Accommodation.pdf)

#### **Religious obligation**

Please contact your instructor with any requests for academic accommodation during the first two weeks of class, or as soon as possible after the need for accommodation is known to exist. For more details, visit the Equity Services website: [carleton.ca/equity/wp-content/uploads/Student-Guide-to-Academic-Accommodation.pdf](https://carleton.ca/equity/wp-content/uploads/Student-Guide-to-Academic-Accommodation.pdf)

#### **Academic Accommodations for Students with Disabilities**

If you have a documented disability requiring academic accommodations in this course, please contact the Paul Menton Centre for Students with Disabilities (PMC) at 613-520-6608 or [pmc@carleton.ca](mailto:pmc@carleton.ca) for a formal evaluation or contact your PMC coordinator to send your instructor your Letter of Accommodation at the beginning of the term. You must also contact the PMC no later than two weeks before the first in-class scheduled test or exam requiring accommodation (if applicable). After requesting accommodation from PMC, meet with your instructor as soon as possible to ensure accommodation arrangements are made. [carleton.ca/pmc](https://carleton.ca/pmc)

#### **Survivors of Sexual Violence**

As a community, Carleton University is committed to maintaining a positive learning, working and living environment where sexual violence will not be tolerated, and is survivors are supported through

academic accommodations as per Carleton's Sexual Violence Policy. For more information about the services available at the university and to obtain information about sexual violence and/or support, visit: [carleton.ca/sexual-violence-support](https://carleton.ca/sexual-violence-support)

### **Accommodation for Student Activities**

Carleton University recognizes the substantial benefits, both to the individual student and for the university, that result from a student participating in activities beyond the classroom experience. Reasonable accommodation must be provided to students who compete or perform at the national or international level. Please contact your instructor with any requests for academic accommodation during the first two weeks of class, or as soon as possible after the need for accommodation is known to exist. <https://carleton.ca/senate/wp-content/uploads/Accommodation-for-Student-Activities-1.pdf>

For more information on academic accommodation, please contact the departmental administrator or visit: [students.carleton.ca/course-outline](https://students.carleton.ca/course-outline)