

# NATURAL DISASTERS COURSE OUTLINE

## ERTH 2415 – FALL 2019

### Course Description:

This course is designed to give the student an overview of geologic catastrophes (i.e. earthquakes, tsunamis, volcanoes, climate change, etc.), with an emphasis on (1) understanding why and how these processes occur from a physical science standpoint, and (2) developing an ability to understand how these hazards affect us in everyday life.

The course also explores how we are trying to prevent, predict, and remedy catastrophes. After an introduction to natural disasters we will start by discussing the Grand Unifying Theory in Geology – Plate Tectonics – as it provides the framework to understand occurrences of major catastrophes.

### Learning Outcomes:

By participating in and completing this course, you should be able to:

1. Demonstrate a comprehension of Earth's geologic, hydrologic and atmospheric processes
2. Explain the energy sources associated with natural disasters
3. Identify the cause and effect relationships between earth processes and natural hazards
4. Assess the associated risks of natural disasters on human societies and identify when a hazard becomes a catastrophe
5. Discuss if and how geological catastrophes can be predicted, mitigated, and Avoided

**Prerequisites:** There are no prerequisite courses required for this course, but high-school level science and math knowledge are expected. Relevant earth sciences knowledge will be reviewed in introductory lectures.

**Instructor:** Braden Gregory  
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Herzberg Laboratories, Rm 2140

**Teaching Assistants:** To be announced

### Important Dates:

*Subject to change – updated schedule will be posted with timing of midterm and final exam are determined*

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|---|------------------|
| 1. Sept. 5 <sup>th</sup>                        | Fall Term Begins |
| 2. Sept. 16-22 <sup>nd</sup>                    | Quiz 1           |
| 3. Sept 30 <sup>th</sup> - Oct. 5 <sup>th</sup> | Quiz 2           |

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|---|--------------------------------------|
| 4. Oct. 14-28 <sup>th</sup>                     | Quiz 3                               |
| 5. Oct. 21-25 <sup>th</sup>                     | Reading Week                         |
| 6. Nov. 11 <sup>th</sup> – 17 <sup>th</sup>     | Quiz 4                               |
| 7. Nov. 25 <sup>th</sup> – Dec. 2 <sup>nd</sup> | Quiz 5                               |
| 8. Dec. 6 <sup>th</sup>                         | End of Classes                       |
| 9. Dec. 9 <sup>th</sup> – 21 <sup>st</sup>      | Final Exam period – date of exam TBD |

### Tentative Schedule

Date	Lecture #	Lecture Topic	Quiz Info
Sept. 9 <sup>th</sup>	1	a) Introduction b) Internal structure and plate tectonics	
Sept. 16 <sup>th</sup>	2	a) Plate tectonics b) Earthquakes 1	Quiz 1 Intro + Plate tectonics Sept 16 <sup>th</sup> – 22 <sup>nd</sup>
Sept. 23 <sup>rd</sup>	3	a) Earthquakes 2 b) Tsunamis	
Sept. 30 <sup>th</sup>	4	a) Volcanoes	Quiz 2 Earthquakes and Tsunamis Sept 30 <sup>th</sup> – Oct 6 <sup>th</sup>
Oct. 7 <sup>th</sup>	5	a) Mass wasting b) Floods	
Oct. 14 <sup>th</sup>	6	a) Atmospheric pressure and weather	Quiz 3 Volcanoes, Mass wasting and Floods Oct. 14 <sup>th</sup> – 28 <sup>th</sup>
<b>Oct. 21<sup>st</sup> – Oct 25<sup>th</sup> Fall Break</b>			
Oct. 28 <sup>th</sup>	7	a) Hurricanes	Plate tectonics – Floods Lectures 1 to 5
Nov. 4 <sup>th</sup>	8	a) Avalanches	
Nov. 11 <sup>th</sup>	9	a) Impacts and the Great Canadian Impact tour	Quiz 4 Atm pressure and Hurricanes Nov. 11 <sup>th</sup> – Nov 16 <sup>th</sup>
Nov. 17 <sup>th</sup>	10	a) Coastal Hazards	
Nov. 24 <sup>th</sup>	11	a) Climate Change	Quiz 5 Impacts and Coastal Hazards Nov 24 <sup>th</sup> – Dec 2 <sup>nd</sup>
Dec 2 <sup>nd</sup>	12	Review questions released online	
<b>Dec 7<sup>th</sup> – 21<sup>st</sup> Final exam within the final exam period</b>			

**Lectures:** This course is offered with online video only. You may watch the class lectures in the following ways:

1. CUOL Web Channel  
CUOL will play a recorded video of the lecture on their web channel.

<https://vod.cuol.ca/stream/web-channel>

**Time TBD**

2. Video on Demand (VOD)  
For a subscription fee, \$50, you can access the recorded video of the lecture at any time.  
<https://vod.cuol.ca/vod>
3. CUOL Student Centre (Loeb D299)  
Kiosks available to view each lecture for free. Available 24 hours a day, 7 days a week

### **CULEARN**

All course material and administration will be conducted through CU Learn. This includes the online quizzes, announcements, and grades.

In case of problems with CU Learn, go to the support page.

Textbook: Natural Hazards: Earth's processes as hazards, disasters, and catastrophes, 5th or 4th Edition  
Edward A. Keller & Duane E. Devecchio

Or

Natural Disasters – Canadian Edition, 4th edition  
Abbott, P.L. and Samson, C. 2015  
(copies on Permanent Reserve in library)

The textbook is suggested, it is **NOT** mandatory to purchase. The lecture notes will follow the first book listed closely, however the second book is an excellent resource as well. All material on quizzes and exams will be taken from in-class topics or supplementary materials posted to CULearn. Please check you are able to access the the required information open before beginning a quiz.

### **QUIZZES**

- Quizzes are taken via CuLearn and will take 1-2 hours.
- Should you experience problems during your Quiz:
  - o Note the time.
  - o Take a screenshot of the problem.
  - o No accommodation will be made to waive or redo a Quiz unless supporting or substantiating documentation is provided.
- Quizzes will refer to the lecture, websites and supplementary material posted online
- I encourage you to work in teams but each student must submit their own Quiz.

## **EXAMS**

There will be two exams and both will be multiple choice. Exam 1 will occur in mid-October (date TBD) and will cover material in Lectures 1-5. Exam 2 will occur during the final exam period and will cover material in Lectures 6-11.

- Attendance of both exams is mandatory.
- Local students, living within 100km of Carleton, write their exams on campus.
- Distance students, living over 100km from campus, will write exams at either a Carleton University Test Centre or may apply to write the exam at distance with a proctor.
  - o Distance students should apply through [CUOL](#) immediately.
- Deferred exams:
  - o All missed exams must be substantiated with a medical note or other official documents for a deferred exam to be granted.
  - o A document supporting your absence must be submitted within 5 business days of the exam. Failure to do so may result in 0% in your exam.

## **ACCOMODATION**

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:

<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:

<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. <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 its 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:

<https://carleton.ca/sexual-violence-support/information-and-resources/>

### 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: <https://students.carleton.ca/course-outline/>