



Carleton
UNIVERSITY

**Department of Earth Sciences
Course Syllabus and Outline
Natural Disasters - EARTH 2415
Fall 2022, September to December**

COURSE DESCRIPTION

A natural disaster is a catastrophic event resulting from Earth's natural process. They sometimes lead to the loss of lives, properties, and some irreplaceable priceless assets, and the deformation of the earth's surface. Examples of natural disasters include earthquakes, volcanic eruptions, tsunamis, firestorms, and Tornadoes. Others are floods, storms/firestorms, landslides, dust storms, and extreme weather conditions. These natural disasters are caused by geological, solar, meteorological, and hydrological processes that humans may experience from time to time and place to place.

Seismologists, volcanologists, hydrologists, and meteorologists have observed and studied these events to explain the candidate mechanisms leading to these natural disasters and made attempts to predict future occurrences of some disasters – e.g., floods, wildfires, and hurricanes. However, the predictions of when and where disasters such as earthquakes and volcanic eruptions would occur are not yet accurate. Interestingly, mitigation strategies that include engineering, architecture, communication, and emergency responses can be put in place to reduce the impact of any kind of natural disaster. This course covers the descriptions of the process leading to natural disasters with emphasis on the science and history, the forecast, mitigation, response and economic impacts drawing examples from Canada, United states and other countries.

This course – EARTH2415 will start off with introduction to Earth's structure and plate tectonics and go on to describe earth's internal process, hydrological and meteorological process leading to natural disasters, explain why some countries are more prone to some natural disasters than others.

Professor: Wasiu O Raji, PhD (wasiuraji@cunet.carleton.ca)
Room 2249 Hertzberg Laboratories

TAs: 1 Misha Whittingham (MISHAWHITTINGHAM@cmail.carleton.ca)

2. Jacob Sullivan - (jacobsullivan@cmail.carleton.ca)

3. Grayson Bilak (graysonbilak@cmail.carleton.ca)

TAs will operate virtual office hours at a time that will be communicated to students later.

Email policy: All questions relating to this course should be sent to the course forum, **not my email**, so that everyone can benefit from the questions and responses. The TA and I will respond to questions on 'Discussion' on Brightspace with 24 hours. Given the number of

students on this course and the workload, I will not respond to emails asking questions about the course/lectures/announcements/deadlines, results, etc., except they are very personal.

COURSE LEARNING OUTCOMES INCLUDE THE FOLLOWING:

Understand the process leading to different natural disasters

Know the impacts of natural disasters

Understand the cause-effect relationship between earth process and natural disasters

Know strategies and safety practices that can be used to mitigate the impacts of natural disasters

Understand the associated risks of natural disasters on people, communities, and infrastructure.

COURSE DELIVERY:

The course will be delivered online asynchronously and synchronously at 80/20%.

Assignments, Quizzes). Lectures will hold on Mondays for three hours, from 14:35 PM -17:25 PM in Brightspace. Lecture materials, videos, assignments, quizzes, mid term and final exam will be done synchronously/asynchronously in Brightspace at scheduled time.

Attendance at synchronous lectures are mandatory. **Classes start on Monday September and ends Monday December 5th 2022. Attendance at the first lecture is mandatory. The lecture will be delivered synchronously online, attendance and participation will be graded.**

IMPORTANT DETAILS

- All important information will be posted on Brightspace. This includes course information, lecture slides, announcements, quizzes, exams, and grades.
- It is the responsibility of the student to check Brightspace and the class forum to stay up to date with the course activities.
- Grading will be based on quizzes, assignments, class participation & attendance, a midterm, and a final exam
- It is students' responsibility to refer regularly to the course website for lecture topics, quizzes, assignments, announcements. Students should regularly log on to Brightspace to check for announcements, course
- Attendance in lectures is mandatory. It is required that you email the instructor to advise of absences due to illness or emergencies within **two days** of missed deadline or an exam and provide evidence to support your circumstance. More details will be provided during the lectures.

QUIZZES, ASSIGNMENTS, and EXAMS

Mid term and final exams will be conducted outside the normal class schedule. **The nature of the exam will be communicated with the first two weeks of the term.** quizzes would be online/virtual, and assignment will be submitted through Brightspace.

- Each quiz, exam, and assignment will assess your understanding of the course.
- You are expected to know the lecture material beforehand and prepare for each class
- There would be at least 4 quizzes.
- Each quiz will consist of 15-20 multiple choice questions and take 15-20 minutes.
- Each quiz will take place during lecture hours on dates stipulated below
- The results will be available few days later with the same week.
- Should you experience problems during your Quiz:
 - o Note the time, take a screenshot of the problem showing your computer time, and send an email to the professor immediately.
 - o No accommodation will be made to waive or redo a Quiz unless supporting documentation is provided.

- Attendance of both exams is mandatory.
- Both exams will take place at a fixed time, not a time range.
 - o No additional time will be given for later arrival to tests, exams, and quiz unless the circumstance is substantiated. Start and finish times are fixed.
- The Midterm Exam will occur as shown in the schedule
- The Final Exam will be scheduled by Exam Services in December
- If you miss the Midterm or final exam:
 - o A document supporting your absence must be submitted within 3 business days of the exam. Failure to do so may result in 0% in your exam.

TEXTBOOK

The following textbooks are recommended:

1. Abbott, P.L. and Samson, C. 2015 (4th Edition). Natural Disasters – Canadian Edition. McGraw Hill Ryerson.
2. Abbot Patrick L. Natural Disasters, 12 Edition, Mc Graw Hill
3. Natural Hazards, DeVecchio, Duane E; Keller, Edward A 2016
4. Natural Hazards: Earth's Processes as Hazards, Disasters, and Catastrophes Keller, Edward A DeVecchio, Duane E.

Textbooks 3, 4 and more are available in the University Library.

GRADING SCHEME:

Quizzes - 15% (best 5 of the 6 quizzes multiplied by 3 equal 15)

Assignments – 15%

Attendance and class participation – 5%

Mid terms exam - 30%

Final exam – 35%

Total – 100%

LECTURE SCHEDULE

Lectures will hold once a week on Mondays from 14:35 PM – 17:25 Pm each week starting from Monday, September 12th 2022. This schedule is tentative and may be revised during the term.

S/No	Date	Lecture #	Lecture topic
Wk 1	Sept 5 – 11	Holiday and orientation	
Wk 2 & 3	Sept12-25	Lecture #1	Introduction
		Lecture #2	Disaster and emergency management
		Lecture #3	Plate tectonic and earthquakes I
Wk 4 & 5	Sept 26- oct 9	Lecture #4	Plate tectonics and earthquakes II
		Lecture #5	Earthquakes, people, and infrastructure
		Lecture #6	What happened during an earthquake
Wk 6 & 7	Oct 10- 23	Lecture #7	Plate tectonics and Volcanoes
		Lecture #8	Tsunami
	TX2@ 5PM OCT17	Lecture # 9 &10	*Climate change & Firestorm
Wk 7	*Oct 22, 2022	Mid term Exam	Covers lecture 1-10 only 9:00 am

Week 8	Fall reading week	Oct 24-29	No lectures
Wk 9-10	Oct 31 - Nov 13	Lecture #11	Mass movement I
		Lecture #12	Mass movement II
		Lecture #13	Snow Avalanche
Wk11-12	Nov 14 - 27	Lecture #14	Severe weather
	TX3 5PM NOV14	Lecture #15	Eruptive style and landform I
		Lecture #16	Eruptive style and landform ii
Wk13-14	Nov 28 - 9	Lecture #17	Floods
	TX3 5PM DEC 5	Lecture #18	Hurricanes
		Lecture 19 & 20	Geomagnetic and Impact of space objects
			Reviews
TBC	December	Final Exam	Covers Lecture 11-20 only ()

QUIZZ, ASSIGNMENT, AND EXAM SCHEDULES: each quiz will last for about 20 minutes on date stated below. Between 5:00 pm and 7:00 pm.

S/No	Date	Task	Description of the task
1	Monday Oct 3	Quiz 1 (5:00 PM)	MCQ Covers lectures 1-6
2	Oct 15 at 11:59 pm	Assignment 1 is due @	Long answer/essay
3	Oct 17	Quiz 2 ((9:00 – 10:15 am)	MCQ Covers lectures 7-10
4	Sat Oct 22 2022 at 10:00 am	Mid-term exam	Covers 1-10
5	Nov 14	Quiz 3(9:00 – 10:15 am)	MCQ Covers lectures 11-15
6	Nov 21 at 11:59 pm	Assignment 2 is due	Long answer/essay
7	Dec 5	Quiz 4 (5:00 pm)	MCQ Covers lecture 16 -20
8	To be fixed by CU	Final exam	Covers lecture 11-20

ACADEMIC INTEGRITY

It is your responsibility to review Carleton's policy on Academic Integrity - Section 14 of the Calendar and obey them. Ignorance is not an excuse

<http://calendar.carleton.ca/undergrad/regulations/academicregulationsoftheuniversity/acadregsuniv14/>

Plagiarism

The instructor is required to report all incidents (or suspected incidents) of plagiarism to the Dean. **All work handed in must be your own.** Plagiarism and cheating are viewed as being particularly serious and the sanctions imposed are accordingly severe. Students are expected to familiarize themselves with and follow the Carleton University Student Academic Integrity Policy. The Policy is strictly enforced and is binding on all students.

Plagiarism and cheating – presenting another’s ideas, arguments, words or images as your own, using unauthorized material, misrepresentation, fabricating or misrepresenting research data, unauthorized co-operation or collaboration or completing work for another student – weaken the quality of the graduate degree. Academic dishonesty in any form will not be tolerated. Students who infringe the Policy may be subject to one of several penalties including: expulsion; suspension from all studies at Carleton; suspension from full-time studies; a refusal of permission to continue or to register in a specific degree program; academic probation; or a grade of Failure in the course.

REQUESTS FOR ACADEMIC ACCOMMODATION

Please review the Carleton’s Student Guide to Academic Accommodations at <http://carleton.ca/equity/wp-content/uploads/Student-Guide-to-Academic-Accommodation.pdf>, and the websites therein.

Students with Disabilities:

“The Paul Menton Centre for Students with Disabilities (PMC) provides services to students with Learning Disabilities (LD), psychiatric/mental health disabilities, Attention Deficit Hyperactivity Disorder (ADHD), Autism Spectrum Disorders (ASD), chronic medical conditions, and impairments in mobility, hearing, and vision. If you have a disability requiring academic accommodations in this course, please contact PMC at 613-520-6608 or pmc@carleton.ca for a formal evaluation. If you are already registered with the PMC, contact your PMC coordinator to send me your **Letter of Accommodation** at the beginning of the term/classes, and no later than two weeks before the scheduled test or exam requiring accommodation. After requesting accommodation from PMC, please follow up with me to ensure accommodation arrangements are made. Please consult the PMC website (www.carleton.ca/pmc) for the deadline to request accommodations for the formally-scheduled exam.

For Religious Observance:

1. As soon as you receive your course syllabus, identify any potential conflicts between your religious obligations and course requirements.
2. Make a formal written request to your instructor indicating the nature of the religious obligation and suggest possible alternative dates and/or means of satisfying the academic requirements. Such request should be made during the first two weeks of the term, or as soon as the need for accommodation is known to exist, but in no case later than the second to last week of classes for the term. For detailed information on Religious Obligations please visit our website at: carleton.ca/equity/accommodation/

Pregnancy or Parental Leave:

A. For final exams. Identify and discuss your needs for final examinations with your professors. When an agreement is reached fill out and submit the online Pregnancy Accommodation Final Exam Request Form at: carleton.ca/equity/accommodation. Equity Services will forward the request to Exam Services to coordinate the accommodation. For detailed information on pregnancy and parental leave policies please visit the website at: carleton.ca/equity/accommodation/academic/

Parental leave:

Either parent may request up to three terms of leave, which must be completed within 12 months of the date of birth or custody or request for leave for health-related family responsibilities. For detailed information on pregnancy and parental leave policies please visit the website at: <https://carleton.ca/equity/policies-procedures/>

Equity and PMC Contact information:

- Department of Equity and Inclusive Communities

613-520-5622

3800 Carleton Technology & Training Centre

equity@carleton.ca

Website: carleton.ca/equity

• Paul Menton Centre for Students with Disabilities

613-520-6608

pmc@carleton.ca

500 University Centre

Website: carleton.ca/pmc