



Carleton
UNIVERSITY

**Department of Earth Sciences
Course Syllabus and Outline
Natural Disasters - EARTH 2415
Summer 2023 – July to August**

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.

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Room 2249 Hertzberg Laboratories

Teaching Assistants:

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Lecture hours: Lecture will hold online synchronously (live lectures) via zoom and asynchronously (no live lectures) on the dates and times shown in table 1. Synchronous

lectures are shown in blue while the asynchronous lectures are shown in black. During asynchronous class, students will study lecture materials and watch the videos provided by the professor. Link to synchronous lecture room is on Brightspace.

TA Office hours for questions and answers: TAs will operate virtual office hours on zoom on Thursdays starting from July 5th, from 3:00 PM to 5:00 PM to respond to questions from students on lecture contents, assignments, exams, etc. link to the room is on Brightspace.

Email policy: All questions relating to this course should be sent to the course forum, **not the professor's email**, so that everyone can benefit from the questions and responses. The TA and PROF will respond to questions on 'Discussion' on Brightspace with 48 hours, except on weekends. Given the number of students on this course and the workload, I will not respond to emails asking questions about the course/lectures/announcements/due dates, results, etc., except they are very personal.

New withdrawal date: Per the Provost's email sent on August 8 (see excerpt below), the academic withdrawal date has been moved up from the last day of term to earlier in the term.

A full list of important dates is available on the Calendar website. Please note that the academic withdrawal dates have changed recently. Consult the Calendar website for the most updated information: <https://calendar.carleton.ca/academicyear>

COURSE LEARNING OUTCOMES INCLUDE THE FOLLOWING:

Understand the process leading to the different natural disasters,
Know the impacts of natural disasters,
Understand the cause-effect relationship between earth process and natural disasters,
Know the strategies and safety practices that can be used to mitigate the impacts of natural disasters, and
Understand the associated risks of natural disasters on people, communities, and infrastructure.

COURSE DELIVERY:

The course will be delivered online asynchronously (50%) and synchronously (50%). Lectures will hold on Wednesdays for three hours, from 8:35 AM to 11:25 PM via zoom according to the schedule. Link to the zoom lecture room is available in Brightspace. For asynchronous classes, students are expected to read the lecture materials on their own. Lecture materials and videos will be posted on Brightspace ahead of the lectures. **Quizzes, mid term exam, and final exam will be conducted only (virtually) synchronously while assignments will be done asynchronously and submitted by the students using drop box in Brightspace.** **Attendance at synchronous lectures is mandatory. Attendance and class 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, and announcements. Students should regularly log on to Brightspace to check for announcements and update.
- 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. Midterm and final exams will be a combination of MCQ and essays questions and will be conducted online. Quizzes would be online/virtual, and assignment will be submitted through Brightspace.

- Each quiz, exam, and assignment will assess your understanding of the course.
- Students are expected to read the lecture material ahead of the lectures and prepare for each class, quiz, and exams. There would be three (3) quizzes and two (2) exams.
- Each quiz will last for 15 - 20 minutes and take place during lecture hours as schedule in the activities table.
- The quiz grades will be available few days later within 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 and /or a complaint is lodge two days before the quiz with supporting documents**
- Attendance at mid and final exams is mandatory.
- Both exams will take place at a fixed time, not a time range.
 - o No additional time will be given for late 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 August and the day could fall outside of lecture hours
- 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: Textbooks 3, 4 are available in the Uni. Library.

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.

GRADING SCHEME:

- Quizzes - 15% (3 quizzes, each weigh 5%)
- Assignments – 15% (2 assignments)
- Attendance and class participation – 5%

Mid terms exam - 30%
 Final exam – 35%
 Total – 100%

LECTURE SCHEDULE

Lectures will hold once a week on Wednesdays from 8:35 AM to 11:25 PM each week starting from Wednesday, July 4th 2023, as shown below. Except for lecture hours, the schedule shown below is tentative and may be revised during the term. Synchronous lectures are written in blue texts

Table 1: Lecture schedule

| S/No | Date | Lecture # | Lecture topic |
|------------|--------------------------------|----------------------|---|
| WK1 | July 5 2023 | Lecture #1 | Introduction |
| | | Lecture #2 | Disaster and emergency management |
| | | Lecture #3 | Plate tectonic and earthquakes I |
| Wk2 | July 12 2023 Q1) | Lecture #4 | Plate tectonics and earthquakes II |
| | | Lecture #5 | Earthquakes, people, and infrastructure |
| | | Lecture #6 | What happened during an earthquake |
| Wk3 | July 19 2023 | Lecture #7 | Plate tectonics and Volcanoes |
| | | Lecture #8 | Tsunami |
| | | Exam Reviews | Review |
| | Friday, July 21 8:30 AM | Mid term Exam | Covers lecture 1-8 (online) |
| Wk4 | July 26 2023 Q2 | Lecture #9 | Mass movement I |
| | | Lecture #10 | Mass movement II |
| | | Lecture #11 | Snow Avalanche |
| Wk5 | August 2 2023 | Lecture #12 | Severe weather |
| | | Lecture #13 | Eruptive style and landform I |
| | | Lecture #14 | Eruptive style and landform ii |
| Wk6 | August 9 2023 Q3 | Lecture #15 | Floods |
| | | Lecture #16 | Hurricanes |
| | | Reviews | Reviews |
| | August ,TBC | Final Exam | Covers lecture 9-16 (online) |

QUIZZ, ASSIGNMENT, AND EXAM SCHEDULES: each quiz will last for 15 - 20 minutes on the dates stated below. Between 11:00 and 11:30 AM

| S/No | Date | Task | Description of the task |
|------|-----------------------|---------------------------|---------------------------|
| 1 | Wednesday July 12 | Quiz 1 (11:00 – 11:30 AM) | MCQ Covers lectures 1-6 |
| 2 | July 19th at 11:59 PM | Assignment 1 is due | Long answers/essay |
| 3 | Wednesday July 26 | Quiz 2 (11 – 11:30 AM) | MCQ Covers lectures 7-11 |
| 4 | Friday, July 21 | Mid-term exam | Covers Lectures 1- 8 |
| 5 | Wednesday August 9 | Quiz 3(11 – 11:30 AM) | MCQ Covers lectures 12-16 |

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|---|----------------------|---------------------|----------------------|
| 6 | August 8 at 11:59 pm | Assignment 2 is due | Long answer/essay |
| 8 | August, TBC | Final exam | Covers lecture 9 -16 |

Missed quizzes, exam, and due dates

Students are to note the date slated for quizzes, exams, and assignments and plan accordingly to ensure they do not miss any quizzes, exams, and due dates for assignments. Make-up quiz or exam will not be approved for any student unless in a case of emergency. In this case, documents on the emergencies will be required to get approval for make-up. Students are to note that full- time job does not constitute a reason for absence during quizzes and exams.

Office Hours: there will be 2 hours office duty per week where students can reach the TAs or Professor via zoom to ask questions on the lecture content, assignments, quizzes, and exams. Office hours will hold every **Thursdays, from 3:00 pm to 5:00 pm** via zoom. All TAs will add their personal meeting room to Brightspace/TA office hours.

Question and answer on discussion board: This is one hourly office duty allocation per week. During this hour TA/Prof. will log on to the discussion module in Brightspace to respond to written questions from students.

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 the 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