

## Term Information

Effective Term Autumn 2022

## General Information

Course Bulletin Listing/Subject Area Earth Sciences  
Fiscal Unit/Academic Org School of Earth Sciences - D0656  
College/Academic Group Arts and Sciences  
Level/Career Undergraduate  
Course Number/Catalog 3530  
Course Title Learning from disasters: Extreme events and their impact on infrastructure, engineering and society  
Transcript Abbreviation Learn from disast  
Course Description Introduction to six dimensions of sustainability while learning the main impacts and threats caused by various extreme events through the study of academic publications and reports covering six major extreme events. Long term impacts and recovery from extreme events, how historical decisions in planning, engineering and/or urban development, legislation play important roles.  
Semester Credit Hours/Units Fixed: 4

## Offering Information

Length Of Course 14 Week  
Flexibly Scheduled Course Never  
Does any section of this course have a distance education component? Yes  
Is any section of the course offered 100% at a distance  
Grading Basis Letter Grade  
Repeatable No  
Course Components Lecture  
Grade Roster Component Lecture  
Credit Available by Exam No  
Admission Condition Course No  
Off Campus Never  
Campus of Offering Columbus, Lima, Mansfield, Marion, Newark, Wooster

## Prerequisites and Exclusions

Prerequisites/Corequisites None  
Exclusions Not open to students with credit for CivilEn 3530  
Electronically Enforced Yes

## Cross-Listings

Cross-Listings Cross-listed in CivilEn

## Subject/CIP Code

Subject/CIP Code 40.0601  
Subsidy Level General Studies Course  
Intended Rank Freshman, Sophomore, Junior, Senior

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## Requirement/Elective Designation

Sustainability

## Course Details

### **Course goals or learning objectives/outcomes**

- Successful students will recognize and explain the multifaceted impacts that disasters resulting from extreme events have on people, communities, infrastructure, society, and nature.
- Successful students will apply multidisciplinary approaches from science and engineering to preparedness and hazard mitigation associated with of extreme events, including community preparedness, vulnerability, infrastructure robustness, resilience.
- Successful students will analyze and explain how social and natural systems function, interact, and evolve over time; how human wellbeing and sustainability depends on these interactions;
- how actions have impacts on subsequent generations and societies globally; and how human values, behaviors, and institutions impact multi-faceted, viable solutions across time.

### **Content Topic List**

- Examples and introduction to sustainability's six dimensions framework
    - Hurricanes (wind and precipitation)
    - Hurricanes (rescue and recovery)
    - Lasting effects of extreme events and measures to increase resilience
    - Global warming and sustainability
  - Dam failures and flooding
    - Wildfires, landslides and debris flows
    - Earthquakes and tsunamis (hazard and effects)
    - Extreme event disasters in developing countries
- Yes

### **Sought Concurrence**

## Attachments

- CurriculumChairLetter-newGE-hazards.pdf  
*(Concurrence. Owner: Griffith, Elizabeth M)*
- response to Jeremie Smith's recommendations.pdf: Response to ODE recommendations  
*(Other Supporting Documentation. Owner: Griffith, Elizabeth M)*
- CE2540+ES2540 - asc-distance-approval-cover-sheet.pdf: ASC Distance Approval Cover Sheet signed  
*(Other Supporting Documentation. Owner: Griffith, Elizabeth M)*
- GE Learning from Disasters - Submission-sustainability 2021-12-15.pdf: Sustainability Theme application  
*(Other Supporting Documentation. Owner: Griffith, Elizabeth M)*
- CIVILEN\_EARTHSC\_3530\_interdisciplinary-team-taught-inventory.pdf: Team taught inventory  
*(Other Supporting Documentation. Owner: Griffith, Elizabeth M)*
- CE3530-AU2022 Syllabus - 2022-06-08 v2.docx: revised syllabus  
*(Syllabus. Owner: Griffith, Elizabeth M)*
- contingencies for 2540 now 3530.docx: response to NMS Panel of ASCC  
*(Other Supporting Documentation. Owner: Griffith, Elizabeth M)*

**Comments**

- CIVILEN 2540 is already submitted - pending approval with ASCCAO 1/27/22

05/02/22 - This course does not count in one of our major programs, so no curriculum map was included.

The ASC ODE reviewed the course and the signed ASC Distance Approval Cover Sheet is attached along with responses to recommendations from ODE. A revised syllabus was uploaded following these recommendations.

8 June 2022 - A revised syllabus and response to NMS Panel is included - this included changing the course number, so a new application for the Theme and Team taught inventory was included. *(by Griffith,Elizabeth M on 06/08/2022 09:21 AM)*

- Please see Panel feedback email sent 05/25/2022. *(by Hilty,Michael on 05/25/2022 04:02 PM)*
- - If this course can count in one of your majors, please upload an updated curriculum map.  
- It does not appear that this course has been reviewed by ASC ODE(?). Please follow instructions here <https://ascas.osu.edu/curriculum/distance-courses> *(by Vankeerbergen,Bernadette Chantal on 04/19/2022 12:41 PM)*

**Workflow Information**

Status	User(s)	Date/Time	Step
Submitted	Griffith,Elizabeth M	03/09/2022 08:54 AM	Submitted for Approval
Approved	Griffith,Elizabeth M	03/09/2022 08:54 AM	Unit Approval
Revision Requested	Vankeerbergen,Bernadette Chantal	04/19/2022 12:41 PM	College Approval
Submitted	Griffith,Elizabeth M	05/02/2022 11:23 AM	Submitted for Approval
Approved	Griffith,Elizabeth M	05/02/2022 11:24 AM	Unit Approval
Approved	Vankeerbergen,Bernadette Chantal	05/02/2022 12:00 PM	College Approval
Revision Requested	Hilty,Michael	05/25/2022 04:02 PM	ASCCAO Approval
Submitted	Griffith,Elizabeth M	06/08/2022 09:22 AM	Submitted for Approval
Approved	Griffith,Elizabeth M	06/08/2022 09:22 AM	Unit Approval
Approved	Vankeerbergen,Bernadette Chantal	06/08/2022 03:07 PM	College Approval
Pending Approval	Cody,Emily Kathryn Jenkins,Mary Ellen Bigler Hanlin,Deborah Kay Hilty,Michael Vankeerbergen,Bernadette Chantal Steele,Rachel Lea	06/08/2022 03:07 PM	ASCCAO Approval

On Monday, May 9<sup>th</sup>, the Natural and Mathematical Sciences Panel of the ASC Curriculum Committee reviewed a new course request for Earth Sciences/Civil Engineering 2540. Please see below for the Panel's feedback.

The Panel unanimously approved the request with two contingencies and three recommendations. As a reminder, the Panel's contingencies must be satisfied by a revision submitted in curriculum.osu.edu while the Panel's recommendations may be implemented when the course is first taught.

- **Contingency:** The Panel asks that the departments submitting this course consider the implications of this being numbered at the 2000-level, as currently, in the College of Arts and Sciences, courses taught at the 2000-level in the physical and mathematical sciences (which the School of Earth Sciences falls within) are considered "upper division" credit. It is likely that students enrolled in the Civil Engineering section of the course will receive "lower division" credit (please double-check with your colleagues in that department) while students enrolled in the same, Earth Sciences, section will receive "upper division" credit. This is not tenable. One potential solution would be to renumber this course to the 3000-level, as 3000-level courses in the College of Arts and Sciences receive upper division credit regardless of their discipline.

Thank you for pointing out this potential issue with "upper division" credit. It was decided to change the course number to "3530" as the course content and delivery is an upper division course.

- **Contingency:** The Panel has some concerns they would like to see addressed in the syllabus regarding the course workload and how it is communicated in the syllabus. On page 7 of the course syllabus, under Credit hours and work expectations, it states that students should expect to spend 4 hours on direct instruction and 12 hours on out-of-classroom instruction. This is incorrect, as per the faculty rules, students should expect to have 1 hour of direct instruction and 2 hours of out-of-classroom work (for a total of 3 hours) per every 1 credit hour earned. For a 4-credit hour course, students should expect to spend 4 hours on direct instruction and 8 hours on out-of-classroom work. The Panel would like to ensure that the course proposers designed their course assignments to meet this 8 hours of outside work per week rather than 12 hours of outside work per week. For additional information, please see the faculty rules (3335-8-24) on credit hours at: <https://go.osu.edu/credithours>.

We appreciate the clarification here and have adjusted the work expectation following the guidelines (copied below with change highlighted in red). The syllabus now reads:

According to [Ohio State policy](#), students should expect to have **1 hour of direct instruction and 2 hours of out-of-classroom work (for a total of 3 hours) per every 1 credit hour earned** to receive a grade of (C) average.

- **Recommendation:** The Panel recommends not requiring a doctor's note for late submission of assignments (as found on page 14 of the syllabus), as the Wilce Student Health center will not provide written documentation that a student is ill or visited them for treatment, and obtaining a doctor's note may require a student to make an unnecessary out-of-pocket medical expense to obtain this note.

This is a good point, and the policy has been adjusted so that it now reads (copied from the syllabus with the change highlighted in red):

Late submission will not be accepted (grade = zero). In case of severe illness, the student shall notify the instructor as soon as possible **of the extenuating circumstance**.

- **Recommendation:** The Panel recommends adding the readings for the course directly to the course calendar on the corresponding dates.

The weeks (from the course schedule) have been added to the readings/resources list on pages 9-12.

- **Recommendation:** The Panel mentions that they view course syllabi as a “user manual” for students enrolled in the course to learn all the necessary information they need to be successful within the course. Therefore, they recommend either moving the relevant information in the course (such as details on assignments, the course calendar, etc.) higher in the syllabus or providing a useful table-of-contents to the front of the syllabus to allow students to quickly find the relevant section they seek.

The order of the material was adjusted following a more standard outline so that the material is more easily found for the students.

Thanks for the opportunity to revise the new course proposal.



# CivilEng 3530/EarthSc 3530: Learning from disasters: Extreme events and their impact on infrastructure, engineering and society

## AUTUMN SEMESTER 2022

COE Instructor: Dr. Daniel Pradel (Civil Engineering)  
Email address: [pradel.1@osu.edu](mailto:pradel.1@osu.edu)  
Phone number: 614-688-2708  
CAS Instructor: Cristina Millan, PhD (Earth Sciences)  
Email address: [millan.2@osu.edu](mailto:millan.2@osu.edu)  
Zoom link: <https://osu.zoom.us/my/pradel> (password: geo)  
Office hours: Monday through Thursday 10:00–11:00AM via Zoom from Hitchcock 403.  
Additional office hours at alternative times or days are available by appointment  
(please request appointment 24hrs in advance).  
Course credit hours: 4

## Course Prerequisites

None.

## COURSE OVERVIEW

### Course description

The course is an introduction to the multidisciplinary study of extreme events and sustainability. The course will cover natural hazards, such as hurricanes, heat waves, flooding, earthquakes, landslides, volcanic eruptions, and tsunamis, which are of great importance because of their potential to cause extensive damage and their impacts on people, infrastructure, and nature. The course is structured in a seminar type format, where students will first perform individual scholarly research about a specific case history, then work with other students on a thematically organized presentation, and lastly, participate in class discussions. Through their study of case histories, students will gain in-depth multidisciplinary

knowledge about extreme events, their relationship with our environment, their consequences, and the different approaches that societies have implemented to mitigate disasters.

During class discussions, students will examine the case histories in terms of preparedness, vulnerability, effects, robustness, flexibility, and resilience, which are important from a sustainability perspective. Students will also discuss the impact of local legislation, wealth/poverty, political decisions, local characteristics, and the major impacts that various engineering design methods/concepts have on damage. The case histories will include extreme weather events that had devastating environmental effects and long lasting economic as well as social consequences, e.g., hurricanes Katrina (2005) and Maria, Irma and/or Harvey in 2017. Natural hazards will include the 2011 Tohoku earthquake and tsunami in Japan, the 2010 Haiti earthquake, and/or the 2015 Gorkha earthquake in Nepal. The case histories will also include man-made disasters, such as dam and levee failures, the damage to the power grid in Puerto Rico in 2017, and/or the melt-down of the Dai-Ichi nuclear plant in Japan in 2011.

Through the study of case histories, students will gain an understanding of the long-term impacts and difficult recovery from extreme events, which are important from a sustainability perspective. Students will also examine the effects of extreme events in developing countries, where limited resources often result in medical threats from infectious diseases due to lack of clean water and emergency medical services (e.g., 2010 Haiti and 2015 Nepal earthquakes); similarly, students will examine how historical decisions in planning, engineering and/or urban development, as well as legislation play important roles that often magnify the destructive effects of extreme events (e.g., levee construction/design methods and urban planning used in New Orleans, the urban planning in the center of Kobe in Japan, the Jones Act that restricts the boats and crews that delivered emergency supplies to Puerto Rico after Maria).

Lastly, students will learn about the six dimensions of sustainability (listed below) and how most global warming models predict a sharp increase in the number, as well as severity, of extreme events.

## **Sustainability Six Dimensions Framework**

- 1) **Systems:** coupled human-natural systems, integrating environmental, economic & social factors, systems thinking, resilience
- 2) **Environment:** environmental, earth, and natural resource systems; knowledge of planetary/natural systems, e.g., climate, aquatics, soils, forests, wildlife, geology, ecology, agriculture; understanding of how these systems impact human well-being (e.g., health, economy, social justice, future generations)
- 3) **Economic-political:** economic and political factors of sustainability (economy/consumption/production; laws/policy/governance/institutions; business/strategy/management; costs/benefits/tradeoffs)

- 4) **Social-cultural**: social/cultural factors of sustainability (justice, equity, values, ethics, history, religion, the arts, citizenship, power, behavior and decision making, cultural critique...)
- 5) **Technology & design**: engineering; technological innovation; systems design; human-machine interface; manufacturing processes; life cycle; product design (design of technology and infrastructure to promote sustainability and human well-being)
- 6) **Well-being**: human health, safety, risk, sustainable livelihoods, social welfare and well-being

## ASSESSMENT AND LEARNING OUTCOMES

### ABET Accreditation Program Learning Outcomes:

None

### Engineering learning outcomes:

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

- Identify the main impacts and threats caused by extreme events.
- Identify methods used to prevent and/or mitigate extreme events, and their immediate as well as long-term consequences.
- Identify how regulations, building codes and mitigation methods change following extreme events, and evolve through time.
- Understand how managers, designers and engineers apply mitigation and design procedures intended to reduce the impacts caused by extreme events
- Understand the importance of resilience in the development of infrastructure.

### Earth Science learning outcomes:

- By the end of this course, students should successfully be able to: Describe the physical, chemical, and/or biological processes that drive extreme events
- Understand feedback loops between natural and anthropogenic factors that cause extreme events
- Identify precursory phenomena that allow scientists and engineers to monitor and/or predict extreme events
- Describe monitoring methods for extreme phenomena



## **OSU GENERAL EDUCATION PROGRAM STRUCTURE**

### **GE Course Goals:**

GOAL 1: Successful students will recognize and explain the multifaceted impacts that disasters resulting from extreme events have on people, communities, infrastructure, society, and nature.

GOAL 2: Successful students will apply multidisciplinary approaches from science and engineering to preparedness and hazard mitigation associated with of extreme events, including community preparedness, vulnerability, infrastructure robustness and resilience.

GOAL 3 (sustainability): Successful students will analyze and explain how social and natural systems function, interact, and evolve over time; how human wellbeing and sustainability depends on these interactions; how actions have impacts on subsequent generations and societies globally; and how human values, behaviors, and institutions impact multi-faceted, viable solutions across time.

### **GE Expected learning outcomes:**

Successful students are able to:

#### **GE ELOs:**

GE 1.1 Locate and select information sources that are credible, relevant and appropriate to the context.

GE 1.2 Demonstrate critical and logical thinking by analyzing and integrating information from multiple sources and disciplines.

GE 1.3 Read, listen, compose and speak in a variety of genres and modalities for a range of purposes and audiences.

GE 1.4 Apply learned concepts and skills to new situations.

GE 2.2 Use methods of research, inquiry, creativity and discovery across disparate disciplines to generate and respond to socially and ethically important topics.

GE 3.3 Describe, analyze and critique the roles and impacts of human activity on both human society and the natural world.

GE 4.1 Describe and apply skills needed to maintain resiliency and personal well-being in contemporary society.

GE 4.3 Employ technology effectively and ethically to enhance academic, professional and personal life.

GE 4.4 Appreciate and participate in a culture of engagement and service.

GE 4.5 Work collaboratively with others to achieve shared goals.

**Sustainability Theme ELOs:**

ELO 1.1: Engage in critical and logical thinking about extreme events.

ELO 1.2: Engage in an advanced, in-depth, scholarly exploration of extreme events.

ELO 2.1: Identify, describe, and synthesize approaches or experiences as they apply to extreme events.

ELO 2.2: Demonstrate a developing sense of self as a learner through reflection, self-assessment, and creative work, building on prior experiences to respond to new and challenging contexts

ELO 3.1: Describe, analyze and critique the roles and impacts of human activity on both human society and the natural world currently and in the future.

ELO 3.2: Devise informed and meaningful responses to problems and arguments in the area of sustainability based on the interpretation of appropriate evidence and an explicit statement of values.

## HOW THIS COURSE WORKS

### Mode of delivery:

The lectures are 100% online and will be conducted on Zoom at their scheduled time.

### Participating in online activities for attendance:

Instructor will hold Zoom live lectures, where students are expected to attend and participate (e.g., make group presentations). There will be Top Hat quizzes on a regular basis during lectures and students must be connected in order to answer them. The live lectures will be recorded and links to lectures will be available shortly thereafter.

### Office Hours and Live Sessions:

Office hours will be held at their scheduled time via Zoom. For students on the Columbus campus, in-person office hours are optional.

### Credit hours and work expectations:

According to [Ohio State policy](#), students should expect to have 1 hour of direct instruction and 2 hours of out-of-classroom work (for a total of 3 hours) per every 1 credit hour earned to receive a grade of (C) average.

### Required Activities and Deliverables:

- Students are expected to attend all Zoom sessions (live lectures) and participate in seminar discussions.
- Weekly readings, student presentations, and individual research are expected.
- We expect that students will have the opportunity of working with peers from foreign universities (e.g., the University of Tsukuba<sup>1</sup>, in Japan, where a similar course is approved). The type, format and extent of outside participation will depend on the respective enrollment from other universities and will be detailed once the semester has begun.

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<sup>1</sup> <http://www.tsukuba.ac.jp/en/>

## SAMPLE ASSIGNMENT

### Introduction: Thematic Student Reports, Presentations and Discussions

For each thematic topic, students will be divided into groups and assigned a specific topic of research (a sample assignment with a list of thematic topics is provided below). During student presentations instructors will act as moderators and encourage questions from other teams and group discussions. The format of the sessions will be similar to that of a graduate student seminar where challenging each other opinions is encouraged. The instructors will moderate sessions according to their area of expertise (e.g., disaster assistance and recovery will be moderated by the instructor from Civil Engineering), and/or their field reconnaissance experience.

### Example of Thematic Topic: Puerto Rico's Recovery from Hurricane Maria

Individual reports (single bullet) and thematic group presentations shall concentrate on the 2018-2021 recovery period from Hurricane Maria in Puerto Rico. Hence, submissions should only discuss briefly emergency actions taken between October and December 2017.

Thematic Group 1: Infrastructure topics (#2, 5 and 6)<sup>2</sup>.

- Power generation and electric distribution (electric grid, hydroelectric dams, renewable sources, etc.)
- Water treatment and distribution of drinkable water.
- Transportation (airports, bridges, freeways, traffic lights, etc.)
- Short vs. long-term building repairs (e.g., blue roofs), differences between residential and commercial building repairs, etc.
- Emergency and long-term repairs of hospitals and other public buildings; impact on services

Thematic Group 2: Effects of federal legislation and political setting (#3 and 4).

- Impact of the "1920 Jones Act" legislation
- Political representation in Washington (impact of US territory vs. state)
- FEMA's funding, warehouses and asset allocation
- Distribution of federal funds between Texas, Florida and Puerto Rico after the 2017 hurricanes (Harvey, Irma and Maria)

Thematic Group 3: Economic topics (#1 and 3).

- Destruction of sources of income (e.g., tourism before vs. after Maria)
- Effect on manufacturing (e.g., pharmaceutical industry) both in Puerto Rico and on the mainland

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<sup>2</sup> Highlighted numbers, indicate the primary dimensions of sustainability that are covered.

- Impact of laws such as the “1920 Jones Act” on recovery in Puerto Rico
- Impact of public debt, fiscal policies and corresponding austerity measures of Puerto Rico’s government during the decade prior to Maria

Thematic Group 4: Public health/wellbeing (#2, 4 and 6).

- Impact of damaged schools, hospitals, pharmacies on Puerto Ricans
- Estimated vs total death toll, and suicide rate
- Environmental impacts from mold and fungi on Puerto Ricans living in damaged buildings
- Impact on the island of residents’ migration to the continental USA

### **Deliverables:**

- Prior to each student presentation session, students will submit a research report regarding an aspect (assigned by instructor) of a case history and their group’s PowerPoint presentation (an assignment example is provided above). The text portion of the research reports should be about ~500 words long (title and references excluded). There is no limit to the number of figures and/or photos that can be attached in a separate appendix.
- Student presentations will be in groups of two to four students (depending on course enrollment) and will focus on a particular impact (assigned by instructor) of an extreme event (e.g., economic impact, flooding, transportation, power generation, clean water, impact of legislation, political setting, economics, medical needs, etc.). An assignment example is attached at the end of the syllabus; depending on the topic assigned by the instructor, student presentations will address some or all the following:
  - A brief description of the assigned topic and its main effects (e.g., type of devastation, health threats, economic impacts);
  - Preparedness of the city/region/country prior to the extreme event;
  - Remedial measures implemented after the extreme event;
  - Short vs. long term consequences of the extreme event;
  - Prevalence of the impact and increased risks following the event;
  - Societal and behavioral impacts;
  - Inequalities in disaster preparedness, data collection, emergency response and allocated resources;
  - Impact of local legislation and/or political setting;

- News coverage, what is commonly remembered, and urban myths associated with the events;
- Strategies for reducing similar threats (e.g., implemented at location or elsewhere).
- **Important:** all student Presentations should have:
  - A “title” slide that identifies team members;
  - A slide where the main sources/references are listed;
  - A “conclusion” or “summary of findings” slide(s) at the end of the presentation.

## COURSE MATERIALS

### Required textbooks:

None

### Suggested Readings/Resources

To research a topic the preferred source of information for students’ research papers are academic/scholarly publications, professional societies reports, government reports. Examples of such publications are presented below:

#### **Weeks 1-3:**

##### **2005 Hurricane Katrina (New Orleans only)**

FEMA (2006) “Hurricane Katrina in the Gulf Coast Mitigation Assessment Team Report Building Performance Observations, Recommendations, and Technical Guidance” FEMA 549 report

NIST (2006) “Performance of Physical Structures in Hurricane Katrina and Hurricane Rita: A Reconnaissance Report” NIST Technical Note 1476

##### **2017 Hurricane Irma & Maria (Puerto Rico only)**

GEER/NSF report from  
[http://www.geerassociation.org/administrator/components/com\\_geer\\_reports/geerfiles/180629\\_GEER\\_PR\\_Report\\_No\\_GEER-057.pdf](http://www.geerassociation.org/administrator/components/com_geer_reports/geerfiles/180629_GEER_PR_Report_No_GEER-057.pdf)

**Weeks 4-6:****1928 St Francis Dam Failure (California)**

Rogers, J. D. (2006, 6:2). Lessons Learned from the St. Francis Dam Failure. *Geo-Strata*, 14-17.

Rogers, J. D. & Hasselmann, K. F. (2013). The St. Francis Dam Failure: Worst American Engineering Disaster of the 20th Century. AEG Shlemon Specialty Conference: Dam Failures and Incidents. Denver: Association of Environmental and Engineering Geologists.

VandenBerge, D. R., Duncan, J.M., & Brandon, T. (2011). Lessons Learned From Dam Failures. Virginia Polytechnic Institute and State University.

**2020 Edenville and Sanford Dam Failures (Michigan)**

Pradel D. and Lobbestael A. (2021) Edenville and Sanford Dam Failures, Field Reconnaissance Report. ASCE GSP327.

**Weeks 7-9:****2005 La Conchita landslide (California)**

Pradel D. (2014), "The Progressive Failure Reactivation of La Conchita Landslide in 2005", ASCE Geo-Congress 2014: Geo-Characterization and Modeling for Sustainability, ASCE GSP 234, 3209-3222.

**Weeks 10-13:****2015 Gorkha Earthquake (Nepal)**

Tiwari B., Pradel D., et al. (2018), "Landslide Movement at Lokanthali, during the 2015 Earthquake in Gorkha, Nepal ASCE Journal of Geotechnical and GeoEnvironmental Engineering, 10.1061/(ASCE) GT.1943-5606.0001842

GEER/NSF reports from:

[http://www.geerassociation.org/administrator/components/com\\_geer\\_reports/geerfiles/Nepal\\_GEER\\_Report\\_V1\\_15.pdf](http://www.geerassociation.org/administrator/components/com_geer_reports/geerfiles/Nepal_GEER_Report_V1_15.pdf)

**2011 Tohoku earthquake and tsunami (Japan)**

Pradel D., Tiwari B., and Wartman J. (2011), "Landslides Triggered by 2011 Tohoku Pacific Earthquake: Preliminary Observations", *Geo-Strata* (ASCE's Geo-Institute) Sept./Oct. 2011, 28-32

Pradel D., Wartman J., and Tiwari B. (2014), "Impact of anthropogenic changes on liquefaction along the Tone River during the 2011 Tohoku Earthquake", *ASCE Natural Hazards Review*. Vol.15, 13-26.

Pradel D., Wartman J., and Tiwari B. (2013), "Failure of the Fujinuma Dams during the 2011 Tohoku Earthquake", *ASCE Geo-Congress 2013: Stability and Performance of Slopes and Embankments III*, GSP 231, 1566-1580.



## GRADING AND FACULTY RESPONSE

### Grading:

Boundaries between grades are firm (there will be no rounding up).

- Research reports 40%
- Group presentations 40%
- Class participation 15%
- Top Hat quizzes 5%

Grade	Point %
A	100% - 93%
A-	90% - 92%
B+	87% - 89%
B	83% - 86%
B-	80% - 82%
C+	77% - 79%
C	73% - 76%
C-	70% - 72%
D+	67% - 69%
D	60% - 66%
E	0% - 59%

### Materials and submissions:

**Lectures:** Instructor's PowerPoint slides will be posted ahead of the Zoom live lectures. In advance of each lecture, students are expected to have researched the subject topic and studied the slides.

**Assignments:** A total of 6 research reports are anticipated, that require constant and continuous effort throughout the semester. Hence, students should plan ahead, and it is their responsibility to budget their time appropriately.

**Presentations:** A total of 6 group presentations are anticipated. Students' PowerPoint slides will be posted on Carmen ahead of the discussion session. Students are expected to have researched the discussion topic or extreme event case history in advance of the meeting.

**Important:** Potential problems (e.g., computer problems, cell phone or internet outages, etc.) can be anticipated by working/submitting ahead of time; furthermore, it is student's responsibility to verify that his/her files have been properly uploaded on Carmen. **Hence, no penalty reduction will be provided for uploading issues or problems.**

### Attendance:

Attendance is expected to all Zoom live lectures, so that students can obtain the information necessary to comprehend the course material, make relevant presentations, participate in group discussions, etc. Attendance should enable students to successfully complete assignments and/or improve performance. Instead of taking attendance, there will be multiple-choice quizzes administered through **Top Hat** during

most live lectures. The Top Hat quizzes will contribute to the grade and help instructor assess students' learning.

## Assignments

- Students will have a week to complete their assignments, and all submissions will be due 3 hours before the relevant discussion session or lecture (e.g., if student presentations are assigned during lectures on a Monday, all Carmen submissions will be due 3 hours ahead of the meeting on the following Monday).
- Late submission will not be accepted (grade = zero). In case of severe illness, the student shall notify the instructor as soon as possible of the extenuating circumstance.
- Handwritten submissions are not allowed, and all assignments are to be submitted electronically in CARMEN. Students shall submit their reports and presentations as a single PDF file. Emailed assignments and/or different formats will not be accepted, nor receive points (grade = zero).

## Grading and feedback:

- Feedback on homework and lab reports will be provided on Carmen, typically within a week.
- Instructor typically replies to emails within 24 hours
- Excused absences from quizzes and exams include illnesses or similar extenuating circumstance.

## Tone and civility:

Let's maintain a supportive learning community where everyone feels safe and where people can disagree amicably. The instructors are committed to making the classroom a comfortable space for all of us, and we ask that we all work toward this goal in all of the course's online spaces. We will respect each other and practice civility at all times. Disrespectful language will not be tolerated.

## Academic integrity policy:

**Quizzes:** You must complete quizzes yourself, i.e., without any external help or communication.

**Written assignments:** Your written assignments, should be your own original work. Copy/paste from the internet will be severely punished.

**Reusing past work:** In general, you are prohibited in university courses from turning in work from a past class to your current class, even if you modify it. If you want to build on previous work or revisit a topic you've explored in previous courses, please discuss the situation with instructor.

**Falsifying data or results:** All the analyses you will conduct in this course are intended to be a learning experience; you should never feel tempted to adjust or modify data/results.

**Collaboration and informal peer-review:** The course includes many opportunities for formal collaboration with your classmates. While study groups and peer-review of written projects is encouraged, remember that the written reports you submit must be your own work.

**Ohio State's Academic Integrity Policy:** Academic integrity is essential to maintaining an environment that fosters excellence in teaching, research, and other educational and scholarly activities. Thus, The Ohio State University and the Committee on Academic Misconduct (COAM) expect that all students have read and understand the university's [\*Code of Student Conduct\*](#), and that all students will complete all academic and scholarly assignments with fairness and honesty. Students must recognize that failure to follow the rules and guidelines established in the university's *Code of Student Conduct* and this syllabus may constitute "Academic Misconduct."

The Ohio State University's *Code of Student Conduct* (Section 3335-23-04) defines academic misconduct as: "Any activity that tends to compromise the academic integrity of the university or subvert the educational process." Examples of academic misconduct include (but are not limited to) plagiarism, collusion (unauthorized collaboration), copying the work of another student, and possession of unauthorized materials during an examination. Ignorance of the university's *Code of Student Conduct* is never considered an excuse for academic misconduct, so I recommend that you review the *Code of Student Conduct* and, specifically, the sections dealing with academic misconduct.

**If we suspect that a student has committed academic misconduct in this course, we are obligated by university rules to report our suspicions to the Committee on Academic Misconduct.** If COAM determines that you have violated the university's *Code of Student Conduct* (i.e., committed academic misconduct), the sanctions for the misconduct could include a failing grade in this course and suspension or dismissal from the university.

If you have any questions about the above policy or what constitutes academic misconduct in this course, please contact instructors.

Other sources of information on academic misconduct (integrity) to which you can refer include:

- The Committee on Academic Misconduct web pages ([COAM Home](#))
- *Ten Suggestions for Preserving Academic Integrity* ([Ten Suggestions](#))
- *Eight Cardinal Rules of Academic Integrity* ([www.northwestern.edu/uacc/8cards.htm](http://www.northwestern.edu/uacc/8cards.htm))

## Copyright disclaimer

The materials used in connection with this course may be subject to copyright protection and are only for the use of students officially enrolled in the course for the educational purposes associated with the

course. Copyright law must be considered before copying, retaining, or disseminating materials outside of the course.

## COURSE TECHNOLOGY

### General

For help with your password, university email, Carmen, or any other technology issues, questions, or requests, contact the Ohio State IT Service Desk. Standard support hours are available at [ocio.osu.edu/help/hours](https://ocio.osu.edu/help/hours), and support for urgent issues is available 24/7.

- Self-Service and Chat support: [ocio.osu.edu/help](https://ocio.osu.edu/help)
- Phone: 614-688-4357(HELP)
- Email: [servicedesk@osu.edu](mailto:servicedesk@osu.edu)
- TDD: 614-688-8743

### Proctoring:

During lectures, some questions (e.g., Top Hat quizzes) may be graded using automatic proctoring tools.

### Baseline technical skills for online courses:

- Basic computer and web-browsing skills
- Navigating Carmen: for questions about specific functionality, see the [Canvas Student Guide](#)

### Required technology skills specific to this course:

- [Zoom virtual meetings](#)
- Microsoft Office 365, especially Excel for graphs and PowerPoint for drawings

### Required equipment:

- Computer: current Mac (OS X) or PC (Windows 7+) with high-speed internet connection
- Other: a mobile device (smartphone or tablet) or landline to use for BuckeyePass authentication, as well as Top Hat quizzes.

- Webcam: built-in or external webcam, fully installed and tested
- Microphone: built-in laptop or tablet mic or external microphone

### Required software:

- [Microsoft Office 365](#): All Ohio State students are now eligible for free Microsoft Office 365 ProPlus through Microsoft's Student Advantage program. Full instructions for downloading and installation can be found [at go.osu.edu/office365help](http://go.osu.edu/office365help).

### Carmen Website:

All course material will be posted on the Carmen site at <http://www.carmen.osu.edu>.

### Carmen access:

You will need to use [BuckeyePass](#) multi-factor authentication to access your courses in Carmen. To ensure that you are able to connect to Carmen at all times, it is recommended that you take the following steps:

- Register multiple devices in case something happens to your primary device. Visit the [BuckeyePass - Adding a Device](#) help article for step-by-step instructions.
- Request passcodes to keep as a backup authentication option. When you see the Duo login screen on your computer, click "Enter a Passcode" and then click the "Text me new codes" button that appears. This will text you ten passcodes good for 365 days that can each be used once.
- Download the [Duo Mobile application](#) to all of your registered devices for the ability to generate one-time codes in the event that you lose cell, data, or Wi-Fi service.

If none of these options will meet the needs of your situation, you can contact the IT Service Desk at 614-688-4357 (HELP) and IT support staff will work out a solution with you.

### Statement on Title IX

All students and employees at Ohio State have the right to work and learn in an environment free from harassment and discrimination based on sex or gender, and the university can arrange interim measures, provide support resources, and explain investigation options, including referral to confidential resources.

If you or someone you know has been harassed or discriminated against based on your sex or gender, including sexual harassment, sexual assault, relationship violence, stalking, or sexual exploitation, you may find information about your rights and options at [titleix.osu.edu](http://titleix.osu.edu) or by contacting the Ohio State

Title IX Coordinator at [titleix@osu.edu](mailto:titleix@osu.edu). Title IX is part of the Office of Institutional Equity (OIE) at Ohio State, which responds to all bias-motivated incidents of harassment and discrimination, such as race, religion, national origin and disability. For more information on OIE, visit [equity.osu.edu](http://equity.osu.edu) or email [equity@osu.edu](mailto:equity@osu.edu).

## Your mental health

A source available at <https://www.osu.edu/wellness> is a student you may experience a range of issues that can cause barriers to learning, such as strained relationships, increased anxiety, alcohol/drug problems, feeling down, difficulty concentrating and/or lack of motivation. These mental health concerns or stressful events may lead to diminished academic performance or reduce a student's ability to participate in daily activities. The Ohio State University offers services to assist you with addressing these and other concerns you may be experiencing. If you find yourself feeling isolated, anxious or overwhelmed, please know that there are resources to help: [ccs.osu.edu](http://ccs.osu.edu). You can reach an on-call counselor when CCS is closed at (614) 292-5766 and 24 hour emergency help is also available through the 24/7 National Prevention Hotline at 1-(800)-273-TALK or at [suicidepreventionlifeline.org](http://suicidepreventionlifeline.org). The Ohio State Wellness app is also a great resource [go.osu.edu/wellnessapp](http://go.osu.edu/wellnessapp).

## Accessibility accommodations for students with disabilities

### Requesting accommodations

The university strives to make all learning experiences as accessible as possible. If you anticipate or experience academic barriers based on your disability including mental health, chronic or temporary medical conditions, please let me know immediately so that we can privately discuss options. To establish reasonable accommodations, we may request that you register with Student Life Disability Services (SLDS). After registration, make arrangements with me as soon as possible to discuss your accommodations so that they may be implemented in a timely fashion.

**SLDS contact information:** [slds@osu.edu](mailto:slds@osu.edu); 614-292-3307; 098 Baker Hall, 113 W. 12<sup>th</sup> Avenue.

### Accessibility of course technology

This online course requires use of Carmen (Ohio State's learning management system) and other online communication and multimedia tools. If you need additional services to use these technologies, please request accommodations with your instructor.

- [CarmenCanvas accessibility](#)
- Streaming audio and video
- [Zoom accessibility](#)

- Collaborative course tools

## **Classroom Safety and Respect**

CEGE Buckeyes take pride in masking up and physically distancing to protect others in public spaces. As members of the Ohio State University community, these actions are part of our personal and ethical responsibility to protect public health and safety.

## COURSE SCHEDULE

Week No.	Class Title / Topic
1	<p><b>Introduction:</b> Scope and organization of the course, discussion of Syllabus and student deliverables; group assignments. Examples and introduction to sustainability's six dimensions framework:</p> <ol style="list-style-type: none"> <li>1) <b>Systems:</b> coupled human-natural systems, integrating environmental, economic and social factors, systems thinking, resilience</li> <li>2) <b>Environment:</b> environmental, earth, and natural resource systems; knowledge of planetary/natural systems, e.g., climate, geology, ecology; understanding of how these systems impact human well-being (e.g., health, and economy)</li> <li>3) <b>Economic-political:</b> economic and political factors of sustainability (economy/consumption/production; laws/policy/governance/institutions; business/strategy/management; costs/benefits/tradeoffs)</li> <li>4) <b>Social-cultural:</b> social/cultural factors of sustainability (justice, equity, values, ethics, history, religion, citizenship, power, behavior and decision making, cultural critique...)</li> <li>5) <b>Technology &amp; design:</b> engineering; technological innovation; systems design; human-machine interface; manufacturing processes; life cycle; product design (design of technology and infrastructure to promote sustainability and human well-being)</li> <li>6) <b>Well-being:</b> human health, safety, risk, sustainable livelihoods, social welfare and well-being</li> </ol>
2	<p><b>Hurricanes (wind and precipitation):</b> Instructor presentation on the effects of Hurricanes Irma and Maria in Puerto Rico and US Virgin Islands (#1, 2 and 3). Assignment of specific topics related to hurricanes for student presentations</p> <p><b>Hurricanes (rescue and recovery):</b> Instructor presentation on rescue efforts and recovery after a major hurricane and Puerto Rico's recovery after Hurricane Maria (#4 and 6).</p> <p><b>Lasting effects of extreme events and measures to increase resilience:</b> Instructor presentation on the short and long term effects of Hurricane Katrina in New Orleans, and measures taken at the local and federal level to decrease New Orleans vulnerability of levees and buildings (#5). Assignment of specific topics related to global warming for student presentations</p>
3	<p><b>Thematic student presentations No.1 (hurricanes) / submission of report No.1</b></p>
4	<p><b>Global warming and sustainability:</b> Recent experience along the Gulf Coast, from Katrina in 2005 to the historical 2020 season (which ran out of hurricane names and had to use Greek letters); increased number of devastating hurricanes in recent decades and predictions from global warming models (#2).</p>



5	<b>Thematic student presentations No.2 (rescue, recovery and global warming) / submission of report No.2</b>
6	<b>Dam failures and flooding:</b> Instructor presentation on the causes and effects of the 1928 St Francis Dam Failure (California), 1976 Teton Dam Failure (Idaho) and 2020 Edenville Dam Failure (Michigan) (#1, 3 and 5). Assignment of specific topics related to dam failures for student presentations
7	<b>Thematic student presentations No.3 (dam failures and flooding) / submission of report No.3</b>
8	<b>Wildfires, landslides and debris flows:</b> Instructor presentation on the 2005 landslide at La Conchita in California and 2014 Oso Landslide in Washington; deforestation caused by wildfires followed by erosion and debris flows (#2, 3, 4 and 6). Assignment of specific topics for student presentations regarding landslides and mudflow disasters.
9	<b>Thematic student presentations No.4 (wildfires, landslides and mudflows) / submission of report No.4</b>
10	<b>Earthquakes and tsunamis (hazard and effects):</b> Instructor presentation on the effects of the 2011 Tohoku Earthquake and tsunami in Japan and on the geological record of past Earthquakes and tsunami events offshore of Japan (#1, 2, 3, 5 and 6). Assignment of specific topics related to earthquakes for student presentations
11	<b>Thematic student presentations No.5 (Earthquakes and Tsunamis) / submission of report No.5</b>
12	<b>Extreme event disasters in developing countries:</b> Instructor presentation on the effects of the 2010 Haiti Earthquake and 2015 Gorkha Earthquake in Nepal (#2, 3, and 6). Assignment of specific topics for student presentations
13	<b>Thematic student presentations No.6 (disasters in developing countries) / submission of report No.6</b>
14-15	<b>Discussions and conclusions:</b> In-class discussions on topics including: vulnerability to extreme events, effects of global warming, lessons learned from case histories, preparedness, infrastructure robustness, and measures to enhance flexibility and resilience. Students suggestions to enhance resilience and reflections on sustainability (#1 to 6).

# GE THEME COURSES

## Overview

Courses that are accepted into the General Education (GE) Themes must meet two sets of Expected Learning Outcomes (ELOs): those common for all GE Themes and one set specific to the content of the Theme. This form begins with the criteria common to all themes and has expandable sections relating to each specific theme.

A course may be accepted into more than one Theme if the ELOs for each theme are met. Courses seeing approval for multiple Themes will complete a submission document for each theme. Courses seeking approval as a 4-credit, Integrative Practices course need to complete a similar submission form for the chosen practice. It may be helpful to consult your Director of Undergraduate Studies or appropriate support staff person as you develop and submit your course.

Please enter text in the boxes to describe how your class will meet the ELOs of the Theme to which it applies. Please use language that is clear and concise and that colleagues outside of your discipline will be able to follow. You are encouraged to refer specifically to the syllabus submitted for the course, since the reviewers will also have that document. Because this document will be used in the course review and approval process, you should be as specific as possible, listing concrete activities, specific theories, names of scholars, titles of textbooks etc.

## **Course subject & number**

### General Expectations of All Themes

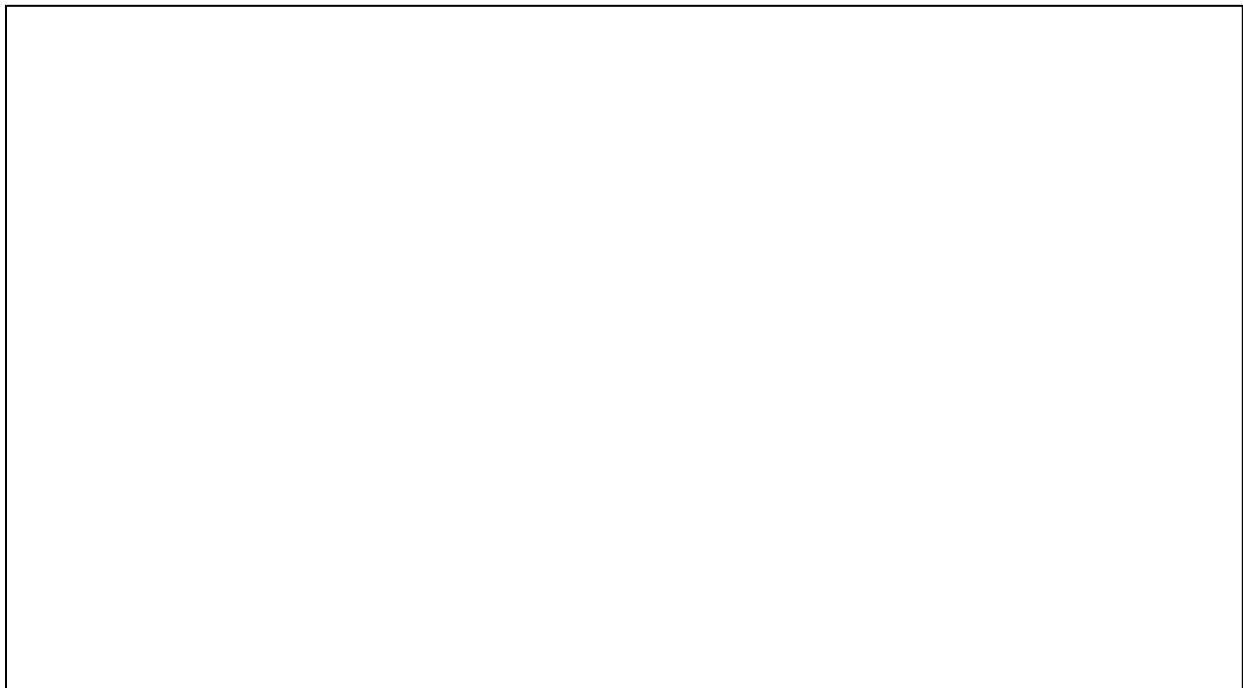
**GOAL 1: Successful students will analyze an important topic or idea at a more advanced and in-depth level than the foundations.**

**Please briefly identify the ways in which this course represents an advanced study of the focal theme.** In this context, “advanced” refers to courses that are e.g., synthetic, rely on research or cutting-edge findings, or deeply engage with the subject matter, among other possibilities. *(50-500 words)*

Course subject & number

**ELO 1.1 Engage in critical and logical thinking about the topic or idea of the theme.** Please link this ELO to the course goals and topics and indicate *specific* activities/assignments through which it will be met. (50-700 words)

**ELO 1.2 Engage in an advanced, in-depth, scholarly exploration of the topic or idea of the theme.** Please link this ELO to the course goals and topics and indicate *specific* activities/assignments through which it will be met. (50-700 words)

A large, empty rectangular box with a thin black border, intended for the student to write their response to the ELOs. It occupies the lower half of the page.

Course subject & number

**GOAL 2: Successful students will integrate approaches to the theme by making connections to out-of-classroom experiences with academic knowledge or across disciplines and/or to work they have done in previous classes and that they anticipate doing in future.**

**ELO 2.1 Identify, describe, and synthesize approaches or experiences as they apply to the theme.**

Please link this ELO to the course goals and topics and indicate *specific* activities/assignments through which it will be met. (50-700 words)

**ELO 2.2 Demonstrate a developing sense of self as a learner through reflection, self-assessment, and creative work, building on prior experiences to respond to new and challenging contexts.**

Please link this ELO to the course goals and topics and indicate *specific* activities/assignments through which it will be met. (50-700 words)

Course subject & number

## Specific Expectations of Courses in Sustainability

**GOAL 1: Students analyze and explain how social and natural systems function, interact, and evolve over time; how human wellbeing depends on these interactions; how actions have impacts on subsequent generations and societies globally; and how human values, behaviors, and institutions impact multi-faceted, potential solutions across time.**

**1.1 Describe elements of the fundamental dependence of humans on Earth and environmental systems and on the resilience of these systems.** Please link this ELO to the course goals and topics and indicate *specific* activities/assignments through which it will be met. (50-700 words)

Course subject & number

**1.2 Describe, analyze and critique the roles and impacts of human activity and technology on both human society and the natural world, in the past, currently, and in the future.** Please link this ELO to the course goals and topics and indicate *specific* activities/assignments through which it will be met. (50-700 words)

**1.3 Devise informed and meaningful responses to problems and arguments in the area of sustainability based on the interpretation of appropriate evidence and an explicit statement of values.** Please link this ELO to the course goals and topics and indicate *specific* activities/assignments through which it will be met. (50-700 words)

# Interdisciplinary Team-Taught Course Inventory

## Overview

The GE allows students to take a single, 4+ credit course to satisfy a particular GE Theme requirement if that course includes key practices that are recognized as integrative and high impact. Courses seeking one of these designations need to provide a completed Integrative Practices Inventory at the time of course submission. This will be evaluated with the rest of the course materials (syllabus, Theme Course submission document, etc). Approved Integrative Practices courses will need to participate in assessment both for their Theme category and for their integrative practice.

Please enter text in the boxes below to describe how your class will meet the expectations of Interdisciplinary Team-Taught courses. It may be helpful to consult the Description & Expectations document for this pedagogical practice or to consult your Director of Undergraduate Studies or appropriate support staff person as you complete this Inventory and submit your course.

Please use language that is clear and concise and that colleagues outside of your discipline will be able to follow. You are encouraged to refer specifically to the syllabus submitted for the course, since the reviewers will also have that document. Because this document will be used in the course review and approval process, you should be as specific as possible, listing concrete activities, specific theories, names of scholars, titles of textbooks etc.

## Accessibility

If you have a disability and have trouble accessing this document or need to receive it in another format, please reach out to Meg Daly at [daly.66@osu.edu](mailto:daly.66@osu.edu) or call 614-247-8412.

## Pedagogical Practices for Interdisciplinary Team-Taught Courses

Course subject & number

**Performance expectations set at appropriately high levels (e.g. Students investigate large, complex problems from multiple disciplinary perspectives).** Please link this expectation to the course goals, topics and activities and indicate *specific* activities/assignments through which it will be met. (50-500 words)

Interdisciplinary Team-Taught Course Inventory

**Significant investment of time and effort by students over an extended period of time (e.g., engage the issue iteratively, analyzing with various lenses and seeking to construct an integrative synthesis).** Please link this expectation to the course goals, topics and activities and indicate *specific* activities/assignments through which it will be met. (50-500 words)

**Interactions with faculty and peers about substantive matters including regular, meaningful faculty mentoring and peer support about conducting interdisciplinary inquiry.** Please link this expectation to the course goals, topics and activities and indicate *specific* activities/assignments through which it will be met. (50-500 words)



Interdisciplinary Team-Taught Course Inventory

**Students will get frequent, timely, and constructive feedback on their work, scaffolding multiple disciplinary perspectives and integrative synthesis to build over time.** Please link this expectation to the course goals, topics and activities and indicate *specific* activities/assignments through which it will be met. (50-500 words)

**Periodic, structured opportunities to reflect and integrate learning (e. g. students should work to integrate their insights and construct a more comprehensive perspective on the issue).** Please link this expectation to the course goals, topics and activities and indicate *specific* activities/assignments through which it will be met. (50-500 words)

## Interdisciplinary Team-Taught Course Inventory

**Opportunities to discover relevance of learning through real-world applications and the integration of course content to contemporary global issues and contexts.** Please link this expectation to the course goals, topics and activities and indicate *specific* activities/assignments through which it will be met. (50-500 words)

**Public Demonstration of competence, such as a significant public communication of their integrative analysis of the issue.** Please link this expectation to the course goals, topics and activities and indicate *specific* activities/assignments through which it will be met. (50-500 words)

## Interdisciplinary Team-Taught Course Inventory

**Experiences with diversity wherein students demonstrate intercultural competence and empathy with people and worldview frameworks that may differ from their own.** Please link this expectation to the course goals, topics and activities and indicate *specific* activities/assignments through which it will be met. (50-500 words)

**Explicit and intentional efforts to promote inclusivity and a sense of belonging and safety for students, e.g. universal design principles, culturally responsive pedagogy, structured development of cultural self-awareness.** Please link this expectation to the course goals, topics and activities and indicate *specific* activities/assignments through which it will be met. (50-500 words)

## Interdisciplinary Team-Taught Course Inventory

**Clear plans to promote this course to a diverse student body and increase enrollment of typically underserved populations of students.** Please link this expectation to the course goals, topics and activities and indicate *specific* activities/assignments through which it will be met. (50-500 words)

Liz and Daniel,

I have completed and signed off on the preliminary distance learning review for the **Ear CivilEng 2540/EarthSc 2540: Learning from disasters: Extreme events and their impact on infrastructure, engineering, and society** course approval proposal (see signed Cover Sheet attached). This syllabus includes all required syllabus elements and provides a comprehensive overview of the course expectations.

I have a few *recommendations* to improve your syllabus that I hope will be helpful:

- Though ASC DL courses are typically required to use the ASC Syllabus Template, this syllabus was created by the Engineering DL syllabus template that shares the same source as the ASC template (ODEE Online Syllabus Model). For this reason, I do not think it necessary to change the cross-listed team-taught syllabus for the Earth Science listing.

No change was made following this recommendation. Thank you for the confirmation.

- Under Credit Hours and Work Expectations (page 7 of syllabus) and workload estimation (page 3 of cover sheet), the language for a 1 credit course is still there, the two numbers for time spent per week should be multiplied by 4 for this 4-credit course. I strongly recommend making these consistent to prevent a longer faculty panel course approval process to address confusions.

Changes (highlighted in red) were made in the syllabus, so it reads on page 7:

- According to [Ohio State policy](#), students should expect for each 4 hours per week of time spent on direct instruction (instructor content and Carmen activities, for example) about 12 hours of time of homework (reading and assignment preparation, for example) to receive a grade of (C) average.
- On page 13 of the syllabus, there is a section on grading that shows the 4 categories of graded work. I recommend providing a brief description of these assignments in this section of the syllabus to clarify expectations (for students and the faculty committees reviewing the course).

Thank you for the recommendation, at this time no revision was made to the syllabus following this point because the assignments are expanded elsewhere in the syllabus. However, the instructors will consider adding more details here in future revisions of the syllabus.

The ASC Office of Distance Education strives to be a valuable resource to instructors and departments in the College of Arts and Sciences. In addition to managing the [DL course review](#) process, [hosting ASC Teaching Forums](#), and developing an ever-expanding catalog of [instructor support resources](#), we also provide one-on-one instructional design consultation to ASC instructors interested in redesigning any aspect of their online course. If your department or any of your individual instructors wish to [meet with one of our instructional designers](#) to discuss how we can provide advice, assistance, and support, please do let me know.

Kindly,

Jeremie Smith  
Distance Education Coordinator  
[ASC Office of Distance Education](#)  
The Ohio State University  
1775 College Road, 458 Hagerty Hall  
Columbus, OH 43210-1340, U.S.A.  
[smith.12199@osu.edu](mailto:smith.12199@osu.edu)

# Distance Approval Cover Sheet

## For Permanent DL/DH Approval | College of Arts and Sciences

Course Number and Title:

### Carmen Use

When building your course, we recommend using the [ASC Distance Learning Course Template](#) for CarmenCanvas. For more on use of [Carmen: Common Sense Best Practices](#).

A Carmen site will be created for the course, including a syllabus and gradebook at minimum.

If no, why not?

### Syllabus

Proposed syllabus uses the ASC distance learning syllabus template, includes boilerplate language where required, as well as a clear description of the technical and academic support services offered, and how learners can obtain them.

Syllabus is consistent and is easy to understand from the student perspective.

Syllabus includes a schedule with dates and/or a description of what constitutes the beginning and end of a week or module.

If there are required synchronous sessions, the syllabus clearly states when they will happen and how to access them.

Additional comments (optional):

### Instructor Presence

For more on instructor presence: [About Online Instructor Presence](#).

Students should have opportunities for regular and substantive academic interactions with the course instructor. Some ways to achieve this objective:

Regular instructor communications with the class via announcements or weekly check-ins.

Instructional content, such as video, audio, or interactive lessons, that is visibly created or mediated by the instructor.



- Regular participation in class discussion, such as in Carmen discussions or synchronous sessions.
- Regular opportunities for students to receive personal instructor feedback on assignments.

Please comment on this dimension of the proposed course (or select/explain methods above):

## **Delivery Well-Suited to DL/DH Environment**

*Technology questions adapted from the [Quality Matters](#) rubric. For information about Ohio State learning technologies: [Toolsets](#).*

- The tools used in the course support the learning outcomes and competencies.
- Course tools promote learner engagement and active learning.
- Technologies required in the course are current and readily obtainable.
- Links are provided to privacy policies for all external tools required in the course.

Additional technology comments (optional):

Which components of this course are planned for synchronous delivery and which for asynchronous delivery? (For DH, address what is planned for in-person meetings as well.)

If you believe further explanation would be helpful, please comment on how course activities have been adjusted for distance learning (optional):



## Workload Estimation

For more information about calculating online instruction time: [ODEE Credit Hour Estimation](#).

- Course credit hours align with estimated average weekly time to complete the course successfully.
- Course includes direct (equivalent of “in-class”) and indirect (equivalent of “out-of-class”) instruction at a ratio of about 1:2.

Provide a brief outline of a typical course week, categorizing course activities and estimating the approximate time to complete them or participate:

- In the case of course delivery change requests, the course demonstrates comparable rigor in meeting course learning outcomes.

## Accessibility

For more information or a further conversation, contact the [accessibility coordinator](#) for the College of Arts and Sciences. For tools and training on accessibility: [Digital Accessibility Services](#).

- Instructor(s) teaching the course will have taken Digital Accessibility training (starting in 2022) and will ensure all course materials and activities meet requirements for diverse learners, including alternate means of accessing course materials when appropriate.
- Information is provided about the accessibility of all technologies required in the course. All third-party tools (tools without campus-wide license agreements) have their accessibility statements included.

Description of any anticipated accommodation requests and how they have been/will be addressed.

Additional comments (optional):

## Academic Integrity

For more information: [Academic Integrity](#).

- The course syllabus includes online-specific policies about academic integrity, including specific parameters for each major assignment:
- Assignments are designed to deter cheating and plagiarism and/or course technologies such as online proctoring or plagiarism check or other strategies are in place to deter cheating.

Additional comments (optional):

## Frequent, Varied Assignments/Assessments

For more information: [Designing Assessments for Students](#).

Student success in online courses is maximized when there are frequent, varied learning activities. Possible approaches:

- Opportunities for students to receive course information through a variety of different sources, including indirect sources, such as textbooks and lectures, and direct sources, such as scholarly resources and field observation.
- Variety of assignment formats to provide students with multiple means of demonstrating learning.
- Opportunities for students to apply course knowledge and skills to authentic, real-world tasks in assignments.

Comment briefly on the frequency and variety of assignment types and assessment approaches used in this course (or select methods above):

## Community Building

For more information: [Student Interaction Online](#).

Students engage more fully in courses when they have an opportunity to interact with their peers and feel they are part of a community of learners. Possible approaches:

- Opportunities for students to interact academically with classmates through regular class discussion or group assignments.
- Opportunities for students to interact socially with classmates, such as through video conference sessions or a course Q&A forum.
- Attention is paid to other ways to minimize transactional distance (psychological and communicative gaps between students and their peers, instructor, course content, and institution).

Please comment on this dimension of the proposed course (or select methods above):

## Transparency and Metacognitive Explanations

For more information: [Supporting Student Learning](#).

Students have successful, meaningful experiences when they understand how the components of a course connect together, when they have guidance on how to study, and when they are encouraged to take ownership of their learning. Possible approaches:

- Instructor explanations about the learning goals and overall design or organization of the course.
- Context or rationale to explain the purpose and relevance of major tasks and assignments.

- Guidance or resources for ancillary skills necessary to complete assignments, such as conducting library research or using technology tools.
- Opportunities for students to take ownership or leadership in their learning, such as by choosing topics of interest for an assignment or leading a group discussion or meeting.
- Opportunities for students to reflect on their learning process, including their goals, study strategies, and progress.
- Opportunities for students to provide feedback on the course.

Please comment on this dimension of the proposed course (or select methods above):

## **Additional Considerations**

Comment on any other aspects of the online delivery not addressed above (optional):

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Syllabus and cover sheet reviewed by *Jeremie Smith* on

Reviewer Comments:

Additional resources and examples can be found on [ASC's Office of Distance Education](#) website.

I have completed and signed off on the preliminary distance learning review for the **Ear CivilEng 2540/EarthSc 2540: Learning from disasters: Extreme events and their impact on infrastructure, engineering, and society** course approval proposal (see signed Cover Sheet attached). This syllabus includes all required syllabus elements and provides a comprehensive overview of the course expectations.

I have a few *recommendations* to improve your syllabus that I hope will be helpful:

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- Under Credit Hours and Work Expectations (page 7 of syllabus) and workload estimation (page 3 of cover sheet), the language for a 1 credit course is still there, the two numbers for time spent per week should be multiplied by 4 for this 4-credit course. I strongly recommend making these consistent to prevent a longer faculty panel course approval process to address confusions.
- On page 13 of the syllabus, there is a section on grading that shows the 4 categories of graded work. I recommend providing a brief description of these assignments in this section of the syllabus to clarify expectations (for students and the faculty committees reviewing the course).

The ASC Office of Distance Education strives to be a valuable resource to instructors and departments in the College of Arts and Sciences. In addition to managing the [DL course review](#) process, [hosting ASC Teaching Forums](#), and developing an ever-expanding catalog of [instructor support resources](#), we also provide one-on-one instructional design consultation to ASC instructors interested in redesigning any aspect of their online course. If your department or any of your individual instructors wish to [meet with one of our instructional designers](#) to discuss how we can provide advice, assistance, and support, please do let me know.



15 November 2021

Dear Daniel,

Cc: Steven Lower, Ashley Griffith, Derek Sawyer

I am writing to express our support for a course proposal for a jointly-offered integrative and high impact 4 credit, online, Interdisciplinary Team-Taught (Civil Engineering/Earth Science) course in the Sustainability Theme of the new GE on the topic of “Learning from disasters: Extreme events and their impact on infrastructure, engineering and society”. My understanding is this course will be team-taught by you (Civil Engineering), Derek Sawyer (SES), and Ashley Griffith (SES), and that the course is intended to be targeted at the 2000-level. The course topics and learning objectives are complementary to our Natural Hazards (EARTHSC 1151) course which has been approved in the new GE as a Foundations course in Natural Sciences. Specifically, EARTHSC 1151 focuses on understanding fundamental Earth processes responsible for hazards. Course objectives for EARTHSC 1151 are listed below:

- 1) Introduce the basic concepts of the Earth Sciences, using natural hazards as examples.
- 2) Develop an understanding of Earth processes, and an appreciation of the rates and scales at which those processes work.
- 3) Examine the details of geologic hazards (earthquakes, volcanic eruptions, landslides, tsunamis, flooding, hurricanes, climate change, and meteorite impacts).
- 4) To examine the influences of geologic hazards on humans, and how humans attempt to mitigate those influences.
- 5) To understand geologic hazards in Ohio.
- 6) To apply the scientific method to collect and interpret earth science data.

In contrast, the proposed 2000-level Interdisciplinary Team-Taught course will expand these topics to an advanced study of the engineering and policy dimensions of natural hazards.

Once the proposed course is approved in the new GE, we also intend to propose a new certificate in Natural Hazards which includes both EARTHSC 1151 and the proposed course as core courses, grouped with upper-level electives in Earth Sciences and Civil Engineering. We hope to submit that proposal early in the 2022-2023 academic year. This certificate will complement other popular certificates already offered in the School of Earth Sciences.

Sincerely,

Elizabeth M. Griffith

Associate Director of Administration & Chair of the Curriculum Committee  
School of Earth Sciences, [griffith.906@osu.edu](mailto:griffith.906@osu.edu)