



ENVS 312-01E – Natural Disasters

COURSE SYLLABUS: Fall, 2026

INSTRUCTOR INFORMATION

Instructor: Huu-Tuan Tran, PhD.
Office Location: Room # STC 215
Office Hours: M-W-F; 10:00 AM – 4:00 PM
Office Phone: 903.886.5378
Office Fax:
University Email Address: Tuan.Tran@etamu.edu
Preferred Form of Communication: Email
Communication Response Time: 9:00 AM – 5:00 PM

COURSE INFORMATION

MATERIALS – TEXTBOOKS, READINGS, SUPPLEMENTAL READINGS

Textbook(s) Required: Patrick L. Abbott, Natural Disasters, 12th Edition, McGraw Hill.
Software Required:
Optional Texts and/or Materials: textbook readings, lectures, figures, case studies, discussions, and assessments.

COURSE DESCRIPTION

This course introduces the scientific processes that produce major natural hazards and examines how those hazards become disasters through interactions with human populations and the built environment. Topics include Earth's internal energy, plate tectonics, earthquakes, tsunamis, volcanoes, weather and climate, severe storms, hurricanes, climate change, floods, wildfires, and extraterrestrial impacts. Emphasis is placed on hazard mechanisms, geographic patterns, vulnerability, risk, preparedness, mitigation, and contemporary case studies.

STUDENT LEARNING OUTCOMES

1. Describe how natural disasters affect human populations, communities, and cultural landscapes.
2. Analyze how human activities and land-use decisions can increase or reduce the impacts of natural hazards.
3. Identify geographic regions vulnerable to major natural hazards and explain why those hazards occur there.

The syllabus/schedule are subject to change.

4. Distinguish natural processes from human factors that modify the severity and consequences of disasters.
5. Explain how Earth processes generate earthquakes, volcanic eruptions, tsunamis, and other geologic hazards.
6. Explain the atmospheric and oceanic processes that produce normal and extreme weather patterns.
7. Evaluate the causes, impacts, preparedness strategies, and mitigation approaches associated with major natural disasters.
8. Apply course concepts to current and historical disaster case studies and communicate scientific information clearly.

Competency Student Learning Outcomes:

1. Critical Thinking: Students will be able to differentiate between fact and opinion; be able to discern between relevant and irrelevant information, recognize bias in source material, and critically examine a diversity of source material.
2. Communication: In written, oral, and/or visual communication, students will communicate in a manner appropriate to audience and occasion, with an evident message and organizational structure.
3. Empirical and Quantitative Skills: Students will be able understand and utilize mathematical functions and empirical principles and processes.
4. Teamwork: Students will be able to work together toward a shared purpose relevant to the course or discipline with a sense of shared responsibility for meeting that purpose.

COURSE REQUIREMENTS

MINIMAL TECHNICAL SKILLS NEEDED

Students should have basic computer and internet skills, including the ability to use D2L, Microsoft Word, PowerPoint, and Excel; access and submit course materials online; communicate electronically; and conduct basic searches for scientific information.

INSTRUCTIONAL METHODS

Students will learn through instructor lectures, textbook readings, figures and maps, short videos or web resources when appropriate, class discussion, and analysis of current and historical natural-disaster events. D2L will be used for course announcements, learning materials, assignments, assessments, and grades

STUDENT RESPONSIBILITIES OR TIPS FOR SUCCESS IN THE COURSE

- Attend class regularly and participate in discussions and learning activities.
- Be late for class and/or leaving early will be treated as absences.
- Official documents (e.g. doctor's letter) must be presented if you ask for a leave from class or it will be treated as an absence
- Complete assigned textbook readings and review lecture materials before assessments.
- Monitor D2L and university email for announcements, schedule changes, and course materials.
- Complete assessments and assignments by the posted deadlines.

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- Maintain dependable access to D2L, university email, and standard document-viewing/word-processing software.
- Communicate with the instructor promptly when academic or technical problems affect course participation.
- Communicate promptly with the instructor regarding academic or technical difficulties.

GRADING

Final grades in this course will be based on the following scale:

A = 90%-100%

B = 80%-89%

C = 70%-79%

D = 60%-69%

F = 59% or Below

Total points corresponding to the final letter grades

A = 451- 500 Points

B = 401- 450 Points

C = 351- 400 Points

D = 301- 350 Points

F = 300 & > Points

Weights of the assessments in the calculation of the final letter grade.

Grading is based on the timely and correct submission of assignments, class participation as well as performance on the midterm examination and a comprehensive final. While the exams cover recent information, the final exam is cumulative and includes all information covered in class lectures, the text and the additional required readings. Exact assessment dates and point values will be posted in D2L.

- Monthly assignments: 30% of the final grade
- Class participation and attendance: 10% of final grade
- In-Class assignments: 10% of final grade
- Mid-semester exam: 20% of final grade
- Cumulative final exam: 30% of final grade

ASSESSMENTS

Monthly assignments, in class assignments, and exams will be given to support and assess the learning objectives and competency student learning outcomes. Some other assignments will be done in classroom to enhance the understanding of the class contents.

Monthly assignments

The syllabus/schedule are subject to change.

- Monthly homework assignments will be used to evaluate your critical thinking and written communication ability. Each assignment must be prepared electronically and submitted as an MSWORD (.doc, .docx) or PDF document with a 12-point font, 1-inch margins (all around) and 1.25 line spacing. Suggested length: 2–3 pages, including figures and tables. Detailed monthly assignment topics are provided below.
- The assignment must be complete, correct, and submitted on time (“on time” means the assignment must be submitted in D2L before 5 pm on Sep 30, Oct 31 and Nov 30). Monthly assignments won’t be accepted late.

In-Class assignments:

- Occasional in-class assignments or pop quizzes will be given throughout the course to reinforce key concepts and deepen your understanding of the materials.

Exams:

- There will be two exams total (50% of the final grade). Exams will be designed to evaluate the student’s understanding of the subjects covered in class and empirical and quantitative skills. Mid-semester exam will cover the current content to-date. The final examination will be comprehensive, including monthly assignments.
- Examinations will be performed on-site. All scheduling conflicts must be discussed at least 1 week prior to the scheduled date of the exam. In the event of an emergency or illness on the day of an exam, you must notify me before the exam. If requested, students must provide verification of the absence in order to schedule a make-up exam. Students who do not make alternate arrangements prior to the exam will be given a grade of “0” for that exam.

Monthly assignment Topics

1. **Recent Natural Disaster Case Study.** Select one major natural disaster that occurred within the last 3 years (hurricane, earthquake, flood, wildfire, tornado, volcanic eruption, etc.). Describe:
 - Sources and environmental occurrence
 - What happened, where, and when?
 - What natural processes caused the event?
 - Number of deaths/injuries and people affected
 - Estimated economic losses
 - Why did the hazard become a disaster?
 - Recommendations for reducing future risk.
2. **Why Are Some Communities More Vulnerable to Natural Disasters?** Choose a recent disaster and analyze how exposure and vulnerability influenced its impacts
 - Consider population density, poverty, age, infrastructure, housing, emergency preparedness, and access to resources
 - Students should answer: Could the impacts have been reduced? How?
3. **Human Influence on a Recent Natural Disaster.** Select a recent flood, wildfire, hurricane, drought, heat wave, or landslide and investigate how human activities may have influenced its severity or consequences. Consider:
 - Sources from households, Climate change
 - Urbanization
 - Deforestation/land-use change

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- Development in hazard-prone areas
- Infrastructure and disaster preparedness

Course Outline/Calendar

Course Outline

Unit 1 / Ch. 1: Human Disasters – populations, vulnerability, and disaster risk
 Unit 2 / Ch. 2: Internal Energy – Earth structure, heat, and internal processes
 Unit 3 / Ch. 3: Seismology – earthquakes, faults, seismic waves, magnitude, and intensity
 Unit 4 / Ch. 4: Plate Tectonics – plate boundaries, crustal movement, and hazards
 Unit 5 / Ch. 5: Earthquakes in the U.S. and Canada – regional hazards, risk, and preparedness
 Unit 6 / Ch. 8: Tsunamis – generation, propagation, impacts, and warning systems
 Unit 7 / Ch. 6: Volcanic Eruptions – volcano formation, eruption styles, and hazards
 Unit 8 / Ch. 7: Volcanoes from the Past – historical eruptions and lessons for future risk
 Unit 9 / Ch. 9: Weather and Climate – atmosphere, energy, circulation, and extreme weather
 Unit 10 / Ch. 10: Tornadoes and Storms – thunderstorms, tornado formation, intensity, and hazards
 Unit 11 / Ch. 11: Hurricanes – tropical cyclone formation, storm surge, and impacts
 Unit 12 / Ch. 12: Climate Change – climate processes, trends, extremes, adaptation, and mitigation
 Unit 13 / Ch. 13: Floods – causes, types, impacts, and management
 Unit 14 / Ch. 14: Wildfires – ignition, fire behavior, impacts, and management
 Unit 15 / Ch. 17: Space Objects – asteroids, comets, and impact hazards

Fall 2026 Course Timetable

Fall 2026 classes begin Thursday, August 20; therefore, the first meeting of this Monday/Wednesday/Friday section is Friday, August 21. Regular classes end Friday, December 4. The Midterm Exam is scheduled for Monday, October 12, and the Final Exam is scheduled for Friday, December 11. This timetable may be adjusted based on class progress.

Week	Date	Topic	Lecture / Activity
1	Fri. Aug. 21	Course Introduction	Syllabus, expectations, natural hazards vs. disasters
2	Mon. Aug. 24	Ch. 1 – Human Disasters	Natural hazards, disasters, populations
	Wed. Aug. 26	Ch. 1	Vulnerability, exposure, risk, human influence
	Fri. Aug. 28	Ch. 1	Case study, discussion, review/assessment
3	Mon. Aug. 31	Ch. 2 – Internal Energy	Earth structure and internal energy
	Wed. Sep. 2	Ch. 2	Heat flow and geologic processes
	Fri. Sep. 4	Ch. 2	Applications, case study, review/assessment
4	<u>Mon. Sep. 7</u>	<u>Labor Day</u>	<u>NO CLASS – University Closed</u>
	Wed. Sep. 9	Ch. 3 – Seismology	Earthquake causes, faults, seismic waves
	Fri. Sep. 11	Ch. 3	Magnitude, intensity, impacts, review
5	Mon. Sep. 14	Ch. 4 – Plate Tectonics	Plate tectonic theory
	Wed. Sep. 16	Ch. 4	Plate boundaries and crustal movement
	Fri. Sep. 18	Ch. 4	Plate tectonics and natural hazards
6	Mon. Sep. 21	Ch. 5 – Earthquakes in U.S. & Canada	Major North American earthquakes
	Wed. Sep. 23	Ch. 5	Earthquake hazards and risk
	Fri. Sep. 25	Ch. 5	Prediction, preparedness, case studies

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7	Mon. Sep. 28	Ch. 8 – Tsunamis	Formation and causes
	Wed. Sep. 30	Ch. 8	Propagation, coastal impacts
	Fri. Oct. 2	Ch. 8	Case studies and warning systems
8	Mon. Oct. 5	Ch. 6 – Volcanic Eruptions	Volcano formation and types
	Wed. Oct. 7	Ch. 6	Eruption mechanisms and volcanic hazards
	Fri. Oct. 9	Ch. 6	Risk, monitoring, case studies
9	Mon. Oct. 12	Midterm Exam	In-Class Quizzes. Includes all material covered between Friday, Aug 21, and Friday. Oct. 9
	Wed. Oct. 14	Ch. 7 – Volcanoes from the Past	Historical volcanic eruptions
	Fri. Oct. 16	Ch. 7	Environmental and societal impacts
10	Mon. Oct. 19	Ch. 7	Lessons from historical disasters
	Wed. Oct. 21	Ch. 9 – Weather & Climate	Atmosphere, weather, climate fundamentals
	Fri. Oct. 23	Ch. 9	Atmospheric circulation and energy
11	Mon. Oct. 26	Ch. 9	Extreme weather processes
	Wed. Oct. 28	Ch. 10 – Tornadoes & Storms	Thunderstorms and severe weather
	Fri. Oct. 30	Ch. 10	Tornado formation, intensity, distribution
12	Mon. Nov. 2	Ch. 10	Case studies and preparedness
	Wed. Nov. 4	Ch. 11 – Hurricanes	Tropical cyclone formation
	Fri. Nov. 6	Ch. 11	Intensity, storm surge, impacts
13	Mon. Nov. 9	Ch. 11	Major hurricane case studies
	Wed. Nov. 11	Ch. 12 – Climate Change	Climate change fundamentals
	Fri. Nov. 13	Ch. 12	Climate change and extreme events
14	Mon. Nov. 16	Ch. 12	Impacts, adaptation, mitigation
	Wed. Nov. 18	Ch. 13 – Floods	Types and causes of floods
	Fri. Nov. 20	Ch. 13	Flood hazards, risk, human impacts
15	Mon. Nov. 23	Ch. 13	Flood management and case studies
	<u>Wed. Nov. 25</u>	<u>Thanksgiving Break</u>	<u>NO CLASS</u>
	<u>Fri. Nov. 27</u>	<u>Thanksgiving Break</u>	<u>NO CLASS</u>
16	Mon. Nov. 30	Ch. 14 – Wildfires	Causes, behavior, environmental controls
	Wed. Dec. 2	Ch. 14 – Wildfires	Impacts, management, case studies
	Fri. Dec. 4	Ch. 17 – Space Objects	Asteroids, comets, impact hazards
17	Mon. Dec. 7	Course Wrap-Up	Space-object impacts, review and conclusions
	Fri. Dec. 11	Final Exam	In-Class Quizzes. Includes all material covered between Friday, Aug 21, and Friday. Dec. 4

TECHNOLOGY REQUIREMENTS

LEARNING MANAGEMENT SYSTEM (LMS)

All course sections offered by East Texas A&M University have a corresponding course shell in the myLeo Online (D2L Brightspace) LMS. Below are the technical requirements:

- [LMS Requirements](#)

The syllabus/schedule are subject to change.

- [LMS Browser Support](#)
- [Zoom Video Conferencing Tool](#)

ACCESS AND NAVIGATION

You will need your campus-wide ID (CWID) and password to log into the course. If you do not know your CWID or have forgotten your password, contact the Center for IT Excellence (CITE) at 903.468.6000 or helpdesk@etamu.edu.

COMMUNICATION AND SUPPORT

If you have any questions or are having difficulties with the course material, please contact me via email or D2L.

TECHNICAL SUPPORT

If you are having technical difficulty with any part of Brightspace, please contact Brightspace Technical Support at 1-877-325-7778 or view [other support options](#).

STUDENT RESPONSIBILITIES FOR THE COURSE

CWID AND PASSWORD

You will need your campus-wide ID (CWID) and password to log into the course. If you do not know your CWID or have forgotten your password, contact the Center for IT Excellence (CITE) at 903.468.6000 or helpdesk@etamu.edu.

TECHNOLOGY-RELATED ISSUES

Personal computer and internet connection problems do not excuse the requirement to complete all coursework in a timely and satisfactory manner. Each student needs a backup method to handle these inevitable problems. These methods might include having a backup PC at home or work, temporarily using a computer at a friend's home, at the local library, at office service companies, at Starbucks, or at an ETAMU campus open computer lab.

TECHNOLOGY REQUIREMENTS AND SUPPORT

MINIMAL TECHNICAL SKILLS NEEDED

Students will need a reliable computer and internet access for this course. Students must be able to use myLeo email, myLeo Online (D2L Brightspace), and Microsoft Office effectively.

LEARNING MANAGEMENT SYSTEM (LMS) – D2L Brightspace

All course sections offered by East Texas A&M University have a corresponding course shell in the myLeo Online Learning Management System (LMS). Below are the technical requirements:

The syllabus/schedule are subject to change.

- View the [Learning Management System Requirements Webpage](#).
- Learn more on the [LMS Browser Support Webpage](#).

TECHNICAL SUPPORT

If you are having technical difficulty with any part of Brightspace, please contact Brightspace Technical Support at 1-877-325-7778. Other support options can be found on the [Brightspace Support Webpage](#).

COMMUNICATION AND SUPPORT

INTERACTION WITH INSTRUCTOR STATEMENT

If you have any questions or are having difficulties with the course material, please contact your instructor. Correspondence will always be through university email (your “myLeo” mail), and announcements will be posted in myLeo online (D2L Brightspace). You will not RECEIVE email through Brightspace, so be sure to check your ETAMU email for communication. Students are encouraged to check their university email daily.

INCLUDE THE FOLLOWING IN EMAILS WITH INSTRUCTOR:

- Course name and subject in the subject line
 - Salutation (Good afternoon, Dr. Tran)
 - Proper email etiquette (no “text” emails – use proper grammar and punctuation)
 - Student name and CWID after the body of the email (possibly add to student signature on email)
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COURSE AND UNIVERSITY PROCEDURES/POLICIES

SYLLABUS CHANGE POLICY

The syllabus is a guide. Circumstances and events, such as student progress, may necessitate the instructor's modification of the syllabus during the semester. Any changes made to the syllabus will be announced in advance.

STUDENT CONDUCT

All students enrolled at the University shall follow the tenets of common decency and acceptable behavior conducive to a positive learning environment. The [Code of Student Conduct](#) is described in detail online in the [Student Guidebook](#).

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Students should also consult the [Rules of Netiquette Webpage](#) for more information regarding how to interact with students in an online forum.

ETAMU ATTENDANCE

For more information about the attendance policy, please view the [Attendance Webpage](#) and the [Class Attendance Policy](#).

ACADEMIC INTEGRITY

Students at East Texas A&M University are expected to maintain high standards of integrity and honesty in all their scholastic work. For more details and the definition of academic dishonesty, see the following procedures:

[Undergraduate Academic Dishonesty University Procedure 13.99.99.R0.03](#)

[Undergraduate Student Academic Dishonesty Form](#)

[Graduate Student Academic Dishonesty University Procedure 13.99.99.R0.10](#)

[Graduate Student Academic Dishonesty Form](#)

USE OF ARTIFICIAL INTELLIGENCE

East Texas A&M University acknowledges that there are legitimate uses of Artificial Intelligence, ChatBots, or other software that have the capacity to generate text, or suggest replacements for text beyond individual words, as determined by the instructor of the course.

Any use of such software must be documented. Any undocumented use of such software constitutes an instance of academic dishonesty (plagiarism).

Individual instructors may disallow entirely the use of such software for individual assignments or for the entire course. Students should be aware of such requirements and follow their instructors' guidelines. If no instructions are provided, the student should assume that the use of such software is disallowed.

In any case, students are fully responsible for the content of any assignment they submit, regardless of whether they used an AI in any way. This specifically includes cases in which the AI plagiarized another text or misrepresented sources

STUDENTS WITH DISABILITIES-- ADA STATEMENT

The Americans with Disabilities Act (ADA) is a federal anti-discrimination statute that provides comprehensive civil rights protection for persons with disabilities. Among other things, this legislation requires that all students with disabilities be guaranteed a learning environment that provides reasonable accommodations for their disabilities. If you have a disability requiring an accommodation, please contact:

The syllabus/schedule are subject to change.

Office of Student Disability Resources and Services

East Texas A&M University

Velma K. Waters Library Rm 162

Phone (903) 886-5150 or (903) 886-5835

Fax (903) 468-8148

Email: studentdisabilityservices@etamu.edu

Website: [Office of Student Disability Services](#)

NONDISCRIMINATION NOTICE

East Texas A&M University will comply in the classroom and in online courses with all federal and state laws prohibiting discrimination and related retaliation on the basis of race, color, religion, sex, national origin, disability, age, genetic information, or veteran status. Further, an environment free from discrimination on the basis of sexual orientation, gender identity, or gender expression will be maintained.

CAMPUS CONCEALED CARRY STATEMENT

Texas Senate Bill - 11 (Government Code 411.2031, et al.) authorizes the carrying of a concealed handgun in East Texas A&M University buildings only by persons who have been issued and are in possession of a Texas License to Carry a Handgun. Qualified law enforcement officers or those who are otherwise authorized to carry a concealed handgun in the State of Texas are also permitted to do so. Pursuant to Penal Code (PC) 46.035 and ETAMU Rule 34.06.02.R1, license holders may not carry a concealed handgun in restricted locations.

For a list of locations, please refer to the [Carrying Concealed Handguns On Campus](#) document and/or consult your event organizer.

Pursuant to PC 46.035, the open carrying of handguns is prohibited on all East Texas A&M University campuses. Report violations to the University Police Department at 903-886-5868 or 9-1-1.

EAST TEXAS A&M SUPPORTS STUDENTS' MENTAL HEALTH – COUNSELING SERVICES

The Counseling Center at East Texas A&M University, located in the Halladay Building, Room 203, offers counseling services, educational programming, and connections to community resources for students. Students have 24/7 access to the Counseling Center's crisis assessment services by calling 903-886-5145. For more information regarding Counseling Center events and confidential services, please visit the [Counseling Center website](#).

MENTAL HEALTH AND WELL-BEING

The university aims to provide students with essential knowledge and tools to understand and support mental health. As part of our commitment to your well-being, we offer access to Telus Health, a service available 24/7/365 via chat, phone, or webinar. Scan the QR code or [download the app](#) and explore the resources available to you for guidance and support whenever you need it.

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As an Institutional Member of the National Association of Schools of Music, East Texas State A&M University supports the Association's commitment to student health and wellness. The [Musician Health and Safety - East Texas A&M University](#) website provides links to information and resources on physical and mental well-being and offers preventive measures students can take to avoid serious and/or chronic conditions.

DEPARTMENT AND ACCREDITING AGENCY STATEMENT:

The syllabus/schedule are subject to change.