

GEO 302J  
(*Unique Number: 26595*)  
Crisis of our Planet  
Spring 2019

**Course Syllabus**

**Instructors:**

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JGB 4.220AA (or ROC 2.116D)

Office hours: TTh 9–11 AM, or whenever my door is open (but it is best to check via email if I am on campus or at the Pickle Research Center)

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JGB 4.108

Office hours: TTh 10–11, MWF 1–2 PM, or whenever my door is open

**Course Overview:** We will explore the interactions between humans and the Earth system by investigating the different time and spatial scales of the natural hazards that the planet presents, and exploring the societal and economic implications of civilizations co-existing with an evolving planet. Discussion of both long-term and punctuated catastrophic hazards, focusing on those from volcanoes, hurricanes, and earthquakes, using a combination of systems level exploration of the driving mechanisms as well as case histories. Discussion of issues related to risk, mitigation, and resilience for humans facing the vast array of natural hazards.

Lectures for the course will be TTh 11:00–12:30 PM in PAI 3.02

**Textbook:** The primary source for readings is:

Patrick Abbott, *Natural Disasters*, 10<sup>th</sup> edition, McGraw Hill, 2017

Other readings may be assigned throughout the semester.

**Lecture notes:** Lecture notes can be found on Canvas (<http://canvas.utexas.edu/>)

**Prerequisites:** None.

**Grades:** Your course grade will be based on the results of 3 in-class exams (25% each), 3 in-class discussion sessions (5% each), and participation in Canvas-based on-line discussions (10%).

*Class exams (75%):* There will be three full-period in-class examinations, which are listed on the class schedule. No books or class notes will be permitted during the exams. Attendance at these exams is required, and a missed exam will be counted as a zero, unless a written doctor's excuse is provided. If an acceptable excuse is provided, a make-up exam can be given. Anyone found cheating on an exam will receive a zero.

*In-Class Discussions (15%):* There will be three in-class discussion sessions scheduled during the semester. Questions concerning natural hazards will be posed to small groups of students. Pairs of students in each group will use concepts learned in the class to evaluate the problem and propose a solution. Each pair will then share their ideas with the larger group, who will evaluate the solutions and meld solutions together, and then each group will propose a single solution to the class as a whole.

*Class Participation (10%):* Throughout the semester, all students will engage in weekly on-line discussions in Canvas, focused on topics in the syllabus with specific instructions provided weekly under Assignments on Canvas. Each student will be randomly assigned to a small group of classmates with whom you will discuss the proposed topic. All posts will be due on Saturdays at 11:59PM. No late posts will be accepted for credit.

### **Final grades will involve the plus/minus system**

**Lecture Protocol:** The use of laptops is allowed only to take notes (that use requires approval of instructors).

**Academic Integrity:** No form of academic dishonesty will be tolerated. Information on this issue can be found at: [http://deanofstudents.utexas.edu/sjs/acint\\_student.php](http://deanofstudents.utexas.edu/sjs/acint_student.php)

**University Honor Code:** "The core values of The University of Texas at Austin are learning, discovery, freedom, leadership, individual opportunity, and responsibility. Each member of the university is expected to uphold these values through integrity, honesty, trust, fairness, and respect toward peers and community."

**Special Needs:** The University of Texas at Austin provides upon request appropriate academic accommodations for qualified students with disabilities. To determine if you qualify, please contact the Division of Diversity and Community Engagement, Services for Students with Disabilities, 471-6259 (link above). After your needs are certified, the instructor will work with you to make appropriate arrangements. Special needs requests must be submitted in writing at least a week prior to the affected event, e.g. a test or assignment.

**Religious Holidays:** Religious holy days sometimes conflict with class. If you miss a class due to the observance of a religious holy day you will be given an opportunity to complete the work missed within a reasonable time after the absence. It is the policy of The University of Texas at

Austin that you must notify each of your instructors at least fourteen days prior to the classes scheduled on dates you will be absent to observe a religious holy day.

**Use of Canvas:** This course uses Canvas, a Web-based course management system in which a password-protected site is created for each course. Canvas can be used to distribute course materials, to communicate and collaborate online, to post grades, to submit assignments, and to take online quizzes and surveys.

You will be responsible for checking the Canvas course site regularly for class work and announcements. As with all computer systems, there are occasional scheduled downtimes as well as unanticipated disruptions. Notifications of these disruptions will be posted on the Canvas login page. Scheduled downtimes are not an excuse for late work. However, if there is an unscheduled downtime for a significant period of time, we will make an adjustment if it occurs close to the due date.

Canvas is available at <http://canvas.utexas.edu>. Support is provided by the ITS Help Desk at 512-475-9400 Monday through Friday 8 a.m. to 6 p.m., so plan accordingly.

**Recorded Lectures:** Our class is using the Lectures Online recording system. This system records the audio and video material presented in class for you to review after class. Links for the recordings will appear in the *Lectures Online* tab on the Canvas page for this class, which can be found along the left side navigation in Canvas.

To review a recording, simply click on the *Lectures Online* navigation tab and follow the instructions presented to you on the page. You can learn more about how to use the Lectures Online system at <http://sites.la.utexas.edu/lecturesonline/>. Please note that your professors decide when and for how long recording will be available for you to review.

**University Electronic Mail Notification Policy:** (Use of E-mail for Official Correspondence to Students)

All students should become familiar with the University's official e-mail student notification policy. It is the student's responsibility to keep the University informed as to changes in his or her e-mail address. Students are expected to check e-mail on a frequent and regular basis in order to stay current with University-related communications, recognizing that certain communications may be time-critical. It is recommended that e-mail be checked daily. The complete text of this policy and instructions for updating your e-mail address are available at <http://www.utexas.edu/its/policies/emailnotify.html>.

In this course e-mail will be used as a means of communication with students. You will be responsible for checking your e-mail regularly for class work and announcements. Note: if you are an employee of the University, your e-mail address in Canvas is your employee address.

## GEO 302J (# 26595), Spring 2019 — Syllabus

Day / Date	No	Inst	Lecture Topic	Canvas Discussion Topic	Reading
T 22 Jan	1	all	Class introduction		
Th 24 Jan	2	DM	Wildfires: fuel, air temperature & wind	In what ways do individual people, communities of people, and the federal government act to make natural disasters worse?	Abbott, Ch. 14
T 29 Jan	3	DM	Precipitation and runoff, tornadoes		Abbott, Ch. 9, 10
Th 31 Jan	4	DM	Landslides & debris flows	Why is central Texas known as 'flash-flood alley'?	Abbott, Ch. 15
T 5 Feb	5	DM	River flooding, flood styles & flood frequency		Abbott, Ch. 13
Th 7 Feb	6	DM	Urbanization & flood management	What goes in to making flood risk maps?	Abbott, Ch. 13
T 12 Feb	7	DM	Tropical storms & cyclones		Abbott, Ch. 11
Th 14 Feb	8	DM	Storm-surge inundation & coastal erosion	Why might the number and/or intensity of hurricanes be increasing?	Abbott, Ch. 11
T 19 Feb	9	DM	Coastal hazard management & response		
Th 21 Feb	10	DM	In-class Discussion (+ class evaluations)		
T 26 Feb		DM	<b>EXAM 1</b>		
Th 28 Feb	11	TB	Plate tectonics and mantle convection		Abbott, Ch. 2
T 5 Mar	12	TB	Earth structure and wave propagation	How variable are plate motions over time, and why?	Abbott, Ch. 2
Th 7 Mar	13	TB	Earthquake physics I		Abbott, Ch. 3
T 12 Mar	14	TB	Earthquake physics II		Abbott, Ch. 3, 4
Th 14 Mar	15	TB	Tsunamis	What is the largest earthquake size?	Abbott, Ch. 8
T 19 Mar			<b>SPRING BREAK</b>		

Th	21 Mar			<b>SPRING BREAK</b>		
T	26 Mar	16	TB	Seismic hazard assessment	How would you determine earthquake insurance rates?	Abbott, Ch. 5
Th	28 Mar	17	TB	Earthquake engineering		
T	2 Apr	18	TB	In-class discussion (+class evaluations)		
Th	4 Apr		TB	<b>EXAM 2</b>		
T	9 Apr	19	JG	What are volcanoes?	What Volcanoes exist in the USA and why?	Abbott, Ch. 6
Th	11 Apr	20	JG	How frequent are volcanic eruptions?		
T	16 Apr	21	JG	Eruptive Styles	How does eruption style vary between USA volcanic regions?	Abbott, Ch. 6
Th	18 Apr	22	JG	Volcanic hazards directly from eruptions		
T	23 Apr	23	JG	Volcanic hazards caused by eruptions (or by volcanoes)	What hazards are related to USA volcanoes?	Abbott, Ch. 7
Th	25 Apr	24	JG	Volcanic hazards on a global scale		
T	30 Apr	25	JG	Responses to Eruptions and their outcomes	What are the risks and “acceptable risks” related to USA volcanoes?	Abbott, Ch. 7
Th	2 May	26	JG	Monitoring for the next eruption		
T	7 May	27	JG	In-class Discussion (+class evaluations)		
Th	9 May		JG	<b>EXAM 3</b>		