The Last Day of Pompeii, Karl Briullov (1833)

GEOG 4950/6900: Natural Hazards and Society

Spring 2016 Syllabus

Instructor: Dr. Peter Howe
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Office hours: Wednesday 2 – 4 pm or by appointment
Office: Natural Resources (NR) 218

Classroom: Biology & Natural Resources (BNR) 360
Schedule: Tuesday & Thursday, 9:00–10:15 am

Course description

This course examines how social and environmental factors work together to shape the risks posed by natural hazards to human society. We will survey different types of natural hazards and integrate perspectives on geospatial risk assessment, vulnerability, resilience, and mitigation planning.

How do geophysical, ecological, social, and economic processes interact to create hazards and disasters? How can we work to mitigate hazards? How do we define risk, and how does the way the human mind interprets risk affect our decisions? In this course, students will use various methods of scientific inquiry to investigate these questions.

GEOG 4950/6900 is discussion-intensive course for advanced undergraduates and graduate students. Instructor-led lectures will make up the first part of the course, followed by group activities and student presentations. Collaborative learning is a core component of this course, and productive participation in discussions is expected of each student. This course will emphasize oral and written communication skills.

Course objectives

1. Learn fundamental principles in the social science of natural hazards and disasters, including research methods and current research findings.
2. Develop skills in written and oral expression.
3. Learning to analyze and critically evaluate ideas, arguments, and points of view.

4. Acquire skills in working with others as a member of a team.

Course expectations

This is a reading-intensive course. You will be expected to read all assigned texts before each class session. Much of the class will be devoted to critically analyzing and discussing the assigned texts, which will include book chapters, journal articles, online sources, and video/audio materials. You should read critically: question the authors' assumptions, the questions they ask or issues they raise, their methodology, and the conclusions they draw.

As with any university-level course, you will be expected to write professionally with proper spelling and grammar. All secondary sources must be properly cited and referenced using a standard author-date style for in-text citations and references, such as APA or Chicago style. A helpful guide to style can be found at the Purdue writing lab (http://owl.english.purdue.edu/owl/resource/560/01/). I strongly recommend using citation management software such as Zotero (free: https://www.zotero.org/) or EndNote to streamline the process of including citations and references in your papers.

For students who may be unsure about their writing I strongly suggest making an appointment with a writing tutor at the USU Writing Center (http://writing.usu.edu/).

Course materials

REQUIRED TEXTS

1. Smith, Keith. *Environmental Hazards: Assessing Risk and Reducing Disaster*. 2013. 6 edition. New York: Routledge.
2. McPhee, John. 1990. *The Control of Nature*. Farrar, Straus and Giroux.

Additional required readings and multimedia materials will be posted on Canvas.

CANVAS

We will use Canvas (usu.instructure.com) throughout the course for announcements, distributing materials, submitting assignments, group collaboration, and grade reporting. It is your responsibility to use the Canvas system. Questions about Canvas can be directed to the USU IT service desk (it.usu.edu, servicedesk@usu.edu, 435-797-4357).

Course structure

This is a seminar-style course, which means the format will consist mainly of discussion sessions, short lectures, and student presentations. Course sessions may also include audiovisual material, such as videos, podcasts, and interactive maps.

FIELD TRIPS

We will take several walking field trips during the semester, weather and schedules permitting. Details of the field trips will be discussed in class.

Assignments and Grading

ATTENDANCE AND PARTICIPATION

Attending each class session is necessary to achieve a satisfactory grade in this course. If you miss class, do not e-mail the instructor to ask what you missed. It is your responsibility to obtain materials or notes from other students and Canvas. The instructor will take notes on each student's participation in discussions and assign a grade based on the amount and quality of the contribution. The participation grade may also include short activities and quizzes assigned during class. In practice, a good participation grade is easily achieved if you have completed the assigned readings, responded to questions about the readings, and are prepared for class discussions.

HAZARDS JOURNAL

Students will be required to keep an up-to-date "hazards journal" over the course of the semester. The journal will consist of two parts: questions about the assigned, and a log of natural disasters that happen over the course of the semester in one assigned region of the world.

The journal can be prepared as either 1) **an online blog** or 2) a **Word document**. If you choose to use the blog format, you can sign up for a free Wordpress blog account at https://wordpress.com/

The journal will be due several times throughout the semester: February 2, March 1, April 5, and April 28.

JOURNAL PART 1: DISCUSSION QUESTIONS

In preparation for each class you will be required to write 2-3 questions for discussion based on the readings for each session (no more than 300 words total). For example, these could include questions about the content of the material, questions about issues that the material raises, or questions for others in the class about how they interpreted the material. Discussion questions will be used to evaluate your comprehension of the readings, so you should include at least one question for each assigned reading per day.

JOURNAL PART 2: DISASTER LOG

For the disaster log portion of the journal students will be expected to follow news sources throughout the semester and record details of any hazard events that occur in their assigned region from January 11 to April 22, 2016. The regions are: Africa, Northern America (U.S. and Canada), Latin America and the Caribbean, Middle East and South Asia, Central and East Asia, Europe, and Oceania (Australia, New Zealand, and the South Pacific). Students will select their focus region during the first week of class.

At a minimum, the disaster log should include: 1) the areas affected by the event; 2) the dates of the event; 3) the type of hazard; 4) estimates of deaths, injuries and property damage; 5) a short, 1-2 paragraph descriptive summary of the event and its impacts; 6) 1-2 photos, maps, or graphics that help to describe the event; and 7) brief citations for all sources of information (URLs are okay), preferably as footnotes. Each disaster log entry should be no more than 1-2 pages. A sample disaster log entry is on the last page of this syllabus.

It is impossible to predict how many disasters will occur in the future, so your log could have only a few or many entries, depending on the frequency of disasters in your assigned region. You will be expected to log entries for all newsworthy disasters in your region—multiple missed events will impact your grade.

There are many global and regional online sources you may consider following this semester. Wikipedia, while useful as a starting point for research, is not an acceptable source for any work in this class. Some suggestions for sources to follow throughout the semester include:

- Nasa Earth Observatory: http://earthobservatory.nasa.gov/NaturalHazards/
- Global Disaster Alert and Coordination System: http://www.gdacs.org/
- Google News: http://news.google.com/
- Google Alerts: https://www.google.com/alerts (you can set up an alert to email you about specific topics)
- International New York Times: http://international.nytimes.com/
- BBC World News: http://www.bbc.co.uk/news/

INDIVIDUAL DISASTER PRESENTATION

Students will select a historical disaster and conduct their own research on the disaster to describe: 1) the context of the disaster (physical and human aspects of vulnerability); 2) the impacts of the disaster; and 3) what can be learned from the disaster to reduce the impacts of similar disasters in the future. This research will be presented in a presentation. In the presentation, students will then teach the rest of the class about the and its implications. Presentations will be about 8-10 minutes long and will be followed by a brief question and answer period.

Presentations must be accompanied by slides (Powerpoint, Keynote, Prezi, or PDF). Remember, slides are not the script for your presentation—please limit the amount of text on your slides and do not read directly from them. Instead, I encourage the use of high-quality photos, maps, and graphics to accompany your talk. Your presentation should be carefully rehearsed.

A one-paragraph proposal of the disaster you intend to present about will be due on Canvas on January 22. Students should each cover a unique disaster, so I may suggest changes in topics if there are two or more people covering the same disaster. I ask that students choose a disaster other than Hurricane Katrina, the 2010 Haiti Earthquake, or the 2011 Japan Earthquake/Tsunami since we will be covering these events in class.

Students are required to make an appointment with the professor at least one week before presentations are due to review a draft of their presentation and receive feedback.

Presentations will take place in class on March 1 and 3. The presentation slides are due on Canvas before class on March 1.

GROUP PRESENTATIONS AND COMMUNITY MITIGATION PROJECT

The second half of the course will involve group presentations on various types of hazards and student-led class activities to develop a mitigation plan for places that are vulnerable to these hazards. Each student group will lead the class for two periods, starting the first day with a presentation on their hazard topic and continuing on the next day to lead the class in a role-playing activity to generate a mitigation plan for a location that is vulnerable to their hazard.

The hazard topics are associated with a chapter or sub-chapter in the textbook:

- Earthquakes
- Volcanoes
- Droughts
- Flooding
- Mass movement hazards
- Severe storms
- Tornados
- Tropical cyclones

Students, in small groups, will choose one of the above types of hazard and conduct thorough research on the topic. Each student in the group is expected to act as an expert on their hazard for the rest of the class.

After groups choose their topic, I will assign each group a case-study location that is vulnerable to their hazard. I will provide some materials on the case-study locations, but groups will also need to conduct independent research to familiarize themselves with the location, its residents, and the characteristics of the hazard.

Each hazard topic will have a set of required readings for all students, including sections of the textbook and other materials.

FIRST CLASS PERIOD: HAZARD PRESENTATION AND COMMUNITY INTRODUCTION

On the first day of their assigned week, groups will deliver two presentations. The first will be an in-depth presentation (about 45 minutes) describing 1) the physical and social processes that create the hazard (giving equal weight to both), 2) examples of past disasters, and 3) possible individual and societal mitigation responses. This presentation will be followed by a question and answer session.

Next, the group will begin the the mitigation planning activity by delivering a 10-minute presentation the introduces the particular case-study location for the mitigation planning activity and describes the local characteristics of the hazard. The presentation should summarize the most important points about the community's physical and social vulnerability.

Slides for both presentations should be submitted on Canvas by 6 PM on the day prior to the presentation.

Each group must schedule a meeting with the professor at least one week before their presentation to receive feedback.

SECOND CLASS PERIOD: COMMUNITY MITIGATION PLANNING ACTIVITY

The next class period following each group presentation will be devoted to a mitigation planning activity, in which students will role-play as members of a community to identify vulnerabilities and develop a mitigation plan. Each student will be assigned a role. Depending on their role, students will work within groups representing various stakeholders including residents, business owners, government officials, representatives of non-profit organizations, emergency managers, etc.

The lead group will act as subject experts and facilitators for the activity. The group will prepare materials to be distributed to the class to facilitate the mitigation planning activity. These materials may include role assignments, maps, and any other information that would help the class carry out the activity.

During the first part of the activity, students will work in their stakeholder groups to identify the elements that contribute to the vulnerability of their community. A member of the expert group will sit in with each stakeholder group to facilitate discussion and answer questions.

During the second part of the activity, each stakeholder group will review the elements of vulnerability they identified and create a prioritized list of short-term and long-term mitigation actions they would like to implement. The group will present their ideas to the class and make the case for why they should be included

in the community's mitigation plan. The members of the lead group will facilitate a discussion to create a consensus mitigation plan that is agreed upon by each stakeholder group.

After the activity, the lead group will write up a summary of the activity and the consensus mitigation plan agreed on by the class, due one week after the last day of the activity.

Each member of the group should contribute equally to preparing the presentations and mitigation activity. You will be asked to evaluate the participation of your fellow group members at the end of the course.

EXAMS (FOR UNDERGRADUATE STUDENTS ENROLLED IN GEOG 4950)

There will be two exams required for undergraduate students enrolled in GEOG 4950: one during the first half of the semester, and a final exam during finals period. Exams will be based on instructor- and student-led presentations and assigned readings. Each exam will consist of multiple choice and free response essay questions.

No make-up exams will be offered unless 1) prearranged with the instructor or 2) as a result of a documented emergency.

Midterm exam: March 17 in class

Final exam: May 3, 9:30-11:20 AM

INDEPENDENT RESEARCH PAPER (FOR GRADUATE STUDENTS ENROLLED IN GEOG 6900)

Graduate students will work with the instructor to select a research paper topic related to natural hazards and society early in the semester.

- A ½ page proposal for the paper topic with at least 5 references will be due on Feb. 4.
- A detailed outline or rough draft of the paper will be due on March 17. The instructor will provide comments and suggestions on the draft at this stage.
- Final papers are due on April 28.

The paper should be at least 2500 words (double spaced, 12 pt type).

RUBRIC FOR GEOG 4950 (UNDERGRADUATE)

Students will be responsible for the following work:

	Percent of grade
Participation in discussion and activities	15%
Midterm exam	10%
Final exam	15%
Disaster presentation	15%
Group presentation and mitigation project	25%
Hazards journal	20%
	100%

RUBRIC FOR GEOG 6900 (GRADUATE)

	Percent of grade
Participation in discussion and activities	15%
Disaster presentation	15%
Group presentation and mitigation project	25%
Research paper	25%
Hazards journal	20%
	100%

GRADING SCALE

Grade	A	A–	B+	B	B–	C+	C	C–	D	F
%	93-100	90-92	87-89	83-86	80-82	77-79	73-76	70-72	60-69	< 60

Course policies

COMMUNICATION WITH THE PROFESSOR

The best way to contact me is via e-mail, a Canvas message, or during my office hours.

LATE WORK

It is your responsibility to turn in all work on time. Grades for assignments will be reduced by 10 percent for each day late. No late work will be accepted more than 2 weeks after the due date.

USE OF COMPUTERS, TABLETS, AND MOBILE PHONES

Turn off or silence phones during class. Computers and tablets may be used only for taking notes or activities directly relevant to class material. Students should respect the rights of others to learn and minimize the possibility of distraction from the use of electronic devices. If the use of electronics presents a distraction to others during class, the student will be asked to stop using the device. If issues persist, the student will be asked to leave the class.

CLASSROOM ENVIRONMENT

Everyone has the right to feel comfortable in the classroom. We are all adults in a college classroom, and we must be open to critical and academic discussion on topics that we may or may not agree with. I will treat you with respect, and I expect you to extend respect to me as well as to your classmates.

ACADEMIC HONESTY

Students are expected to produce original work. Plagiarism or falsification of any kind will be subject to disciplinary action. Offences will be referred to Utah State University Admissions office. The USU policy for academic honesty can be found at usu.edu/studentservices/studentcode/article6.cfm. Please review this document to understand the Utah State University policy on academic honesty. If you have questions or concerns about the policy, please contact your instructor or academic advisor.

PLAGIARISM

Plagiarism includes knowingly "representing, by paraphrase or direct quotation, the published or unpublished work of another person as one's own in any academic exercise or activity without full and clear acknowledgment. It also includes the unacknowledged used of materials prepared by another person or agency engaged in the selling of term papers or other academic materials." The penalties for plagiarism are severe. They include warning or reprimand, grade adjustment, probation, suspension, expulsion, withholding of transcripts, and denial or revocation of degrees.

STUDENTS WITH DISABILITIES

Reasonable accommodation will be provided for all persons with disabilities in order to ensure equal participation within the program. If a student has a disability that will likely require some accommodation by the instructor, the student must contact the Disability Resource Center (435-797-2444), preferably during the first week of the course. Any request for special consideration relating to attendance, pedagogy, etc., must be discussed with and approved by the instructor.

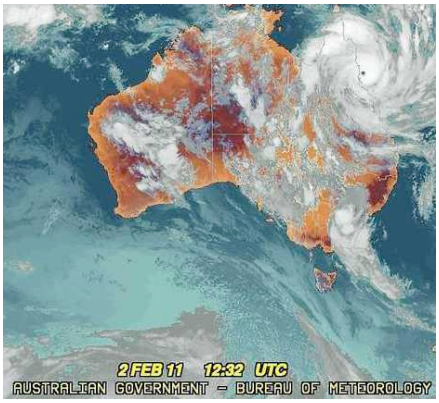
Sample hazards journal entry

REGION: OCEANIA

Event: Tropical Cyclone Yasi
Dates: 1/26/2011–2/3/2011
Areas affected: Australia (Queensland, South Australia, New South Wales, Northern Territory and Victoria)
Hazard type: Tropical cyclone
Casualties: 1 death[1]
Property damage: approximately $3.5 billion (US) insured losses[2]

Summary:
Tropical cyclone Yasi formed near Fiji in late January, intensifying to a Category 3 cyclone on January 31st and a Category 5 cyclone on February 2nd. Yasi made landfall on the coast of Queensland, Australia on February 3rd as a powerful Category 5 storm, with winds of at least 185 miles per hour and a 16-foot storm surge[3]. The area hit by the storm is mostly composed of coastal villages dependent on the tourism industry and rural sugarcane and banana plantations (these crops are expected to have been devastated by the storm). Major cyclone damages missed the larger coastal cities of Cairns and Townsville, although smaller towns and villages between the two cities, including the towns of Innisfail and Cardwell, suffered severe damages including downed trees and power lines, flooding, and extensive structural damage[3].

Thousands of residents were successfully evacuated in advance of the storm, which emergency managers cited as contributing to the relatively low number of casualties for such a powerful cyclone. The damages from Yasi are likely to compound the effects of the extreme and deadly flooding in Queensland since November, 2010. The estimated $3.5 billion in damages to crops, businesses, and homes would make Yasi the second-most damaging cyclone ever to hit Australia[2].



Satellite image of Yasi near landfall[4]


Damage at a mobile home park in Tully, Queensland[5]

[1] http://www.smh.com.au/environment/weather/man-in-cyclone-zone-suffocates-20110204-1agbe.html
[2] http://www.reuters.com/article/2011/02/03/insured-losses-yasi-idUSLDE7121NR20110203
[3] http://www.bom.gov.au/cyclone/history/yasi.shtml
[4] http://www.ncdc.noaa.gov/sotc/hazards/2011/2
[5] http://www.nytimes.com/2011/02/04/world/asia/04australia.html

Course schedule

Your learning is my primary concern, so I may modify the schedule and assigned readings based on your progress during the course. Changes will be posted on Canvas. *Asterisked materials are available on Canvas.

Date		Wk	Topic	Required reading	Assignments due
Jan	12 Tu	1	Course introduction and orientation		
	14 Th		Patterns and processes of hazards	Schulz (2015) "The Really Big One" * Nova video "Japan's Killer Quake"*	
	19 T	2	Vulnerability	Smith ch. 1 and ch. 2; Frontline video "The Quake"*	
	21 Th		History of hazards research	Cutter et al. (2000)*; Neil Smith (2006)*	
	26 T	3	Hurricane Katrina, vulnerability, and resilience	McPhee, "Atchafalaya" p. 2-92; Frontline video "The Storm";	*Disaster presentation proposal due*
	28 Th		Hurricane Katrina, vulnerability, and resilience (cont'd)	Smith ch. 3; Moulton (2015) Colten and Sumpter (2009)*	
Feb	2 T	4	Risk and risk assessment	Smith ch. 4 Tierney (2014) ch. 2*	*Hazards journal due*
	4 Th		Social and cultural dimensions of disaster	Tierney (2014) ch. 3* Broad (2015)* Finkbeiner (2015)*	*Grads only: paper proposal due*
	9 T	5	Risk management	Klinke and Renn (2001) Daley (2014)	
	11 Th		Risk perception	Slovic (1987); McPhee, "Los Angeles…," p. 183-272	
	16 T	6	NO CLASS (Monday class schedule)		
	18 Th		Risk communication	Demuth et al. (2012)* Kasperson and Kasperson (1996)*	
	23 T	7	Stakeholder participation and mitigation planning	Smith ch. 5; Additional reading TBD	*Deadline for meeting with professor to review presentation*
	25 Th		Stakeholder participation and mitigation planning (cont'd)	Frazier et al (2010); Young (2015);	
Mar	1 T	8	Disaster presentations		*Disaster presentation slides due*
	3 Th		Disaster presentations		*Hazards journal due*
	8 T		NO CLASS (Spring break)		
	10 Th		NO CLASS (Spring break)		
	15 T	9	Wildfire hazards	Pyne (2015)*; Pyne (2008)*	
	17 Th		**Midterm exam**		
	22 T	10	Group presentation 1	Reading TBD	
	24 Th		Mitigation project 1		
	29 T	11	NO CLASS (professor at AAG conference	McPhee, "Cooling the Lava," p. 95-179	
	31 Th		NO CLASS (professor at AAG conference)		
Apr	5 T	12	Group presentation 2	Reading TBD	*Hazards journal due*
	7 Th		Mitigation project 2		
	12 T	13	Group presentation 3	Reading TBD	
	14 Th		Mitigation project 3		
	19 T	14	Group presentation 4	Reading TBD	
	21 Th		Mitigation project 4		
	26 T	15	Group presentation 5	Reading TBD	
	28 Th		Mitigation project 5		*Hazards journal due*
May	3 T		**Final exam**		