

## Spring 2012 Syllabus

### Geography 333: Human Dimensions of Natural Hazards

Monday, Wednesday, Friday: 10:10 am – 11:00 am  
101 Walker

#### Instructor

##### **Peter D. Howe**

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Office hours: Wednesday 11:00 am – 1:00 pm or by appointment

*The best way to contact me is through e-mail or ANGEL. I try to respond to e-mails the same day on weekdays, but don't expect an immediate response on weekends.*

#### Course description

How do geophysical, ecological, social, and economic processes interact to create hazards for humans? How can we as geographers learn help to mitigate hazards by learning about these processes? How do we define *risk*, and how does the way the human mind interprets risk influence our vulnerability? In this course, students will use various methods of scientific inquiry to investigate these key questions.

Geography 333 is seminar course for juniors and seniors. Instructor-led lectures will make up a small part of the course, accompanied by group activities and student presentations. Discussion and collaborative learning are core components of this course, and productive participation in discussions is expected of each student. This course will emphasize oral and written communication skills. Each student will present a summary of a historical disaster to the class, contribute to a major group presentation and activity, and author a hazards journal.

This course will focus on the human dimensions of natural hazards from a geographic perspective. Introductory background in physical geography, human geography, and basic statistics is assumed.

#### Readings

This is a reading-intensive course. Students should expect to read 30-100 pages per week from assigned textbooks, journal articles, and online sources. Videos may also be assigned. When readings or videos are assigned, students will be required to answer short response questions in their hazards journal prior to attending class.

## Books

These books are available at the university bookstore and online. I encourage buying used books, but please ensure that you are purchasing the correct edition. A limited number of copies are also on reserve at the Earth and Mineral Sciences Library.

1. Keller, Edward A. and Duane E. DeVecchio. 2011. *Natural Hazards: Earth's Processes as Hazards, Disasters and Catastrophes* 3<sup>rd</sup> ed. Prentice Hall.
2. McPhee, J. 1990. *The Control of Nature*. Farrar, Straus and Giroux.

## Journal articles

*Assigned articles will be available on ANGEL.*

## Other materials

*Videos or web resources may be available on ANGEL as needed.*

## Grades

### Grading scale

Letter grades will be assigned on the following scale:

Grade	A	A-	B+	B	B-	C+	C	C-	D+	D	D-	F
%	93-100	90-93	87-90	83-87	80-83	78-80	73-78	70-73	67-70	63-67	60-63	< 60

## Student responsibilities

### Rubric

Students are responsible for the following work:

	Percent of grade	Points
Participation in discussion and activities	15%	150
Mid-term exam	15%	150
Final exam	15%	150
Disaster presentation	10%	100
Hazards journal	20%	200
Group presentation, community mitigation activity, and mitigation plan	25%	250
	100%	1000

## Exams

There will be two exams: 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*.

### 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: responses to questions about the assigned readings and in-class activities, and a log of natural disasters that happen over the course of the semester in an assigned region of the world. The journal should be typed as a single Word document. Digital copies of the journal will be due on ANGEL several times throughout the semester: **February 3, March 2, April 2, and April 27.**

For the first part of the journal, I will post questions on the assigned readings or in-class activities online and in class. Questions on in-class activities should be completed by the next class period. You will be expected to respond to questions on assigned readings **before** the class in which the readings will be discussed. Responses should be concise (no more than 2-3 paragraphs, unless requested otherwise).

For the disaster log portion of the journal students will be expected to follow multiple news sources throughout the semester and record details of any hazard events that occur in their assigned region from **January 1 to April 25**. The regions are: Africa, Northern America (U.S. and Canada), Latin America and the Caribbean, Asia, Europe, and Oceania (Australia, New Zealand, and the South Pacific).

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/>

NOAA State of the Climate: Global Hazards (updated monthly): <http://www.ncdc.noaa.gov/sotc/hazards/>

Google News: <http://news.google.com/>

New York Times/International Herald Tribune: <http://global.nytimes.com/>

BBC News: <http://www.bbc.co.uk/news/>

### Disaster presentation

Students will select a historical disaster and conduct their own research on the disaster to describe: 1) the physical and socioeconomic context of the disaster; 2) the impacts of the

disaster; and 3) the human dimensions of the disaster (who was vulnerable, and why). Students will then teach the rest of the class about this disaster by delivering a short 5-minute presentation. Each presentation will be followed by a brief question and answer period.

Presentations must be accompanied by slides (Powerpoint, 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 ANGEL on **January 18**. 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.

Presentations will occur in class on **February 20, 22, and 29 and March 2**. Slides are due on ANGEL before class on **February 20**.

### **Group presentations and community mitigation activities**

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 three periods, starting the first day with a presentation on their hazard topic and continuing on the next two days 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 in the textbook:

- |  |                       |                         |
|--|-----------------------|-------------------------|
| * <b>Earthquakes</b>                           | * <b>Tsunami</b>      | * <b>Volcanoes</b>      |
| * <b>Flooding</b>                              | * <b>Mass wasting</b> | * <b>Severe weather</b> |
| * <b>Hurricanes and extratropical cyclones</b> |                       |                         |

Students, in groups of 4 or 5, 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 there.

On the first day of their assigned week, groups will deliver a 45-minute presentation 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. Slides should be submitted on ANGEL by 6 PM on the day prior to the presentation.

The next two class periods following each group presentation will be devoted to a case-study mitigation planning activity, in which students will role-play as members of the community to develop a mitigation plan. Each student will be assigned a role at the conclusion of the first class period. 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. Students will rotate through these roles over the course of the activities.

The lead group will act as subject experts, beginning the first period of the activity by delivering a 10-minute presentation on the case-study location and the local characteristics of the hazard. In the remainder of the period, 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 period 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 activities 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 (min. 5 pages, double spaced), **due one week after the last day of the activity**.

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

Each group must schedule a meeting with the instructor no later than **one week before their presentation** to receive feedback and suggestions for improvement.

*More information about these activities will be presented in class.*

## Course policies

### Academic integrity

Penn State defines academic integrity as the pursuit of scholarly activity in an open, honest and responsible manner. All students should act with personal integrity, respect other students' dignity, rights and property, and help create and maintain an environment in which all can succeed through the fruits of their efforts (Faculty Senate Policy 49-20).

Dishonesty of any kind will not be tolerated in this course. Dishonesty includes, but is not limited to, cheating, plagiarizing, fabricating information or citations, facilitating acts of academic dishonesty by others, having unauthorized possession of examinations, submitting work of another person or work previously used without informing the instructor, or tampering with the academic work of other students. Students who are found to be dishonest will receive academic sanctions and will be reported to the University's Judicial Affairs office for possible further disciplinary sanction.

### Attendance and participation

Attendance at each class session is necessary to achieve a good grade in this course. If you miss class, please do not e-mail me to ask what you missed. It is your responsibility to obtain materials or notes from other students.

This is a small discussion-centric seminar that requires the active participation of each student. Participation represents 15 percent of the total grade for the course. 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. In practice, a good participation grade is easily achieved if you have completed the assigned readings, responded to questions about the readings in your hazards journal, and are prepared for class discussions.

**CMS**

Course documents will be available on ANGEL, Penn State's online course management system, at <https://cms.psu.edu/default.asp>. All assignments should be submitted through ANGEL.

**Disability accommodation**

Penn State welcomes students with disabilities into the University's educational programs. If you have a disability-related need for reasonable academic adjustments in this course, contact the Office for Disability Services, ODS located in room 116 Boucke Building at 814-863-1807(V/TTY). For further information regarding ODS, please visit their web site at <http://www.equity.psu.edu/ods/>.

Please notify the instructor as early in the semester as possible regarding the need for reasonable academic adjustments.

**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 1 week after the deadline.

## Course schedule

*Your learning is my primary concern, so I may modify the schedule and assigned readings if it will facilitate your learning. Any changes will be announced in class and posted on ANGEL.*

Date		Topic	Required reading (* link on ANGEL)
Jan	9	M	Introduction: format of the course & syllabus
	11	W	Patterns and processes of hazards Keller & DeVecchio ch. 1, Nova video "Japan's Killer Quake"*
			Introduction to vulnerability
	13	F	<b>Form groups, choose presentation topics, set up instructor meetings</b> Smith (2006)*, <i>Frontline</i> video "The Quake"*
	16	M	<i>No class: Martin Luther King Jr. Day</i>
			Vulnerability cont'd
	18	W	<b>1-paragraph disaster presentation proposal due</b> McPhee, "Atchafalaya," p. 2-92
	20	F	Geographic approaches to vulnerability and climate change Cutter et al. (2000)*, Frazier et al (2010a)*
	23	M	Hurricane Katrina, vulnerability, and resilience <i>Frontline</i> video, "The Storm"*, Yarnal (2007)*
	25	W	Hurricane Katrina, vulnerability, and resilience cont'd Colten and Sumpter (2009)*
	27	F	Risk and risk assessment Klinke and Renn (2001)*
	30	M	Social and cultural dimensions of risk Kasperson & Kasperson (1996)*,
Feb	1	W	Stakeholder perspectives & vulnerability Frazier et al (2010b)*
			Stakeholder participation and mitigation planning
	3	F	<b>Hazards journal due</b> 2010 Centre County Hazard Mitigation Plan ch. 1-3, ch. 4 sec. 4.1-4.3.12, sec. 4.4, ch. 6*
	6	M	Risk perception Slovic (1987)*
	8	W	Wildfire hazards (Possible guest lecturer) Keller & DeVecchio ch. 13; TBD
	10	F	Risk perception McPhee, "Los Angeles Against the Mountains," p. 183-272
			Risk communication
	13	M	Slovic (1986)*
	15	W	Review for mid-term exam
	17	F	<b>Mid-term exam</b>
			Disaster presentations
	20	M	<b>Presentation slides due on ANGEL before class</b>
	22	W	Disaster presentations
	24	F	<i>No class: AAG meeting in New York</i> Nova, "Deadliest Volcanoes"*
	27	M	<i>No class: AAG meeting in New York</i> McPhee, "Cooling the Lava," p. 95-179

Mar	29	W	Disaster presentations	
			Disaster presentations	
	2	F	<b>Hazards journal due</b>	
	5	M	<i>No class: Spring break</i>	
	7	W	<i>No class: Spring break</i>	
	9	F	<i>No class: Spring break</i>	
	12	M	Group 1 presentation: <b>Earthquakes</b>	Keller & DeVecchio ch. 3; Bolin and Stanford (1998)*
	14	W	Group 1 community mitigation activity: phase 1	
	16	F	Group 1 community mitigation activity: phase 2	
	19	M	Group 2 presentation: <b>Tsunami</b>	Keller & DeVecchio ch. 4; Bernard et al. (2006)*
Apr	21	W	Group 2 community mitigation activity: phase 1	
	23	F	Group 2 community mitigation activity: phase 2	
	26	M	Group 3 presentation: <b>Volcanoes</b>	Keller & DeVecchio ch. 5; Tobin and Whiteford (2002)*
	28	W	Group 3 community mitigation activity: phase 1	
	30	F	Group 3 community mitigation activity: phase 2	
			Group 4 presentation: <b>Flooding</b>	
	2	M	<b>Hazards journal due</b>	Keller & DeVecchio ch. 6; Pelling (1997)*
	4	W	Group 4 community mitigation activity: phase 1	
	6	F	Group 4 community mitigation activity: phase 2	
	9	M	Group 5 presentation: <b>Mass Wasting</b>	Keller & DeVecchio ch. 7; O'Hare and Rivas (2005)*
	11	W	Group 5 community mitigation activity: phase 1	
	13	F	Group 5 community mitigation activity: phase 2	
	16	M	Group 6 presentation: <b>Severe weather</b>	Keller & DeVecchio ch. 9; Brooks and Doswell (2002)*
	18	W	Group 6 community mitigation activity: phase 1	
	20	F	Group 6 community mitigation activity: phase 2	
	23	M	Group 7 presentation: <b>Hurricanes &amp; extratropical cyclones</b>	Keller & DeVecchio ch. 10; Burby (2006)*
	25	W	Group 7 community mitigation activity: phase 1	
			Group 7 community mitigation activity: phase 2	
	27	F	<b>Hazards journal due</b>	
	TBD		Final exam	



# 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

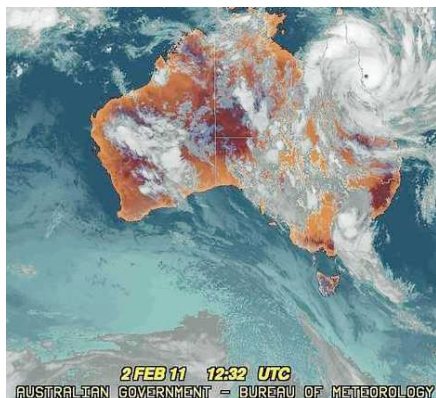
Casualties: 1 death<sup>1</sup>

Property damage: approximately \$3.5 billion (US) insured losses<sup>2</sup>

Summary:

Tropical cyclone Yasi formed near Fiji in late January, intensifying to a Category 3 cyclone on January 31<sup>st</sup> and a Category 5 cyclone on February 2<sup>nd</sup>. Yasi made landfall on the coast of Queensland, Australia on February 3<sup>rd</sup> as a powerful Category 5 storm, with winds of at least 185 miles per hour and a 16-foot storm surge<sup>3</sup>. 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<sup>3</sup>.

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 endured by Queensland since November, 2010. The estimated \$3.5 billion in damages to crops, businesses, and homes will make Yasi the second-most damaging cyclone ever to hit Australia<sup>2</sup>.



Satellite image of Yasi near landfall<sup>4</sup>



Damage at a mobile home park in Tully, Queensland<sup>5</sup>

<sup>1</sup> <http://www.smh.com.au/environment/weather/man-in-cyclone-zone-suffocates-20110204-1agbe.html>

<sup>2</sup> <http://www.reuters.com/article/2011/02/03/insured-losses-yasi-idUSLDE7121NR20110203>

<sup>3</sup> <http://www.bom.gov.au/cyclone/history/yasi.shtml>

<sup>4</sup> <http://www.ncdc.noaa.gov/sotc/hazards/2011/2>

<sup>5</sup> <http://www.nytimes.com/2011/02/04/world/asia/04australia.html>