

GEOGRAPHY AND ENVIRONMENT 414

NATURAL HAZARDS AND COMMUNITY RESILIENCE



Photo: Mount Fuji

Instructor: Brian Szuster

Credits: 3

Contact hours: 45



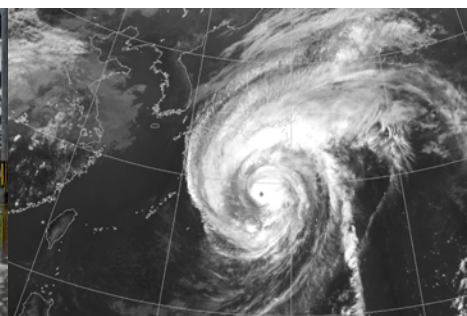
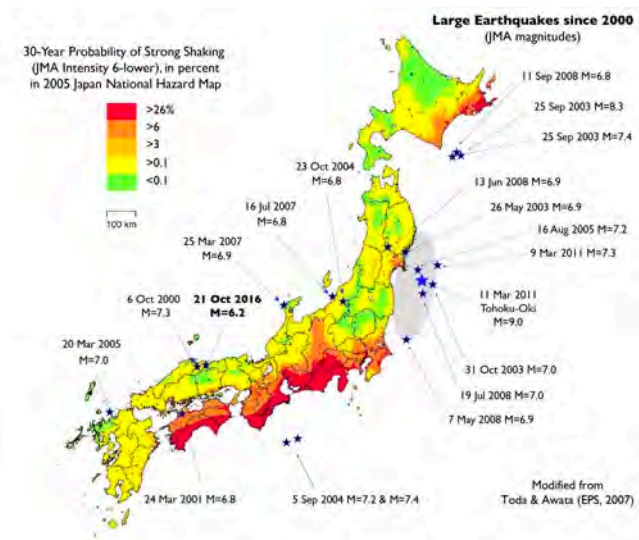
The study of environmental hazards has a long history in geography stemming from the seminal work of the renowned geographer Gilbert White at the University of Chicago in the mid-20th century. GEO 414 follows in that tradition and adopts an integrative approach to illustrate how human and environmental systems interact before, during and after hazard events. The course will include three main sections with the first introducing the character of environmental hazards such as earthquakes, typhoons, volcanic eruptions and floods. The second section will deal with theories supporting the management of environmental hazards, and basic concepts such as risk, vulnerability, mitigation and adaptation. The final section of the course will focus on specific risks with examples drawn from Japan and other countries in Asia to illustrate methods of analysis applicable to the management of these threats.



COURSE TOPICS

TECTONIC HAZARDS

Japan possesses a dynamic physical environment that presents numerous challenges to its population. Earthquake is a by-product of tectonic activity which is characterized by a collision between the Pacific, Asian and Filipino plates near Japan. The country has a violent history of earthquakes which has affected the island chain throughout its history. The interaction between tectonic plates also creates iconic volcanic features such as Mt Fuji, and more dangerous mountains such as Mt Unzen on the southern island of Kyushu. Tsunami are usually produced by tectonic events and have created great destruction in Japan. The tectonic hazard module will review geologic processes that have created the Japanese landscape, and will consider hazard mitigation and adaptation options available to vulnerable communities.



FLOODING

Although Japan lacks major rivers due to its size, its lengthy coastline and exposure to heavy rains associated with typhoons create vulnerabilities to flooding. The country possesses a diverse range of landscapes and flood hazards exist in many parts of Japan as a result of climate variability and change. Without effective management of flood hazards, future losses could be substantial.

CLIMATE & WEATHER HAZARDS

Japan is vulnerable to both tropical storms during the summer and extreme weather during the winter months. This creates a diverse range of atmospheric hazards including typhoon, winter storms, and extreme heat events. Both the severity and frequency of extreme weather events in Japan are expected to increase in the future.

DISEASE AND TECHNOLOGY

From historic outbreaks of measles, smallpox and cholera, to the Spanish flu epidemic of 1917-18 and COVID-19, Japan has dealt with disease hazards for over a millennia. Modern technology has mitigated many of these threats, but modern problems associated with nuclear, chemical and biological accidents have emerged.

STUDENT LEARNING OUTCOMES

The objective of GEO 414 is to increase your understanding of natural and technological hazards such as earthquake, tsunami, flood and climate change while living and studying in Japan. Upon the completion of this course, students should:

- a. appreciate the physical character of individual environmental risks;
- b. understand key concepts such as risk, vulnerability, mitigation, and adaptation;
- c. communicate well-reasoned opinions on the nature and management of environmental risks;
- d. gain different perspectives on how nations such as Japan deal with hazards and risk.

To demonstrate successful achievement of these learning objectives, the student must display competence through written exams and oral presentations.

Students will also be able to achieve at least one of the following study abroad objectives:

- demonstrate awareness of own cultural values and biases and how these impact their ability to work with others;
- demonstrate knowledge of diversity with a focus on the population or topic of interest in the specific Study Abroad program;
- communicate appropriately and effectively with diverse individuals and groups; and
- demonstrate an increased capacity to analyze and appreciation disparate viewpoints.

EVALUATION

Midterm Exam #1	25%
Midterm Exam #2	25%
Class Presentation	15%
Class Participation	10%
Final Exam	25%



CLASS PARTICIPATION

Participation marks are based on engagement in class discussions and activities in addition to general attendance; but failure to attend classes regularly without legitimate cause will result in the loss of participation marks in GEO 414.

EXAMINATIONS

There are 2 midterm examinations scheduled for this class and a final examination. Examinations are not cumulative. Make-up examinations are only allowed without penalty for valid reasons supported by a doctor's note or other form of legitimate documentation. Requests for a makeup must be made in writing or in person. E-mail requests will not be honored. Makeup exams will take place the week after a midterm at a time and place determined by the instructor.

COURSE OUTLINE

Class will meet once per week with specific subjects outlined in the Schedule of Class Topics. Textbook for the course is *Environmental Hazards: Assessing Risk and Reducing Disaster*, 6th Edition by Keith Smith, which is available through on-line through vendors such as Amazon in paperback, ebook or ebook rental format. Additional readings will be provided in class, emailed, and/or posted on the class website.

Week 1 – Class Introduction / Environmental Hazards (Chapter 1)

Week 2 – Managing Risk (Chapter 2)

Week 3 - Complexity, Sustainability, Vulnerability (Chapter 3)

Week 4 – Vulnerability and Adaptation Group Exercise

Week 5 – Risk Assessment (Chapter 4)

Week 6 – Hazard Mitigation (Chapter 5)

Week 7 – Earthquake / Tsunami (Chapter 6)

Week 8 – Volcano (Chapter 7)

Week 9 – Mass Movements (Chapter 8)

Week 10 – Severe Storms (Chapter 9)

Week 11 – Floods (Chapter 11)

Week 12 – Disease (Chapter 10)

Week 13 – Climate Risk (Chapter 12)

Week 14 – Technological Hazards (Chapter 13)

Week 15 - Class Presentations

Week 16 – Final Exam



HAZARD CASE STUDY PRESENTATION

The presentation will be flexible with regard to format but it should ideally focus on a natural or technological hazard in Japan. It is important to discuss the background and history of the environmental hazard(s) under consideration, and be sure to focus a substantial part of your presentation on methods to achieve mitigation and adaptation. I will organize time slots for these presentations starting after the first midterm exam. Please select your presentation topic and book this with me as soon as possible. The environmental hazard presentation will represent 15% of the overall course grade in GEO 414, and will be graded for content, clarity, organization, and style.

Oral Presentation Rubric

	4—Excellent	3—Good	2—Fair	1—Needs Improvement
Delivery	<ul style="list-style-type: none"> Holds attention of entire audience with the use of direct eye contact, seldom looking at notes Speaks with fluctuation in volume and inflection to maintain audience interest and emphasize key points 	<ul style="list-style-type: none"> Consistent use of direct eye contact with audience, but still returns to notes Speaks with satisfactory variation of volume and inflection 	<ul style="list-style-type: none"> Displays minimal eye contact with audience, while reading mostly from the notes Speaks in uneven volume with little or no inflection 	<ul style="list-style-type: none"> Holds no eye contact with audience, as entire report is read from notes Speaks in low volume and/or monotonous tone, which causes audience to disengage
Content/ Organization	<ul style="list-style-type: none"> Demonstrates full knowledge by answering all class questions with explanations and elaboration Provides clear purpose and subject; pertinent examples, facts, and/or statistics; supports conclusions/ideas with evidence 	<ul style="list-style-type: none"> Is at ease with expected answers to all questions, without elaboration Has somewhat clear purpose and subject; some examples, facts, and/or statistics that support the subject; includes some data or evidence that supports conclusions 	<ul style="list-style-type: none"> Is uncomfortable with information and is able to answer only rudimentary questions Attempts to define purpose and subject; provides weak examples, facts, and/or statistics, which do not adequately support the subject; includes very thin data or evidence 	<ul style="list-style-type: none"> Does not have grasp of information and cannot answer questions about subject Does not clearly define subject and purpose; provides weak or no support of subject; gives insufficient support for ideas or conclusions
Enthusiasm/ Audience Awareness	<ul style="list-style-type: none"> Demonstrates strong enthusiasm about topic during entire presentation Significantly increases audience understanding and knowledge of topic; convinces an audience to recognize the validity and importance of the subject 	<ul style="list-style-type: none"> Shows some enthusiastic feelings about topic Raises audience understanding and awareness of most points 	<ul style="list-style-type: none"> Shows little or mixed feelings about the topic being presented Raises audience understanding and knowledge of some points 	<ul style="list-style-type: none"> Shows no interest in topic presented Fails to increase audience understanding of knowledge of topic
Comments				