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:

1. Introducing the character of environmental hazards such as earthquakes, typhoons, volcanic eruptions, and floods.
2. Dealing with theories supporting the management of environmental hazards, and basic concepts such as risk, vulnerability, mitigation, and adaptation.
3. Focusing on specific risks with examples drawn from Spain and other countries in the European Union to illustrate methods of analysis applicable to the management of these threats.

Instructor: Brian Szuster
Credits: 3
Contact hours: 45
COURSE TOPICS

TECTONIC HAZARDS

Europe possesses a dynamic physical environment that presents numerous challenges to its population. Volcanism is the most infamous by-product of tectonic activity, which is characterized by a collision between the African plate to the south and the Eurasian plate to the north. This interaction between the African and European plates creates earthquakes, volcanic features such as Mt. Vesuvius, and the Alps mountain chain that forms the backbone of the continent. The tectonic hazards module will review geologic process that have created European landscape, and will consider the range of hazards and hazard mitigation options available to Europeans who live in this tectonically active region.

FLOODING

With major rivers such as the Danube, Rhine, and Seine, and a lengthy coastline, Europe possess a diverse range of flooding landscapes. Increased flood hazards are possible in many parts of Europe as a result of climate change, and without effective management and adaptation, future losses could be substantial.

CLIMATE & WEATHER HAZARDS

Continent Europe is influenced by both polar and desert regions. This creates a diverse range of atmospheric hazards including severe summer storms, blizzards, extreme heat events and dust storms. Both the severity and frequency of severe weather events in Europe are expected to increase in the future.

DISEASE AND TECHNOLOGY

From the “black death” of the middle ages to COVID-19, Europe has repeatedly struggled with disease hazards for a millennia. Modern technology has mitigated many of these hazards, but also created new threats associated with nuclear, chemical and biological accidents.
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. It is also important to gain additional insights through the experience of living and studying in Seville. Upon the completion of this course, students should:

a. appreciates the physical character of individual environmental risks;
b. understands key concepts such as risk, vulnerability, mitigation, and adaptation;
c. communicates well-reasoned opinions on the nature and management of environmental risks;
d. gain different perspectives on how other nations deal with hazards and risk; and
e. gain a deeper understanding of European culture and environments.

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

WHAT IS EXPECTED OF STUDENTS?

a. come to class and be prepared to participate;
b. read assigned and outside materials;
c. deliver well-organized and clear oral presentations; and
d. respect their fellow student’s opinion about issues discussed in class.

EVALUATION

<table>
<thead>
<tr>
<th>Evaluation</th>
<th>Percentage</th>
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<tbody>
<tr>
<td>Midterm Exam #1</td>
<td>25%</td>
</tr>
<tr>
<td>Midterm Exam #2</td>
<td>25%</td>
</tr>
<tr>
<td>Class Presentation</td>
<td>15%</td>
</tr>
<tr>
<td>Class Participation</td>
<td>10%</td>
</tr>
<tr>
<td>Final Exam</td>
<td>25%</td>
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</tbody>
</table>

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
WHAT IS EXPECTED OF STUDENTS?

a. come to class and be prepared to participate;

b. read assigned and outside materials;

c. deliver well-organized and clear oral presentations; and

d. respect their fellow student’s opinion about issues discussed in class.

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 Spain or another EU country. 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

<table>
<thead>
<tr>
<th></th>
<th>4—Excellent</th>
<th>3—Good</th>
<th>2—Fair</th>
<th>1—Needs Improvement</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Delivery</strong></td>
<td>Holds attention of entire audience with the use of direct eye contact, seldom looking at notes</td>
<td>Consistent use of direct eye contact with audience, but still returns to notes</td>
<td>Displays minimal eye contact with audience, while reading mostly from the notes</td>
<td>Holds no eye contact with audience, as entire report is read from notes</td>
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<tr>
<td></td>
<td>Speaks with fluctuation in volume and inflection to maintain audience interest and emphasize key points</td>
<td>Speaks with satisfactory variation of volume and inflection</td>
<td>Speaks in uneven volume with little or no inflection</td>
<td>Speaks in low volume and/or monotonous tone, which causes audience to disengage</td>
</tr>
<tr>
<td><strong>Content/ Organization</strong></td>
<td>Demonstrates full knowledge by answering all class questions with explanations and elaboration</td>
<td>Is at ease with expected answers to all questions, without elaboration</td>
<td>Is uncomfortable with information and is able to answer only rudimentary questions</td>
<td>Does not have grasp of information and cannot answer questions about subject</td>
</tr>
<tr>
<td></td>
<td>Provides clear purpose and subject; pertinent examples, facts, and/or statistics; supports conclusions/ideas with evidence</td>
<td>Has somewhat clear purpose and subject; some examples, facts, and/or statistics that support the subject; includes some data or evidence that supports conclusions</td>
<td>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</td>
<td>Does not clearly define subject and purpose; provides weak or no support of subject; gives insufficient support for ideas or conclusions</td>
</tr>
<tr>
<td><strong>Enthusiasm/ Audience Awareness</strong></td>
<td>Demonstrates strong enthusiasm about topic during entire presentation</td>
<td>Shows some enthusiastic feelings about topic</td>
<td>Shows little or mixed feelings about the topic being presented</td>
<td>Shows no interest in topic presented</td>
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<td></td>
<td>Significantly increases audience understanding and knowledge of topic; convinces an audience to recognize the validity and importance of the subject</td>
<td>Raises audience understanding and awareness of most points</td>
<td>Raises audience understanding and knowledge of some points</td>
<td>Fails to increase audience understanding of knowledge of topic</td>
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<tr>
<td><strong>Comments</strong></td>
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