

Department:Center for Integrative Geosciences

Course No:1XXX [1YY]

Credits:3

Title: Global Change and Natural Disasters

Contact:Timothy Byrne

Content Area:CA 3 Science and Technology

Catalog Copy:Proposed New Cat Copy: -GEOL 1xxx (also offered as GEOG 1xxx). Global Change and Natural Disasters. Either semester. Three credits. Climate change, global warming, natural hazards, earth surface processes, and the impact these have on populations now and in the past.

Justification:

No current curriculum/courses exist for undergraduate classes dealing with global change and natural disasters. Only a select few deal with global change, one of which is no longer offered at UConn (GEOL101). This course will fill a critical gap in the undergraduate curriculum. Parts of the proposed course are taught in various upper level courses (through EEB, GEOG, GEOL, ENVE, NRME) but there are no general overview courses that introduce students to the interconnectedness of humans and nature with a focus on global change and natural disasters in the first year. There is no overlap with courses or curriculum offered at the regional campuses.

General Education Goals 1 through 7 are noted where appropriate under “Course requirements”, “General Education Goals” and “Specific Criteria (Content Area – Science and Technology)”.

Meets Goals of Gen Ed :

Global change and natural hazards represent a broad interdisciplinary field that is both timeless and timely. As nearly daily news stories and scientific reports continue to raise concerns about increasing tropical storms, desertification, and melting ice sheets related to global warming, we consider it to be a critical time for UConn to develop undergraduate curriculum on global change and natural hazards. The course is timeless as many of the associated processes (e.g., earthquakes, volcanoes, and climate change) are integral parts of Earth’s 4 billion year history. The new course, therefore, provides the opportunity for students to see and understand the Earth as an evolving and interconnected system, an understanding that will remain with them throughout their lives (Goals 2, 5 and 7).

CA3 Criteria:

The course will include numerous examples that show students how science works as well as its limitations in solving social and economic problems associated with natural hazards and disasters (Goal 3). Some of the problems will involve calculations and discussions in the classroom while others will require individual efforts and solutions. Some problems will also involve multiple data sets and require

interactions and discussions throughout the semester. Many of the examples cross international borders, introducing students to globalization through the natural world (Goals 5 and 6).

By the end of the course students will understand the effects of different kinds of volcanic eruptions, assess the potential damage related to earthquakes of different magnitudes and evaluate the potential damage associated with major floods (Goal 7). Overall, we hope that students will appreciate and understand science-based decision-making and that they will be able to incorporate this process into their academic careers.

Syllabus:

a. Course overview:

This course will introduce students to climate change, global warming, natural hazards, earth surface processes, and the effects these have on human populations. The course will use a combination of lectures, videos, discussions and data based problem solving to show students how scientific analysis can be applied to global change and natural disasters.

b. Course requirements:

In addition to mid-term and final exams, students will be responsible for completing several applied geosciences modules and report on a real or potential hazard in their neighborhood. The applied modules will be centered on a made-up city (e.g., "Hazard City") and involve analyzing potential hazards that plague the city. These assignments, when integrated with the rest of the course material, will allow students to develop the intellectual breadth and versatility necessary to understand and critically judge the consequences of natural hazards (Goals 2 and 3). The hazard report will be a 1-2 page summary of real or potential natural hazards in the student's neighborhood, including UConn. The reports can be descriptions of the surface processes active in your backyard or neighborhood (e.g., runoff, rivers, floods, drought, earthquakes, slumps, storms) or scientific discussions of the human impact on the Earth's surface. The combination of an applied project and the investigation of potential hazards in *their own backyard* will give the students a sense of their place in the world (Goal 5) and an understanding of the economic, social and moral effects of climate change and natural hazards.

Exams will be a combination of vocabulary, multiple-choice and/or true false and short questions that require knowing and understanding the scientific and societal effects of global change and natural hazards as well as their potential benefits of the natural processes that too often produce hazards,

Grades will be based on exams (~50%) and successfully completing the applied modules (40%) and potential hazard reports (10%)

c. Topics to be covered (~2 weeks per topic):

1. Krakatoa eruption and tsunami – an introduction to global change and natural hazards

2. Volcanoes –
3. Earthquakes
4. Rivers and Floods – bringing hazards closer to home
5. Landslides, wildfires, impacts and mass extinctions
6. Global change and climate – globalizing disasters and catastrophes
7. Global change and coastal processes

NOTE: all topics will include the following: processes, potential hazards, recurrence intervals and possibilities for responses and disaster preparedness

Potential textbook:

Keller and Blodgett, 2006, Natural Hazards: Earth's Processes as Hazards, Disasters and Catastrophes

CA Justification: a. b. and c. are included in the syllabus.

Grading:

Mid-term Exam (Week of Oct. 16)	30
Hazard City Projects (4 x 10pts)	40
ESP Project	10
Final Exam	20
Extra Credit	up to 4 pts