**EARTHSYS 195, Natural Hazards and Risk Communication**

*Spring 2013 – DRAFT*

Instructor: Katie Phillips TA(s): TBD

Office: Y2E2 175

Phone: 650-725-3028

E-mail: [kphill@stanford.edu](mailto:kphill@stanford.edu)

Office Hours: by appointment

**Course Description**:

This course will provide an introduction to the science behind natural hazards, the risks associated with these hazards, and effective methods of communicating those risks to a variety of audiences. Recent research has shown that relaying scientific knowledge alone to potentially vulnerable populations does not have a significant impact on increasing their resilience to those hazards. Therefore, it is increasingly important for scientists to become translators of complex technical information for a variety of audiences. In this class, you will learn various methods of translation and communication and investigate the relative effectiveness of these methods for increasing preparedness and resiliency to natural hazards.

The process of becoming an effective writer requires making iterative revisions based on editing and feedback. In this class, you can expect to receive thoughtful editing and feedback on your writing from the instructor, TAs, and your peers in the class. You will be expected to provide thoughtful feedback on your peers’ writing and respond to the feedback you receive. All writing assignments will undergo at least one iteration of edits and revisions. Becoming an effective writer also requires learning from examples, and learning to recognize effective writing in others. You will be reading many examples of others’ writing on natural hazards and, as a class, you will develop a list of helpful tips and examples of excellent writing. This list will be used and augmented by future classes.

This will be a hands-on course where you will be working in small groups to discuss class topics, share, and peer review each other’s writing each week. The course satisfies the *Writing in the Major* requirement for Earth Systems majors.

**Goals:**

After completing this course, you will be able to:

* Describe the science behind major natural disasters.
* Understand the relationships between hazards, risk, vulnerability, and resilience.
* Effectively target communications about risk to a variety of audiences, i.e. the public, policy-makers, vulnerable populations, and funding agencies.

**Schedule**:

**Week 1:** Brief Survey of Natural Hazards, Risk, Vulnerability, and Resilience

*Class 1*: Introduction to the class; Mini-lecture on Natural Hazards

*Class 2*: Mini-lecture on Risk and Vulnerability, in-class free write and small group peer review

**Week 2**: Earthquakes, consider your audience – general public

*Class 1*: Mini-lecture on earthquakes, discussion on considering the audience for your writing

*Assignment*: Write a short (< 2 pages) piece for the general public on earthquakes

*Class 2*: Discussion on effective peer review; small group peer review on earthquake pieces

**Week 3**: Volcanoes, audience: policy-makers, funding for hazards research

*Class 1*: Mini-lecture on volcanoes, discussion of policy makers as an audience

*Assignment*: Write a short (1 page) letter to your congressperson about funding for volcano monitoring

*Class 2*: Case study: Long Valley, Mt. St. Helens, or S. America; introduction of final projects, small group peer review

**Week 4**: Tsunami, audience: impacted populations

*Class 1*: Mini-lecture on Tsunami, discussion of Indonesian and Japanese tsunami, and the impacted populations

*Assignment*: Write a short piece for a local news station to read warning the local population of increased activity at their volcano, and the potential for earthquakes and tsunami

*Class 2*: Small group peer review on news pieces – share some with the whole class for discussion. Discussion on the news media as an outlet for hazards information

**Week 5**: Probability assessment, danger vs. likelihood of occurrence, size of

potentially impacted population

*Class 1:* Mini-lecture on probability assessment methods for hazards and discussion of appropriate mitigation measures

*Assignment:* Choose a hazard we have already discussed, prepare a dialogue for how you would explain the probability of this hazard occurring to your mom, dad, bother, sister, room-mate, etc.

*Class 2:* Small group peer review of dialogues

**Week 6**: Extreme Weather, audience: kids/education

*Class 1:* Mini-lecture on extreme weather – tornadoes, hurricanes, storm surge

*Assignment:* Prepare 1-2 page proposal for your final project

*Class 2:* Discussion of extreme weather and climate change

**Week 7**: Floods and Droughts, audience: insurance companies/agents

*Class 1:* Mini-lecture on floods and droughts, case study of Hurricane Katrina, part 1

*Assignment:* Prepare a recommendation for insurance agents to give homeowners in flood zones for preparing for potential hazards

*Class 2:* Case study of Hurricane Katrina part 2; small group peer review; discussion of final project proposals

**Week 8**: Meteor Impacts, audience: funding agencies

*Class 1:* Mini-lecture – meteor impacts as a hazard, discussion of role of funding agencies in hazards research and preparedness

*Assignment:* Write a 3-page request for funding to the agency of your choice for research/monitoring of meteor hazards.

*Class 2:* Small – medium size groups, funding panel - each group votes on which proposal to fund and why

**Week 9**: Human Dimensions

*Class 1:* Institutional/personal memory of past events, impact on resilience

*Assignment:* hazards in the movies (Dante’s Peak, Deep Impact, etc.)

*Class 2:* Guest Speaker (potentially someone from Geohazards International)– human dimensions of hazards

\*Drafts of final project reports due at Class 1. Instructor will return comments to students at Class 1 next week

**Week 10**: Final Projects

*Class 1:* In-class presentations of final projects

*Assignment:* Complete final projects

*Class 2:* Reflection and wrap up for the course

**Final Project:**

Each student must select a hazard of his/her choice and a case study locality for that hazard on which to focus some research. Each student will then select an audience for which to target a report explaining the scientific background of his/her selected hazard, a brief history of the impact on the surrounding areas, the probability of future impacts, and a plan or series of recommendations for increasing resiliency in the potentially impacted community. Reports may not exceed 10 pages including figures and references. Each student will also prepare a short (5 minute) presentation of his/her project for the class. Students are encouraged to form groups around related project topics to brainstorm recommendations, etc. However, each student must prepare his/her own report and presentation. Final reports are due on the last day of classes for the quarter.

Students are strongly encouraged to take advantage of the writing consulting available at the Hume Writing Center (see below) for their final reports. Please plan ahead and make appointments for consulting prior to the end of the quarter.

**Grading:**

This course must be taken for a letter grade if the student is taking the course to fulfill the Earth Systems WIM requirement. Other students may take the course on a S/NC basis.Grades will be based on weekly assignments (60%), participation (10%), and the final project (30%). There will be no midterm or final exam in this class.

**Attendance and Class Participation**:

Small group work and peer review of writing assignments are an integral part of this course, and therefore, engaged participation is required of all students. Participation will account for 10% of your grade in this course. If you need to miss a class, please make every effort to let us know ahead of time.

**Writing Resources:**

The Hume Writing Center provides assistance with all types of writing for Stanford students, including drop in consulting appointments. You are strongly encouraged to take advantage of this excellent resource, especially for your final project: <http://www.stanford.edu/dept/undergrad/cgi-bin/drupal_pwr/hwc_dropintutors>.

**Special Accommodations:**

If you need special learning accommodations, it is important that we know about it as soon as possible. Requests must be initiated by the student through Office of Accessible Education: <http://studentaffairs.stanford.edu/oae>.