COURSE GOAL:
The primary goal of this course is to provide an introduction to the concepts, techniques, and scientific methods used in the earth sciences. *Natural Hazards* covers a range of topics including earthquakes, volcanic hazards, climate change, plate tectonics, and storm hazards. Most topics are examined in the context of plate tectonics and/or climate and climate change. The physical and chemical processes that drive each hazard, as well as methods of forecasting and mitigating damage from each hazard, are the focus of each lecture. Societal and economic impacts of each hazard are described, with attention to the different responses and consequences as a function of a nation’s economic prosperity. The course concludes with an examination of mass extinction events and their probable causes, including impacts and rapid climate change.

COURSE CONTEXT:
This is an introductory level course designed to meet the DEC-E requirement. The overview provided by this course develops scientific literacy and contributes to meeting the need for all to be able to make informed decisions about policies that impact the environment for current and future generations. The teaching goals are (i) to provide an overview of the Earth as a system comprehensible to the science and non-science student, (ii) to facilitate growth in the ability of students to integrate concepts and predict outcomes of geological processes, and (iii) to foster the ability for the students to communicate concepts to each other. Testing is used to provide an incentive to reinforce concepts in a timely manner, while minimizing the grading penalty common to students with lesser science background and interest.

INSTRUCTIONAL COMPONENTS:

A. Concept presentation
   • This course is lecture style, using Powerpoint presentations.
   • Presentations are posted on Blackboard ahead of time for students to download to facilitate note-taking and for later study.

B. Concept reinforcement
   • Bonus clicker quizzes on the material presented during each lecture.
   • Reading assignments that cover material presented in class.
   • Hour long in-class examinations.

C. Concept development
   The schedule of topics begins with internally-driven hazards (earthquakes and volcanic eruptions), transitions to water- and weather-related hazards, and then concludes with external hazards such as bolide impacts.
   i. The structure of Earth’s interior and plate tectonics
   ii. Earthquakes and seismic engineering methods
   iii. Volcanic hazards
   iv. Landslides and ground subsidence
   v. Tsunami
vi. Wildfires  
vii. Severe weather  
viii. Hurricanes  
ix. Climate and climate change  
x. Floods  
xi. Impacts  
pii. Mass extinctions

**COURSE LOGISTICS:**
The course content is distributed through two 80-minute professor-given lectures per week.

**EXPECTED COURSE OUTCOMES:**
At the conclusion of this course, students should be able to:

- Explain how natural hazards are measured and forecasted
- Understand the physical and chemical processes that drive natural hazards
- Understand the current engineering techniques and warning systems used to mitigate the dangers from natural hazards
- Discuss the societal and financial impacts of natural hazards
- Explain the scientific process
- Discuss some of the analytical/measurement techniques used in earth sciences

**GOALS FOR BROADER SKILLS:**

A) To be able to pull together varied information to answer multi-tiered questions and orally defend his/her answers  
B) Look for interrelatedness of concepts  
C) Increase scientific literacy

**ASSESSMENT OF ATTAINMENT OF COURSE GOALS:**
Student attainment of course goals is assessed by in-class examinations.
GEO 107 Course Details

Spring 2014

Tuesday & Thursday, 11:30 am – 12:50 pm; ESS 001

Instructor: Dr. Deanne Rogers (Deanne.Rogers@stonybrook.edu; 631-632-1509)
Office hours: ESS Room 318, Monday 10:30 – 11:30 am, Tuesday 2-3 pm or by appt.

REQUIRED MATERIALS:
1. Textbook Patrick L. Abbott, Natural Disasters (9th ed.).
2. Classroom Response System (“clicker”) by Turning Point Technologies. See bookstore. (Note: the Turning Point smartphone app will not work in this classroom.)
3. Blackboard: Lecture notes, grades and announcements will be posted on Blackboard throughout the semester. At times, announcements will also be emailed to the class via Blackboard; it is important that you check the email account that is on file for you on Blackboard.

COURSE EVALUATION
There will be 3 mid-term exams worth 100 points each. A cumulative make up exam worth 100 points can be taken during the final exam period to replace the mid-term exam with the lowest grade or a missed exam. Your grade for the course will be based on summing the best 3 exam grades (each worth a max of 100 points), plus all participation points (12 point maximum), plus all bonus points (20 point maximum).

Exam policies and procedures:
1. There will be no make-ups. Be on time for tests; no one will be admitted after any student leaves.
2. Cheating is not tolerated. Be very careful and aware of your behavior and your surroundings during exams.
3. Bring an SBU ID, a #2 pencil and an eraser to every exam.
4. You must correctly mark your SBU ID and the version of the exam on your scantron answer sheet.
5. Each answer sheet will have a hand-written, unique identifier on it (ex: “Z32”). This is your “confirmation code”. It is important to record and save your confirmation code for each exam. It is the only proof you have that you took the exam.

Participation points will be determined as the percentage of questions you answered in class using your clicker. This percentage will be multiplied by 12 to get the final participation point figure, rounded up to the nearest whole number. I will start with in-class questions on Tuesday Feb 4. Please buy and register your clicker prior to that day. You can register your clicker on Blackboard, under Tools→Turning Point Registration

Extra Credit – more details available on Blackboard, under Documents→Course Information.
A maximum of 20 bonus points may be earned throughout the semester, by any combination of the following assignments.
1. Science Open Night (max of 5 points per summary). Attend a Science Open Night from the list in the file Open Night schedule (on Blackboard), and write a short summary of the topic covered by the talk. It must be turned in immediately after the presentation (i.e. within 15
minutes) so is intended to be a quick assessment of the important points you learned from
the talk. It’s easiest to write bits of your summary as the talk is going on. You do not have to
use paragraph-style writing; you may make bullet-point lists instead. **Slip your summary
under Rogers’ office door (ESS 318), within 20 minutes of the end of the presentation.** All
summaries are graded (out of 5 points) for content and quality. Summaries should be
approximately ½ to one page long, **handwritten.**

2. **DVD Documentaries (max of 5 points per summary).** View one of the approved
documentaries listed on Blackboard (available from Melville Library, Main Stacks) and write a
short summary. **Include the date that you viewed the DVD.** Write bits of your summary as
you watch the movie—jot down the important points as you go. You do not have to use
paragraph-style writing; you may make lists instead. Summaries should be approximately ½ to
one page long, **handwritten.** All summaries are graded (out of 5 points) for content and
quality. **All documentary summaries are due by Thursday May 1, at 11:30am, but you can
turn them in any time before this date.** You must sign the yellow legal pad in class whenever
you turn something in.

**Grading scale:** Grades are earned by mastering course material; and understanding of course
material is assessed via exams. Grades are not given on the basis of need or effort.

<table>
<thead>
<tr>
<th>Grade</th>
<th>Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>&gt;=279</td>
</tr>
<tr>
<td>A-</td>
<td>270-278</td>
</tr>
<tr>
<td>B+</td>
<td>261-269</td>
</tr>
<tr>
<td>B</td>
<td>249-260</td>
</tr>
<tr>
<td>B-</td>
<td>240-248</td>
</tr>
<tr>
<td>C+</td>
<td>231-239</td>
</tr>
<tr>
<td>C</td>
<td>219-230</td>
</tr>
<tr>
<td>C-</td>
<td>210-218</td>
</tr>
<tr>
<td>D+</td>
<td>201-209</td>
</tr>
<tr>
<td>D</td>
<td>180-200</td>
</tr>
<tr>
<td>F</td>
<td>0-179</td>
</tr>
</tbody>
</table>

**COURSE SCHEDULE**

<table>
<thead>
<tr>
<th>Lecture #</th>
<th>Date</th>
<th>Topic</th>
<th>Reading (before lecture)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Jan. 28</td>
<td>Course organization, Introduction</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Jan. 30</td>
<td>Natural hazards and Earth overview</td>
<td>p.1-15; 26-36 Ch.1,2</td>
</tr>
<tr>
<td>3</td>
<td>Feb. 4</td>
<td>Plate tectonics</td>
<td>p.36-49 Ch. 2</td>
</tr>
<tr>
<td>4</td>
<td>Feb. 6</td>
<td>Earthquake geology &amp; seismology</td>
<td>p.50-66 Ch. 3</td>
</tr>
<tr>
<td>5</td>
<td>Feb. 11</td>
<td>Earthquake mitigation &amp; seismic engineering</td>
<td>p.67-78 Ch. 3</td>
</tr>
<tr>
<td>6</td>
<td>Feb. 13</td>
<td>Plate boundaries/tectonic environments</td>
<td>p.79-95 Ch. 4</td>
</tr>
<tr>
<td>7</td>
<td>Feb. 18</td>
<td>EQ forecasting</td>
<td>p.95-109 Ch. 4</td>
</tr>
<tr>
<td>8</td>
<td>Feb. 20</td>
<td>EQ/tectonic environments in US and Canada</td>
<td>p.110-141 Ch. 5</td>
</tr>
<tr>
<td></td>
<td>Feb. 25</td>
<td><strong>Test I</strong></td>
<td></td>
</tr>
</tbody>
</table>
ACADEMIC INTEGRITY STATEMENT: Each student must pursue his or her academic goals honestly and be personally accountable for all submitted work. Representing another person's work as your own is always wrong. Faculty are required to report any suspected instances of academic dishonesty to the Academic Judiciary. Faculty in the Health Sciences Center (School of Health Technology & Management, Nursing, Social Welfare, Dental Medicine) and School of Medicine are required to follow their school-specific procedures. For more comprehensive information on academic integrity, including categories of academic dishonesty, please refer to the academic judiciary website at http://www.stonybrook.edu/uaa/academicjudiciary/

AMERICANS WITH DISABILITIES ACT: If you have a physical, psychological, medical or learning disability that may impact your course work, please contact Disability Support Services, ECC (Educational Communications Center) Building, room128, (631) 632-6748. They will determine with you what accommodations, if any, are necessary and appropriate. All information and

Faculty/TA responsibilities:
• Produce a clear and detailed syllabus and adhere to it.
• Present course material in a straightforward and well-organized fashion.
• Create exams that accurately assess knowledge of material discussed in class.
• Post grades in a timely manner (usually within 48 hours).
• Be available during office hours for extra help with course content.

Student responsibilities:
• Knowing and adhering to the policies and schedule outlined in the syllabus.
• Maintaining professional behavior in class and during exams.
• Keeping up with grades on Blackboard.
• Using all possible methods for learning and mastering course content (coming to class, taking notes, asking questions during class, reading the assignments, studying the lecture notes and notes taken in class).
• If you miss class, you are responsible for getting notes and finding out what you missed from a classmate.

Email should be reserved for specific questions about course content or for setting up a meeting with the professor. Questions that can be answered by looking at the syllabus, or questions arising from having missed a class, are not likely to receive a response from me. Examples: “When is the exam?” “What did I miss in class today?” “Are we doing anything important in class today?” “What are the extra credit options?” “I am only 1 point away from [desired grade]. Can you bump me up to [desired grade]?”