OCEAN/ESS 410: Marine Geology and Geophysics (4)

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Class Meeting Times and Locations:
Lectures M/W 9:30-10:20 Ocean Sciences Building 425
Lab Section AA TTh 9:30-11:20 Ocean Sciences Building 111 (GIS Lab)
Lab Section AB TTh 1:30-3:20 Ocean Sciences Building 111 (GIS Lab)

Office hours:

Instructor - after lectures, during/after labs or by appointment.

TAs – after/before lectures, during/after labs or by appointment.

Please include Ocean 410 or ESS 410 in the subject line of e-mails

Class Web Site:
http://www.ocean.washington.edu/courses/oc410/
This is the source for updated class information so please use it.

Class e-mail:
multi_ocean410aa_au14@uw.edu
Goes to all the class but you must send the e-mail from your UW e-mail account.

Syllabus and Format:
The aim of this class is to provide a basic introduction to the geological and geophysical processes that form and shape the ocean basins and their margins. The class schedule comprises two 1-hour lectures per week and two 2-hour labs many of which are computer-based. The benefit of the labs is that they emphasize learning through doing rather than listening. The disadvantage is that the class works if you do not attend on a very regular basis.

In the class, we will first learn to interpret global bathymetric maps in terms of plate tectonics and spend a lab comparing the Earth to other planets. We cover some of the geophysical
techniques used to characterize the Earth and discuss how the shape of the ocean basins results from the cooling of the oceanic plates. We will learn how earthquakes are located and how we can deduce the style of faulting from earthquake records. We study volcanic and tectonic processes at mid-ocean ridges and subduction zones. We will then move on to understanding the role of sedimentary processes in shaping continental margins and briefly look at sediments in the deep oceans.

There will be two weekend field trips: a class field trip to Mt. St. Helens and a make up field trip to the beaches of the Olympic Coastline. You are required to participate in one.

**Textbook:**
There is no required textbook for this course. Optional background reading is on the website help you get more details or alternative perspective of the material presented.

**Other Sources of MG&G:**
- OCEAN 230 Rivers and Beaches – Nittrouer & Montgomery (fall)
- OCEAN 450 Climatic Extremes – Johnson and Quay (winter)
- OCEAN 454 Hydrothermal Systems: An Interdisciplinary View – Lilley & Baross (winter)
- OCEAN 411 Juan de Fuca Ridge / Hydrate Ridge Cruise – Kelley & Delaney (summer)
- MG&G Seminar – Mondays 12:30-1:20 in MSB 123

**Class Format:**
- Lectures – 2 per week
  - PowerPoint files available on line (requires UW Net ID)
- Labs – 2 per week
  - You learn best by actively doing things.
  - Available on-line but you will be provided with a paper copy at the start of the lab.
  - Aim to turn in at end of lab session.
  - Due for full credit no later than the start of the following lab.
  - Bring a ruler, calculator, pencil, and memory stick to each lab.
- Optional background reading to help you understand concepts in more depth
- Term paper, selection, statement of news, draft and final - News and Views article (only 500 words or 1.5 double-spaced pages)
- Presentations
- Mid-term (tentatively in lab Tues, Oct 28 but we will discuss and finalize)
- Final or 2nd mid-term (in OSB 425 Wed, Dec 10)

**Weekend Field Trips:**
- Mt. St. Helens - Sat/Sun October 11-12
- Olympic Peninsula Beaches - Sat/Sun October 25-26 (joint with OCN/ESS 230 field trip)
You are required to participate in one of the weekend field trips – the second is a makeup and while very interesting it is not closely linked to the content of this class. If you miss both there is no makeup for the makeup. You can participate in both but will not get any extra credit.

**Grading:**

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<thead>
<tr>
<th>Percentage</th>
<th>Component</th>
<th>Notes</th>
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</thead>
<tbody>
<tr>
<td>20%</td>
<td>Mid-term exam**</td>
<td>(assuming 2-hr mid-term)</td>
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<tr>
<td>20%</td>
<td>Final exam**</td>
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<tr>
<td>30%</td>
<td>Lab exercises, Paper Discussions, Field Trip Write Up*</td>
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<tr>
<td>5%</td>
<td>Draft version of ‘News &amp; Views’ article**</td>
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<tr>
<td>10%</td>
<td>Final version of ‘News &amp; Views’ article**</td>
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<tr>
<td>10%</td>
<td>In-class presentation</td>
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<tr>
<td>5%</td>
<td>Field Trip Participation (Mt. St. Helen's or Olympic Beaches)</td>
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*Your two worst lab / paper discussion scores will be excluded from final grade.

**A score above zero is required in each of these components to pass the class.

**Policies:**

- Lab exercises will be due at the start of the following lecture.
- Other assignments will be due on date stated on the assignment and on the website.
- Unless you have a valid reason for turning in homework late and you notify the Instructor or TA as soon as practical, assignments turned in up to 1 week late will be graded for 50% credit.
- If you are ill or have another good reason and let us know as soon as practical we are very flexible on deadlines. If you have to miss a couple of labs you can also take advantage of the fact that your 2 worst lab scores are excluded from the grade although the labs feature a lot in the exams.
- You are encouraged to work collaboratively on the labs but everyone should turn in their own set of answers.