WELCOME TO EOSC 310: Earth and the Solar System, Spring 2008

(last updated 7 January 2008)

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COURSE GOALS

Human society on this planet is faced with extraordinary circumstances here at the beginning of the 21st century. Population growth, resource use, and climate change are a few of the big issues about which we make decisions every day. Our decisions have far-reaching effects. How will we address these challenges? In order to make *evidence-based decisions*, we need to understand and use the process of science. How do we gather appropriate evidence? How do we evaluate evidence? How do we ask the next questions? Each of us makes important choices, therefore, scientific skills are useful to each person, not only to those who work in scientific fields. We will use the broad topic "Earth and the Solar System" to progress toward the following goals:

1. Apply an evidence-based, logical, scientific approach to ask and address questions about our planet and solar system.
2. Explain everyday observations of the natural world in terms of planetary processes.
3. Interpret observations of other solar system bodies using knowledge of how Earth works.
4. Recognize the complex links among geologic, oceanic, and atmospheric processes.
5. Identify and use appropriate time scales to describe and link different planetary processes.
6. Articulate the relevance of earth science to individuals and to society.
7. Evaluate earth science-related topics presented in the media, on the basis of the evidence presented and your knowledge of physical processes.

RESOURCES

1. Course web page. Go to http://www.elearning.ubc.ca/vista/ , login to the VISTA system (this is the "new" WebCT. Don't go to WebCT!) using your Campus-Wide Login (CWL), then click on EOSC 310. If you don't have a CWL, go to http://www.it.ubc.ca/cwl and request one. If you have a CWL and you're registered for this course, but you don't see our course listed, email the instructor and include your CWL in your message. The course web page is the place to look for all course resources, including answers to most of your questions. There you'll find:
    a. This syllabus
    b. Announcements & useful links
    c. Pre-class assessments, to be completed using the VISTA Assessments tool (be aware! These have deadlines!)
    d. PDFs and Powerpoints of slides shown in class. If you'd like to print out and bring the PDFs to class with you, or work off the Powerpoints electronically, keep in mind that you may need to add information to the slides and that some items are purposely omitted pre-class (such as details of in-class activities and answers to questions posed in class). Additional slides will be posted after class to supplement. Keep in mind that these files are a *guide* to a *presentation*. They are not intended to be full-blown notes, nor a textbook. You'll do well to add your own notes during the class. It's up to you to ensure you have the most current and complete materials when studying for exams.
    e. Exam details and study guides
2. Required textbook: "Understanding Earth", 5th edition, by Grotzinger et al., 2007, Freeman Publishing. ISBN: 0-1767-6682-5
3. Required other equipment: one pack of 3"x 5" index cards (white, lined).
4. The Earth Course Assistance Centre (ECAC). This is a help desk staffed by Teaching Assistants 4-6 hours per day. You can go there to get help with assignments, readings, or any course related issues.

ECAC is located in EOS-Main room 135A. Email is ecac (at) eos.ubc.ca or you can fill out the email form at: http://www.eos.ubc.ca/courses/ecac/mailecac.html. Phone number is 604-822-9005. Schedule is posted at http://www.eos.ubc.ca/courses/ecac/

SCHEDULE

This course is divided into 6 principal topic sections:

(1) Origins & structure of the solar system
(2) Planetary structure
(3) Plate tectonics – the unifying theory of geology on Earth (what about elsewhere?)
(4) Atmospheres and energy: terrestrial planets vs. the gas giants
(5) Oceans and water on Earth (and elsewhere?)
(6) Planetary climates, from mass extinctions to current climate trends.

For pre-class preparation, you'll need to do some reading. The readings are listed on each day's webpage on the VISTA site. They are primarily from Grotzinger, but also include readings from websites and from scientific articles. There's lots of great extra detail in Grotzinger. Don't hesitate to read more if you feel you want or need more information. **Non-textbook readings are available via links on the course website**. Pre-class assessments (done in VISTA, typically due by 8 am on the day of class) will be based on these readings. Some work in class will rely on your preparedness to discuss the material with your peers.

DATE	TOPIC	PRE-CLASS ASSESSMENT DUE?
8-Jan	**Introduction, Science, Learning Goals**	No
10-Jan	**Our Solar System in Space**	*Yes, but this one's for practice.*
15-Jan	**Solar System Architecture I: Formation**	*Check VISTA*
17-Jan	**Solar System Architecture II: Dynamics**	*Check VISTA*
22-Jan	**Planetary structure I: Earth's evolution & planetary layering**	*Check VISTA*
24-Jan	**Planetary structure II: Planetary interiors & seismic evidence**	*Check VISTA*
29-Jan	**Planetary structure III: Earth's outer layers and crustal rocks**	*Check VISTA*
31-Jan	**Planetary Structure IV: Interpreting the geologic record**	*Check VISTA*
5-Feb	**Plate tectonics I: The unifying theory**	*Check VISTA*
7-Feb	**Plate tectonics II: Plate boundaries & motion**	*Check VISTA*
12-Feb	**Plate tectonics III: Evidence and magnetism**	*Check VISTA*
14-Feb	**Plate Tectonics IV: Earthquake action**	*Check VISTA*
	READING WEEK	*Check VISTA*
26-Feb	**Plate Tectonics V: Volcanism**	*Check VISTA*
28-Feb	**Atmospheres I: Composition & structure**	*Check VISTA*
4-Mar	**MIDTERM**	No
6-Mar	**Atmospheres II: Energy & heat budgets**	*Check VISTA*
11-Mar	**Atmospheres III: Circulation & Coriolis**	*Check VISTA*
13-Mar	**Atmospheres IV: Storms & geostrophic flow**	*Check VISTA*
18-Mar	**Oceans I: Wind-driven circulation**	*Check VISTA*
20-Mar	**Oceans II: Thermohaline circulation**	*Check VISTA*
25-Mar	**Oceans III: Water & life**	*Check VISTA*
27-Mar	**Climate I: Long-term climate change and tectonics**	*Check VISTA*
1-Apr	**Climate II: Abrupt climate change and meteor impacts**	*Check VISTA*
3-Apr	**Climate III: Orbital cycles & the ice ages**	*Check VISTA*
8-Apr	**Climate IV: Recent trends and human activities**	*Check VISTA*
10-Apr	**Climate V: The future & mitigation strategies**	*Check VISTA*

EVALUATION

You will be evaluated on a variety of in-class and out-of-class activities. Here's the breakdown:

Pre-class assessments	10%
Class Participation	10%
Midterm	35%
Final exam	45%

It is possible to earn ***up to 3% extra credit*** by presenting and submitting a **News Report** (see below).

Pre-Class Assessments (10% of your mark)

These are short quizzes based on the assigned reading, administered in VISTA. Check the "Learning Modules" area for details before each class. You are welcome to discuss the *reading* with anyone you'd like PRIOR to starting the quiz, but NOT during the quiz. It is completely inappropriate to share/exchange information about the quiz unless ALL students involved have already completed it. See webpage about academic conduct and misconduct below. Deadlines for completing the pre-class assessments are typically 8 am the day of class. I will throw out your **five** worst quizzes before calculating final marks, so you are free to have computer problems (and fix them) or simply skip a few of these assessments. I recommend you don't start skipping them until later in the term.

Class Participation (10% of your mark)

We will do a variety of individual and group exercises in class. It's to your benefit to be present and participate, not only for these marks, but the exercises will help you prepare for the exams. Peer reviews of other students' oral presentations will also be included in these marks. If you know that it will be difficult for you to attend class, I advise you to take the Distance Education version of this course, or a different course.

Exams (80% of your mark)

The midterm will take place during the regular class period in the usual classroom. The final exam will be scheduled for sometime in April by UBC. The final exam will be cumulative in the sense that you will likely need to integrate concepts from the first and second half of the course.

Extra Credit (0-3% possible)

OPTIONAL NEWS REPORT

During each class meeting there will be a NEWS REPORT, given by up to three student volunteers who wish to earn extra credit in the course. These reports will contribute to your achieving learning goals 6 and 7. If you wish to present a news report, look in "Assignments" in VISTA for instructions about how to sign up, how to prepare, and how you can expect to be marked. Be sure to read everything carefully. All students in class on days with News Reports will complete peer evaluations of those reports. These are part of your class participation.

ACADEMIC CONDUCT

Neither I nor the University is sympathetic to academic dishonesty. For more information, here is the University's webpage about academic conduct and misconduct:

http://students.ubc.ca/calendar/index.cfm?tree=3,54,111,959