Earth and Environmental Sciences 101 – Fall 2011
Dynamic Earth: Introduction to Geological Sciences
Lecture: MWF 12:10 – 1:00 pm
Stevenson Center 4327

Instructor Dr. Dan Morgan
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Office hours: M: 1:30 – 3:30 pm (SC 5723)
T: 4 – 5 pm (Grins café) or by appointment

Required text: *Geology, 4th edition*, by Chernicoff and Whitney

Course goals: What students should be able to do after taking this class:
1. Explain the fundamental processes that affect the earth, how these processes are manifested, and why it is important to understand these processes.
2. Explain deep time and how it affects the human perspective, particularly their own.
3. Explain the operation of major earth cycles and how these cycles link diverse components of the earth.
4. Know and understand enough to learn about the earth independently and to succeed in upper level EES courses.
5. Evaluate social/political controversies that are based on geological problems (e.g. groundwater availability; development in flood-prone areas) as presented in the literature for non-specialists and assess the scientific validity of arguments presented by each side.
6. Evaluate the importance of scientific uncertainty in understanding the earth's processes and what this means for the future.

Exams and Grading

Your course grade will be based on three semester exams, a comprehensive final exam, homework assignments, and class participation.

Each semester exam will be given during class and is noncumulative, covering only the material presented since the previous exam. Exam material will be based primarily on class lectures and secondarily on the course textbook. Not everything that you are expected to know is covered in lecture. The final exam is cumulative and will be administered at the scheduled Final Exam time and at the alternative time. Check the Final Exam Schedule on the registrar's webpage for the official times.

Homework assignments will be posted on OAK with a due date. Homework assignments are due at the beginning of class on the date they are due. Late homework assignments are accepted for half credit. There will be five or six homework assignments during the semester.

Most class sessions, I will ask you to write a brief response to a question on a piece of paper. I will collect these at the end of class and register who wrote one. These responses will be graded on effort and not on whether or not they are correct. These responses will be used to determine your Participation grade, so make sure you write your name on each one. There will be ~30 of these response questions during the semester. I will drop 3 of these from your Participation grade.

Students are expected to attend every class, especially when there is an exam. No make-up exams are given unless a student makes prior arrangements and has a legitimate excuse.

Evaluation

| | |
|---|---|
| 3 semester exams and cumulative final (17.5% each) | 70% |
| Homework assignments | 15% |
| Participation | 15% |
| **Total** | 100% |

Extra credit

There are two opportunities for students to earn extra credit in this course. 1) To encourage students to explore recent and relevant earth processes and issues, students can read an article, watch an earth-oriented TV program, attend a lecture, or investigate a pertinent website and come discuss the issue with me or a TA during office hours. Students are encouraged to print out the article, bring a ticket or program from a lecture, or take detailed notes of the program to document that you were actually there. 2) To encourage active participation in lecture, students can write down five thoughtful and well-developed questions from lecture and ask these questions during office hours. By coming to office hours and completing one of these exercises, a student will earn 0.5% added to their final grade.

A few rules apply to these extra credit opportunities. Students may only come to my office hours or to TA office hours (check OAK for TA office hours) to earn extra credit. Extra credit options are not available by appointment. A student may only exercise each extra credit option once before each semester test and the final exam. This means that a student could do both extra credit options before Exam #1, and again before each following exam, for a total of 4 times. The maximum amount of extra credit available is 4%. The deadline for fulfilling an extra credit option is December 2, 2011. The TAs and instructor are not expected to stay after the listed office hours to complete extra credit options.

Participation

Active participation during lecture is vital to the success of this class for everyone. Primarily to facilitate my getting to know each of you, a seating chart will be made during the second week of class. Although I do not take attendance, remember that the participation sheets are 15% of your final grade. Occasionally, I will ask for volunteers or ask specific questions of a student during lecture. Your cooperation during these exercises is entirely voluntary and will not affect your participation grade.

Electronic devices

In my experience, electronic devices are more distracting than they are helpful in the classroom, and some research indicates that laptop use prevents true “course engagement” and information processing. Furthermore, electronic devices are often distracting to other students, and because of this, I strongly discourage the use of them in class. This includes, but is not limited to, laptop computers, music players, cell phones, and gaming devices. If you are seen using these devices foolishly, you may be publicly shamed.

If you want to use a laptop in class, you must sign a contract that states that you will only use the computer for classroom activities such as taking notes. To sign a contract, you must come to my office and discuss your computer use with me. If you are caught using your laptop for non-class related activities (such as checking email, Facebook, shopping, etc.), your laptop privileges will be revoked for the remainder of the semester. Teaching assistants will maintain a list of students who have signed a contract for laptop use, and if you are caught using a laptop without a signed contract, you will lose the privilege to use one in class and lose your participation score for that day.

Course materials

All class material other than the textbook will be posted on OAK. Outlines indicating the order of topics we will cover in class will be posted for each major area that we cover. In many cases, these are

organized differently from the way the textbook is organized. There will be a PowerPoint lecture for each class, and these will be posted prior to each class. Sometimes, a single PowerPoint lecture will be used for multiple lectures. Do not depend on the slides for all of your notes because they do not provide "everything you need to know." Active class participation, careful reading of the textbook, thinking about all of the material, and asking questions are crucial activities to succeed in this class.

Course communication

Most communication from me regarding lecture and exam information will be posted on OAK, or will be sent to the entire class in an email. I strongly encourage you to check OAK for an announcement before you email me a question about class logistics. Due to the size of the class, email is not a very efficient way to get a hold of me. I will make every effort to read every email that is sent to me, but I may not respond to every email. I prefer to converse with students in person rather than use email, particularly about class content, grades, and other substantive issues.

**Grades for individual assignments/exams will be posted on OAK, but do not depend on OAK to calculate your final grade correctly. Final grades will be calculated by hand.*

Student integrity

All work in this course is governed by the Vanderbilt Honor Code, in both its letter and intent. There will be zero tolerance for cheating and plagiarism – if you are in doubt of something or concerned about anything, please see me. For those new to Vanderbilt, or in need of a refresher, see the Honor Code website at http://www.vanderbilt.edu/student_handbook/chapter2.html.

EES 111 - Laboratory to Accompany EES 101

The EES 111 laboratory course is designed to complement lecture material, and I encourage all students in EES 101 to also take the EES 111 course at the same time. Students register for EES 101 and 111 separately. Students do not have to register for EES 111 if they are in EES 101, but students may not enroll in EES 111 unless they are registered concurrently for EES 101. Space in each section of EES 111 is limited to 20 students by the size of the lab room, and students must attend the EES 111 lab section in which they are registered. Details regarding the lab evaluation and expectations will be provided in lab by your TA. Lab sections meet the first full week of classes in the semester.

*Teaching Assistants*

Labs in EES 111 are taught by teaching assistants working closely with each other and myself. Teaching assistants also take turns helping in the lecture sessions and with grading. Questions about the labs should be direction to the section lab TA. The teaching assistants this semester are: Susanne McDowell, Lindsey Yann, Greg George, and Lauren Williams.

Special needs

If you have any issue that may impact your course work, please let me know early in the semester so that we can help with accommodations. You should also contact EAD to register with them (322-4705; http://www.vanderbilt.edu/ead/ ).

Tips for succeeding in this course

1. *ATTENDANCE.* Hands-down the best way to do well in this course is to attend lecture, take good notes, ask questions, and be an active participant.
2. Use the textbook. The textbook is a great tool and should be used to reinforce concepts from class. Remember that you will be responsible for all assigned material from the textbook, even if it is not discussed in lecture.
3. Stay current. We cover a lot of material in this course, so it is important not to fall behind.
4. Take note of the 'systems' level organization in earth sciences. This will become increasingly important later in the course and for the final as we integrate ideas from the entire semester to give you a more comprehensive understanding.

Course schedule (subject to change)

| Week | Topic | Text reading |
|---|---|---|
| 1 | Earth systems | Chap. 1 |
| 2 | Plate tectonics | Chap. 1, 11, 12, 13 |
| 3 | Minerals | Chap. 2 |
| 4 | Igneous rocks | Chap. 3, 4 |
| 5 | Sedimentary rocks | Chap. 5, 6 |
| 6 | Metamorphic rocks/Rock cycle | Chap. 5, 7 |
| 7 | Structure & Earthquakes | Chap. 9, 10, 11 |
| 8 | Geologic time | Chap. 8 |
| 9 | Assembling continents | Chap. 1, 11, 12, 13 |
| 10 | Energy | Chap. 20 |
| 11 | Hydrologic cycle | Chap. 16 |
| 12 | Landscapes made by water | Chap. 15, 17, 19 |
| 13 | Atmospheric cycles | Chap. 18 |
| 14 | Climate change | Chap. 17 |
| **Important dates** | | |
| Sept. 7 | HW #1 due | |
| Sept 14 | HW #2 due | |
| **Sept. 21** | **Exam #1** | **Through 9/16** |
| Sept 26-29 | Supervolcano movie showings | Times TBA |
| Oct. 5 | HW #3 due, Supervolcano response | |
| Oct. 12 | HW #4 due | |
| **Oct. 19** | **Exam #2** | **Through 10/14** |
| Nov. 2 | HW #5 due | |
| Nov. 9 | HW #6 due | |
| **Nov. 16** | **Exam #3** | **Through 11/11** |
| | **Final exam** | **See final exam schedule** |