



Fundamentals of Geology – Spring, 2015

The University of Toledo - Department of Environmental Sciences
EEES 2100 - 001 (24480)

Instructor: Dr. Don Stierman dstierm@utnet.utoledo.edu

Office Hours: W 11 – 2, R 11 – 1 in BO 3045A (phone 419-530-2860)

Class Location: BO 1006 or BO 1010 (computer lab session dates will be posted)

Class Day/Time: M & W, 9 – 10:50¹. 4 Credit Hours

Field trip required! Leave late morning, April 17, return to campus late Sunday, April 19. 2 nights camping, primitive conditions.

It is highly recommended that each student enroll in EEES 1020 (Introductory Geology Laboratory) immediately if not already enrolled.

COURSE/CATALOG DESCRIPTION: Consideration of earth materials and the dynamic external and internal processes active on earth; the physical and biological history of the earth. Required overnight field trip [Fall, Spring] Prerequisite: CHEM 1090 or 1230.

COURSE OVERVIEW: In this course you will learn about the Earth's materials and what makes it up, the Earth's processes, and Earth's history. You will have the opportunity to do this through readings, lectures, computer labs, and hands on exercises. You will be able to demonstrate your understanding through web based assignments, computer labs, field trips, in class discussions and exams.

¹ The official schedule is 9 – 10:40 (100 minutes contact) but we will take a 10-minute break about half-way through the class period.

STUDENT LEARNING OUTCOMES

By the end of the course you should be able to explain

- How the Earth was formed
- What the Earth is made of
- How the components of the Earth arranged
- What the dominant processes acting on the Earth are
- How and where those processes affect the Earth
- How those processes affect you
- How the Earth has changed through time, and the stages of the Earth's evolution and the evolution of life (T)
- Students will associate rocks with the environments in which they formed (T)
- Students will describe observations key to the development of the plate tectonics theory (T)
- Given a physical relief map of Planet Earth, students will use topographic, bathymetric and other clues to correctly draw major plate boundaries and correctly which kind of boundary (convergent, divergent or transform) each is (T)

(T) means this will probably be part of a midterm or the final exam.

TEACHING STRATEGIES

- 1. You will prepare for most class meetings by taking a short on-line quiz that covers the main points of the next lecture or computer lab. You should look for the best answers for these questions as you read the assigned material. This 'theory of first encounter' introduces you to the basics, allowing me to get into greater depth in the classroom.**
- 2. You will use 'clickers' to respond to multiple choice questions embedded in lectures. This tells us if you caught the important concepts. If most of the classes misses the point, this is the best time to repeat, review and better explain.**
- 3. You will explore dynamic Earth using an interactive computer lab, examining observations that led to the development of the plate tectonics theory. You will also explore earthquakes and volcanoes using the same platform.**
- 4. We will experiment with some in-class group activities and Web exploration. Although active learning is proving superior to listening to lectures, I am not yet prepared to completely 'flip' my classroom.**

PREREQUISITE: CHEM 1090 or 1230.

REQUIRED TEXT: EARTH: Portrait of a Planet (4th edition) by Stephen Marshak. W.W. Norton & Co., ISBN 978-0-393-93518-9

TECHNOLOGY REQUIREMENTS

1. Preview quizzes will be posted on Blackboard beginning 1/13. The grade book is on Blackboard. Many resources required for this class are posted on Blackboard.
2. Each student needs a Responsive Innovations ResposeCard RF and register the unit code with me before Monday, January 26.
3. Each student need a thumb drive by Wednesday, January 14. This item will store files needed to Explore Dynamic Earth.
4. If most students have tablets or laptops that can surf the Web, I hope to develop exercises to make use of this resource. But I will not require students who do not have these devices to purchase one.



This image shows the RI ResponseCard RF. RF stands for Radio Frequency. Some of the older cards use infrared.

Note: class will meet but students who drive to campus will not be counted as absent if there is a Level 1 or Level 2 snow emergency. You are still expected to complete the preview quiz. Excused absences are granted for serious health or personal issues that are documented. An obituary or dated receipt from MD or pharmacy is sufficient. Court dates also qualify for excused absence except for DWI.

COURSE EXPECTATIONS

Students are expected to be seated, equipped with the appropriate hardware (see Technology) at 9 AM.² 2 or more unexcused absences deducts one letter from final grade.

Students are expected to read assigned material and complete all preview tests on schedule.

Students are expected to post an avatar to Blackboard³ and participate weekly in Bulletin Board discussions.

Students are expected to submit assignments when they are due.

Students are expected to take tests as scheduled.

Students are expected to make preparations for the April field trip. We have sufficient tents for the class but you will need sleeping bags and appropriate clothing (shoes, rain gear, etc.) for a long mid-April hike.

GRADING

Points accumulate as follows:

Preview quizzes: 25%

Exploring Dynamic Earth worksheets (4): 15%

Correct clicker responses:⁴ 5%

Field trip conduct and report: 10%

Misc. assignments and group in-class projects: 10%

In-class participation: 5%

Midterms (2 40-minute): 15%

Final exam (comprehensive!) 15%

Late assignments are subject to grade reduction if one week overdue. Assignments more than 2 weeks might not be accepted.

Midterm Grading

Your midterm grade will be calculated based on preview quizzes, worksheets and assignments due before March 1, your clicker response record, participation, and the first midterm exam.

Final Grading

This course uses the A – F scale, where $F < 59$, $60 < D < 69$, $70 < C < 79$, $80 < B < 89$, > 90 is A. + or – are used when the one's digit is 0, 1 or 8, 9 respectively.

² As a former seismologist with German ancestors, I am a bit of a fanatic about punctuality.

³ This will help me link names with faces more rapidly.

⁴ When taking opinion polls, any response is counted as correct.

COMMUNICATION GUIDELINES

I send announcements via Rocket Email, so please check your Rocket inbox frequently, even if you do most of your email using another service.

Contact me by email if you have an urgent need to communicate. I do not look at Blackboard Messages or Bulletin Board every day.

When visiting my office, do not knock on the hallway door unless I forgot to unlock it. Just walk in and proceed to the open door in the NW corner of the room.

COURSE SCHEDULE

1/12: Introduction (Read textbook Chapters 1 & 2)

1/14: Exploring Dynamic Earth Unit 1 (meet in BO 1010 – computer lab)

1/21: Exploring Dynamic Earth Unit 2 (BO 1010)

1/26, 1/28: Plate Tectonics (Chapters 3 and 4)

2/2: Earth materials (Chapter 5, Interlude A of Part 2)

2/4: Igneous rocks (Chapter 6)

2/9: Weathering, soil and sedimentary rocks (Interlude B, Chapter 7)

2/11: Metamorphism and the rock cycle (Chapter 8, Interlude C)

2/16: Exploring Dynamic Earth, Unit 4 - volcanoes (BO 1010)

2/18: Volcanoes (Chapter 9)

2/23: Exploring Dynamic Earth, Unit 3 – earthquakes (BO 1010)

2/25: Earthquakes (Chapter 10 and Interlude D)

3/2: Deformation and mountain building (Chapter 11)

3/4: Midterm covering plate tectonics and internal processes

Spring break

3/16, 3/18, 3/23, 3/25: Age of the Earth and organic evolution (Interlude E, Chapters 12 & 13)

3/30 & 4/2: Energy and mineral resources (Chapter 14 & 15)

4/6: Mass movements (Interlude F, Chapter 16)

4/8: Rivers (Chapter 17)

4/13: Oceans and coasts (Chapter 18)

4/15: Groundwater (Chapter 19)

4/20: The atmosphere and deserts (Chapters 20 & 21)

4/22: Glaciers (Chapter 22)

4/27: Global change (Chapter 23)

4/28: Midterm covering surficial processes, age of the Earth, groundwater, oceans and coasts, global change.

The final exam is Tuesday, May 5, 10:15 to 12:15 in BO 1006.



UNIVERSITY POLICIES: *The University is an equal opportunity educational institution. Please read [The University's Policy Statement on Nondiscrimination on the Basis of Disability Americans with Disability Act Compliance.](#))*

Academic Accommodations:*The University of Toledo is committed to providing equal access to education for all students. If you have a documented disability or you believe you have a disability and would like information regarding academic accommodations/adjustments in this course please contact the [Student Disability Services Office.](#))*

ACADEMIC POLICIES

*(Insert specific academic policies the student is expected to comply with; policies **may** include student conduct, academic dishonesty, missed class policy, student grievances, etc.)*