

GEOS 197: FIRST YEAR SEMINAR
SHAKE, RATTLE, AND ROLL:
**THE MAJESTY AND TRAVESTY OF EARTHQUAKE
SCIENCE**

Fall, 2013

Instructor: Prof. James Mills

Office: Julian 214 **Phone:** 658-4669 or 658-4654 (Secretary) **E-mail:** jmills@depauw.edu

Office Hours: 11:00 – 12:00 am MWF, or by appointment

REQUIRED TEXTS:

Doing Honest Work in College, 2008, Lipson, Charles, (free copy provided)

A Pocket Style Manual, 6th ed., 2012, Hacker, D., and Sommers, N., Bedford/St. Martins Publishers, 300 p., ISBN 978-0-312-54254-2

Earthquakes: Science and Society, 2010, 2nd ed., Brumbaugh, D.S., Prentice Hall Publishers, 264 p., ISBN 978-0-321-61228-1

Earthquakes in Human History, 2005, Zeilinga de Boer, J. and Sanders, D.T., Princeton University Press, 278 p., ISBN 978-0-691-12786-6

Predicting the Unpredictable, 2010, Hough, Susan, Princeton University Press, 260 p., ISBN 978-0-691-13816-9

CLASS PERIOD:

2:50 - 3:50 pm MWF, JSC 222

ATTENDANCE AND PARTICIPATION:

Regular attendance is required and expected. If you must miss a class due to other obligations, please be sure to get the notes from someone else in the course, and, check with me to see if there are any materials you need to pick up. Because this is a seminar your regular attendance is critical to the success of the course.

The seminar nature of this course requires that each person contribute to the daily discourse through discussion, questioning, and active listening. Evaluation of your performance in this class will be in part, how well you perform these activities on a regular basis. While discussion and questioning are probably very familiar to most of you, the process of active listening may not be. When you are *not* part of the discussion, it is important that you listen carefully and thoughtfully to the questions and comments others around you are putting forth.

GOALS OF THE COURSE:

- Learn about earthquakes, earthquake science and how modern scientists are working to better predict the occurrence of earthquakes
- Continue to develop your study skills
- Learn to critically read materials
- Continue to develop your skills as a participant in discussions
- Continue to develop your skills as a writer
- Learn how to develop, construct, and present a scientific poster
- Learn how to develop, organize, and deliver an oral presentation

THE COURSE TOPIC:

Earthquake. Most likely your immediate thoughts go to images of the ground moving up and down, buildings falling down and people being injured and killed; all of these thoughts and images are entirely accurate for a major earthquake. Earthquakes are a fundamental part of the way planet Earth works. In this course we will strive to better understand the nature of earthquakes and how scientists are working to better understand not only the origin and distribution of earthquakes but also whether or not earthquakes can be predicted. Earthquake science is a fascinating field of study that stretches far back in human history. However, even within this long history, seismologists and the general public are still plagued by deep concerns and misconceptions of what the science can, and should do with respect to predicting earthquakes. In this class we will try to deconstruct what the science can and cannot do.

COMPONENTS OF THE SEMINAR

The seminar consists of several components: reading, discussion, quizzes, oral presentations, and writing assignments. We will meet three times a week for 60 minutes. Our time will be spent discussing the books, working on skill development, making presentations, working on assignments, and viewing DVDs.

Reading: We will read three books on earthquakes: one that focuses primarily on the science of earthquakes, the second on significant earthquakes in human history, and the third on the science of predicting earthquakes.

Discussion: As you are reading the books, think about what you are reading. Take notes about anything that you might want to discuss with the seminar group. What did you find to be interesting? Why? What did you not understand? Is there anything that you disagree with and want to challenge? Are claims supported with data? Can you find any information from another source that supports or contradicts a claim? What position does the majority of the scientific community hold? Are the arguments balanced and logical? Are alternate viewpoints considered? Are references provided and are they from reliable sources?

Quizzes: Prior to our discussions, you will be given short (5-10 minute) quizzes over the assigned reading. The format will be written short answers. The quizzes are designed to ensure that you have completed the reading, have taken good notes, and have studied effectively.

Oral Presentations: You will compose PowerPoint presentations about a specific earthquake you have chosen from a list I've given you, and then, you will present your poster to the seminar group. The purpose of the presentations are to help you develop your oral presentation skills, and to present information you have learned and your ideas to the seminar group in a succinct format.

Writing Assignments: You will write four papers during the semester. The papers are sequenced through the semester so that you become progressively better at analyzing information and communicating through writing. Your four papers will be in the "public domain", meaning that they will be read not only by me, but also by other students in the seminar. Each paper will involve a first draft, editing of the first draft based on comments from your peers and from me, and a final draft. Class time will be spent on writing instruction using excerpts from the first drafts of your papers. We will work as a class to rewrite these excerpts. For each writing and speaking assignment, I will provide detailed instructions.

GRADING:

Your course grade will be determined from the criteria listed below:

Participation	10%	Paper One	10%
Quizzes	10%	Paper Two	15%
Poster	15%	Paper Three	15%
Misc. Homework	10%	Paper Four	15%

GRADE SCALE:

A	93-100%	C+	79-77%	D-	63-60%
A-	92-90%	C	76-74%	F	<60%
B+	89-87%	C-	73-70%		
B	86-84%	D+	69-67%		
B-	83-80%	D	66-64%		

WHAT DO THESE GRADES REFLECT ABOUT YOUR PERFORMANCE?:

College professors must assign grades for courses for the simple reason that this grade communicates to you and *others* how well you have mastered the course material. These '*others*' might be professors, your advisor, parents, or a future employer. If you receive an 'A' in a course, another person could, and should, expect that you are highly proficient in the material covered in that course. Some students may not have to expend much effort to master the course material while others may invest huge amounts of time and still not master the material. Unfortunately, the grade in a course must reflect how well a student comprehends the course material, high grades cannot be given simply on the amount of effort put forth as unfair as that may seem. Consider an example of a medical student that invests 80+ hours a week into a surgical procedures course, but fails to master the basic procedures. Because the student put forth a tremendous effort, the instructor passes the student with an A-. This student is now the surgeon getting ready to operate on you... This scenario can be played out in any discipline. Grades are earned, not given.

In any college-level course grades should reflect on the following about your level of knowledge:

- A** A grade of 'A' in a course indicates that you have demonstrated a *complete* understanding of the material, participated thoughtfully and in many instances, have led the discussions on a regular basis. In effect, given the right circumstances, you should be able to teach the course material to others.
- B** For those students that demonstrate an almost complete understanding of the material but who still have some areas left to master, and, have participated on a regular basis would receive a 'B' in the course.
- C** An average performance. You have mastered much of the material and have contributed to the class discussions.
- D** You have a rudimentary but weak grasp of the material and occasionally have contributed to the discussions.
- F** Your knowledge of the material is less than rudimentary and your contributions to the class discussions are most likely minimal at best. *And yes, it is possible to fail a course at DePauw, many have succeeded...*

ACADEMIC HONESTY:

Any act that places a student in unfair advantage with respect to the rest of the class will be treated according to the University procedures outlined in the Student Handbook.

SYLLABUS:

This course may be very fluid in nature with respect to topics covered and the pace of the course. I will attempt to keep to the schedule outlined in this syllabus. Changes will be announced in class as necessary.

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Course Outline and *Tentative Schedule*

<u>Day</u>	<u>Topic</u>	<u>Reading Assignment</u>
8/28	Introduction Work in College	Lipson, p. 3-53
8/30	Meet with Librarian Caroline Gilson – Library Overview	
9/2	Plagiarism – how to avoid it. A review of Lipson reading.	
9/4	Paper Assignment #1 Discussion: Earthquakes in early human history.	ZS, pgs. 22-64 BR, pgs. 3-8
9/6	Video: When the Walls Came Tumbling Down	
9/9	Quiz #1, Turn in Paper #1. Discussion topic to be announced.	
9/11	Measuring Earthquakes (use our seismographs for demos)	BR, Chp. 2
9/13	Quiz #2 Faults	BR, Chp. 3
9/16	Receive Writing Assignment #2: (4-5 page paper) First draft due 9/27 (3 copies) Receive Speaking Assignment #2: (5 minute presentation, based on Writing Assignment #2) Measuring Earthquake Size	BR, Chp. 4
9/18	Quiz #3 Earthquake Location	BR. Chp. 4
9/20	Meet with Caroline Gilson – Earthquake Paper Research Overview Plate Tectonics	BR, Chp. 6
9/23	Plate Tectonics	
9/25	Quiz #4 Plate Tectonics	
9/27	Hand in first draft of Writing Assignment #2 (3 copies) DVD	BR, Chp. 6
9/30	Peer Editing Workshop Receive Speaking Assignment #3 & #4	Edit 2 student papers

10/2	Earth's Interior	BR, Chp. 7
10/4	Earth's Interior	BR, Chp. 7
10/7	Quiz #5 Triggering and Prediction of Earthquakes	BR, Chp. 9
10/9	Hand in final paper for Writing Assignment #2 Receive Writing Assignment #3: (5-6 page paper) Due 10/18 Earthquake Prediction	H, Chps. 1,2
10/11	Earthquake Prediction	H, Chps. 3
10/14	Earthquake Prediction	H, Chps., 4
10/16	Earthquake Prediction	H, Chps., 5, 6
10/18	Quiz #6 Earthquake Prediction	H, Chps., 6, 7
Fall Break – Saturday, October 19 through Sunday, October 27		
10/28	No Class - GSA	
10/30	No Class – GSA	
11/1	Hand back first draft of Writing Assignment #3 Writing Workshop	
11/4	Earthquake Prediction	H, Chps., 8, 9
11/6	Quiz #7 Earthquake Prediction	H, Chps., 10, 11
11/8	Hand in final paper for Writing Assignment #3 (1 copy) Receive Writing Assignment #4	
11/11	Earthquake Prediction	H, Chps., 12, 13
11/13	Quiz #8 Earthquake Prediction	H, Chps., 14,15
11/15	Earthquake Prediction	H, Chps., 16, 17
11/18	Earthquake Prediction	H, Chp. 18
11/20	Quiz #9 Open	
11/22	Oral Presentations:	
11/25	The State of Earthquake Science: L'Aquila, Italy 2009	

Thanksgiving Recess – Wednesday, November 27 through December 1

- 12/2 The State of Earthquake Science: L'Aquila, Italy 2009
Hand in first drafts, part 1
- Individual Conferences (11/30-12/5)
- 12/4 Student Course Evaluation
- 12/6 Final Presentations
- 12/9 Final Presentations
- 12/11 Final Presentations
- 12/13 Wrap Up

Final Papers Due by 4:00 p.m. on Monday, December 9

Prof. James Mills

Dept. of Geosciences

Fall, 2013

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	<i>Monday</i>	<i>Tuesday</i>	<i>Wednesday</i>	<i>Thursday</i>	<i>Friday</i>
<i>8 - 9:00</i>					
<i>9 - 10:00</i>					
<i>10 - 11:00</i>					
<i>11 - 12:00</i>	Office Hour		Office Hour		Office Hour
<i>12 - 1:00</i>	Geos 280 12:30-1:30		Geos 280 12:30-1:30	Geos 280	Geos 280 12:30-1:30
<i>1 - 2:00</i>				Lab	
<i>2 - 3:00</i>	Geos 197 2:50-3:50		Geos 197 2:50-3:50	12:40-3:30	Geos 197 2:50-3:50
<i>3 - 4:00</i>					
<i>4 - 5:00</i>	<i>Faculty or Department</i>				
<i>5 - 6:00</i>	<i>Meeting</i>				
<i>6 - 7:00</i>					
<i>7 - 8:00</i>					
<i>8 - 9:00</i>					

Geos 197 = First Year Seminar: Earthquake Science, JSC 203

Geos 280 = Mineralogy, JSC 226