

**TEXAS A&M UNIVERSITY – CORPUS CHRISTI
COLLEGE OF SCIENCE AND TECHNOLOGY**

**GEOLOGY 3422 – GEOPHYSICS
SPRING SEMESTER 2006**

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Text: *Looking into the Earth*, by Mussett and Khan., Cambridge, 2000

Class Meetings: Tuesdays and Thursdays, 5:30 p.m. to 6:45 p.m., BH 205

Course Description

This is a course in college-level Geophysics primarily for students majoring in Geology or Environmental Science. The class is open to all who have the necessary prerequisites and an interest in the study of geophysics. Prerequisites for this course are: Geology 4421 and Physics 2426 and Math 2413 or Physics 1400.

Course Objectives

Upon successful completion of this course, the student should have obtained a good understanding of:

- 🌐 the study of the earth's structure and plate tectonics
- 🌐 the basics of seismology and sequence stratigraphy,
- 🌐 the basics of the earth's gravity and magnetics,
- 🌐 the basics of GPR survey methods,
- 🌐 the basics of radiometric dating of earth materials
- 🌐 the basics of well logging and hydrocarbon exploration methods
- 🌐 the basics of the Earth's heat and volcanoes, and
- 🌐 the Chixulub and other impact structures.

Evaluation and Grade Assignment

Your final grade will be based on a % curve from the following point distribution:

A) Intra-semester Exams:	3@ 100 points	300 points
B) Final Exam:	100 points	100 points
C) Chapter Quizzes	6@10 points each, lowest grade dropped	<u>50 points</u>
		Total: 450 points

A perfect score in this course would be to earn all 450 points available. At the end of the semester, I will take the highest point total in the class and will use that high score to calculate the percentage bonus required to bring this individual's total points up to 450. That percentage bonus is then applied to everyone's individual total.

Final grading will be as follows:

A = 450-403 points B = 402-358 points C = 357-313 points D = 312-268 points F < 268 points

Exams and Quizzes

Exams can only be taken during the scheduled time, except in cases of emergencies. Documented proof is required of such emergencies. There will be NO make up exams or quizzes for unscheduled and unexcused absence! If you know you are going to miss a class or an exam and have a valid excuse, let me know BEFORE the fact, NOT after (by that time I already know...)! Make-up exams cannot be taken after the graded test has been given back to the class. There will be no exceptions!

Quizzes happen randomly and are used to encourage regular attendance in class. The odds of a Chapter Quiz occurring on a given day are inversely proportional to the number of students present in class that day. Quizzes will consist of a short series of questions to be answered in approximately 5-10 minutes at the end of the class period. Chapter Quizzes may include material covered in previous lectures or in the reading assignment for that day. So please be prepared!

Class Policies

While attendance of the lectures will not be recorded by the instructor on a regular basis, regular attendance is essential to the successful completion of this course.

Treat your co-students (and instructor) with respect. The college catalog contains the university statement on academic integrity. Cheating will not be tolerated and will result in a failing grade in the course and possible further disciplinary action by the university. **The use of cell phones, pagers, CD players, headphones and similar electronic devices is not allowed in class. If your cell phone/pager rings during lecture, you will be asked to leave the classroom!**

Special Needs

The Geology Program complies with the Americans with Disabilities Act in making reasonable accommodations for qualified students with disabilities. If you need disability accommodations in this class, please see me as soon as possible. Please have your accommodation letter from TAMU-CC Services for Students with Disabilities Office with you when you come see me. If you suspect that you may have a disability (physical impairment, learning disability, psychiatric disability, etc.), please contact the Services for Students with Disabilities Office (located in Driftwood 101) at 825-5816. It is important that you contact them in a timely fashion as it may take several days to review requests and prepare accommodations

Reading Assignments

All reading assignments are to be read prior to the class in which the material will be discussed. The following lecture schedule will be followed as closely as possible although some revisions may become necessary during the semester.

Optional Field Trips

Two optional field trips are tentative scheduled. Although not required, attendance is highly encouraged. The actual Saturday dates may be moved slightly to accommodate changing

weather conditions and/or the availability of the professionals providing the field trips. The student is responsible for his/her own transportation to the field trip site.

Important Dates

January 11	Classes begin
January 12	First Class Meeting
January 16	Holiday
February 14	Exam 1
February 18	Optional Seismology Field Trip
March 9	Exam 2
April 8	Optional Well logging Field Trip
April 20	Exam 3
March 13-17	Spring Break (campus closed)
May 02	Last day of classes
May 4	Final exam 4:00 p.m. – 7:00 p.m.

Lecture Schedule

(Schedule may change slightly as semester evolves)

January

Thur	01/12	Introduction/Data Acquisition (Chapters 1-2)
Tues	01/17	Data Processing/Global Seismology I (Chapters 3-4)
Thur	01/19	Global Seismology II (Chapter 4)
Tues	01/24	Earthquakes (Chapter 5)
Thur	01/26	Seismotectonics (Chapter 5)
Tues	01/31	Refraction Seismology I (Chapter 6)

February

Thur	02/02	Refraction Seismology II and Reflection Seismology I (Chapters 6-7)
Tues	02/07	Reflection Seismology II (Chapter 7)
Thur	02/09	Sequence Stratigraphy and Seismology in Hydrocarbon Exploration (Chapter 7)
Tues	02/14	Exam 1
Thur	02/16	Gravity (Chapter 8)
Sat*	02/18	Seismology Field Trip (Details TBA)*
Tues	02/21	Large-Scale Gravity and Isostasy (Chapter 9)
Thur	02/23	Paleomagnetism (Chapter 10)
Tues	02/28	Magnetic Surveying (Chapter 11)

March

Thur	03/02	Electrical Methods (Chapters 12-13)
Tues	03/07	Electromagnetic Methods and Ground Penetrating Radar (Chapter 14)

Thur	03/09	Exam 2
Tues	03/14	No Class (Spring Break)
Thur	03/16	No Class (Spring Break)
Tues	03/21	Radioactivity and Radiometric Dating I (Chapter 15)
Thur	03/23	Radioactivity and Radiometric Dating II (Chapter 15)
Tues	03/28	Gamma-ray surveys (Chapter 16)
Thur	03/30	Well logging I (Chapter 18)

April

Tues	04/04	Well logging II (Chapter 19)
Thur	04/06	Global Tectonics (Chapter 20)
Sat*	04/08	Well Logging Field Trip (Details TBA)*
Tues	04/11	Hydrocarbon Exploration I (Chapter 22)
Thur	04/13	Hydrocarbon Exploration II (Chapter 23)
Tues	04/18	Ore Mineral Exploration (Chapter 23)
Thur	04/20	Exam 3
Tues	04/25	Volcanoes (Chapter 24)
Thur	04/27	Impact Structures (Chapter 25)

May

Tues	05/02	Review for Final Exam
Thur	05/04	Final Exam (4:30-7:00 PM)

* Optional field trip weekends may be moved forward or backward to accommodate changing weather conditions, etc.