

Geology 3302. DINOSAURS, VOLCANOES, and EARTHQUAKES
Fall 2016, Sul Ross State University, Alpine

Instructor: Dave Rohr, 837-8167, WSB 315, drohr@sulross.edu.

Office hours MWF 9:30-11:30, TuTh 11-12, and by arrangement

General: The course is designed for those with no previous class work in geology, and it cannot be counted by Geology majors for advanced credit. The course covers several of the currently popular topics in geology: who were the dinosaurs; the world of the dinosaur; hot blooded dinosaurs; and mass extinction and the fate of the dinosaurs; meteorites and asteroid impacts. What is an earthquake and what causes them; how big and how many? Where do they occur? Case histories of earthquakes and tsunami, earthquake destructiveness – can it be controlled? Volcanic deposits and eruptive styles, case histories of volcanoes, volcanism and human affairs.

Methods of Instruction: The course consists of two and a half hours of lecture and discussion, once a week.

Class attendance policy: Attendance is expected in lectures since the exams are partly based on class notes.

Grading and examinations: Semester grade is based on homework plus three open-book, open-notes exams. Each of the exams counts equally (30%).

No electronics are allowed out on the desk during exams.

Homework, 5 assignments, 2 percent each (available online on Blackboard).

First exam, 29 September: 30 percent

Second exam, 27 October, 30 percent

Third Exam, 7 December, Wednesday (6:00 pm), comprehensive 30 percent

If you are going to miss an exam for a legitimate reason, let me know **AHEAD** of time. Incomplete (I) grades are given where passing work has been done and only a minor part of the requirements are incomplete. Grades are based on a standard curve (100-90=A; 89.9-80=B; 79.9-70=C; 69.9-60=D), and you can view your grades and *weighted average* anytime on Blackboard.

<http://blackboard.sulross.edu>.

Texts: Purchase the **print version**, so you will be able to use it on open-book exams.

Discover Texas Dinosaurs (by Finsley). ISBN 0-87719-320-7

Volcano & Earthquake (by Van Rose) ISBN-10: 0756637805; ISBN-13: 978-0756637804.

Reference Materials: Handouts will be provided which will cover additional points of the lectures.

Comprehensive lecture notes are NOT available online.

Some of the previous exams are available online on Blackboard.

CONDUCT: Students are expected to observe the University's Code of Student Conduct (see Student Handbook, <http://www.sulross.edu/pages/3633.asp>). **Please turn OFF all cellular phones, IPODs, MP3s, etc.**

DISABILITY: "Sul Ross State University is committed to equal access in compliance with the Americans with Disabilities Act of 1973. It is the student's responsibility to initiate a request for accessibility services. Students seeking accessibility services must contact Mary Schwartz, M. Ed., L.P.C., in Counseling and Accessibility Services, Ferguson Hall, Room 112. The mailing address is P.O. Box C-122, Sul Ross State University, Alpine, Texas 79832. Telephone: 432-837-8691. E-mail: mschwartz@sulross.edu .

Readings are from Discover Texas Dinosaurs, and Volcano & Earthquake.

Tentative Schedule for semester:

Week 1: August 25. Introduction

Review of Geologic Time and Plate Tectonics

Homework 1 due next week (September 4).

Week 2: September 1, Volcanoes

Week 3, September 8, Volcano Hazards

Week 4: Volcanoes 15 September

Week 5: September 22 Intro to Earthquakes

Week 6: 4 October 29, FIRST EXAM

Week 7: October 6, Earthquakes

Week 8: October 13, Earthquakes

Week 9: October 20, Intro. To Dinosaurs

Week 10: October, 27, 2nd EXAM

Week 11: 3 November, Dinosaurs

Week 12: 10 November, Tracking dinosaurs.

Week 14: 17 November, Demise of the Dinosaurs

24 November, Thanksgiving

Week 15: 1 December, Dead Day

Week 16: 7 December, Wednesday (not Thursday), 6:00 pm, Exam

EXPECTED LEARNING OUTCOMES/OBJECTIVES SLO* – Upon completion of this course, students will apply critical reasoning and problem solving skills to: 1. Identify, describe, and apply the basic geologic principles. 2. Analyze processes and settings of volcanoes and earthquakes, and relate associated features. 3. Evaluate evolutionary processes and analyze how the fossil record of dinosaurs is interpreted. 4. Apply basic classification of dinosaurs. 5. Analyze volcanic hazards present in different settings 6. Analyze earthquake hazards in different settings.

- Week 1: Introduction. Geologic time *PLO 1, Review of plate tectonics 1,2.
Week 2: Volcanoes and pyroclastic flows 2,4; Monserrat 2,4; St. Pierre 2,4
Week 3, Volcanoes and Volcanic hazards 2,4; Capulin 2,4.; Craters of the Moon, Mt. Pinatubo 2,4.
Week 4: Volcano eruptive styles and history, 1, 2. Cascades and Mt St. Helens 1,2; Krakatau 1,2; The largest eruptions 1,2; Once upon a time a volcano almost killed everybody 1,2.
Week 5: Earthquakes, 29 September. Alpine Earthquake 2,6; Tsunami hazards 2,5; P and S waves 6; San Francisco Earthquake.
Week 6: FIRST EXAM
Week 7, Earthquakes. The Day the Earth Shook 2,5; Liquefaction and demonstration 2,6; New Madrid 2,6; Earthquakes in Texas, Valentine Earthquake, 1931 2,6.
Week 8: Earthquakes and Dinosaurs. Dinosaur Family Tree 3,4;
Week 9:,Dinosaurs. Great Dinosaur Hunt 3,4.
Week 10: Dinosaurs. Miscellaneous Dinosaurs 3, 4; The Monsters Emerge 3,4.
Week 12: 10 November, Dinosaurs. ; Pterosaurs 3,4; 3, 4. For teachers: Interactive dinosaur site.
Week 11: 2nd EXAM
Week 13: Tracking dinosaurs, 3,4. Story of Big Al 3,4; Dino Tracks in West Texas 3, 4, Monsters on the Move 3,4.
Week 14: Where did the dinosaurs come from? 3, 4
Week 15. Demise of the Dinosaurs 3,4. Archaeopteryx 3,4.
Week 16. Wednesday, Exam

METHODS OF ASSESSMENT/EVALUATION – Learning outcome assessment will be made on the basis of three Exams. The exams will assess the application of critical reasoning and problem solving skills through short answer questions and multiple choice questions (with some diagrams). The graded exams will be reviewed, by discussing the logic of the answers to and content of the questions. Homework assignments will assess student problem solving skills in applying, describing, and explaining principles and processes of Earth processes and history of life on Earth by using, in part, online resources.

SCIENCE STANDARDS
Earth and Space Science

Standard X. The science teacher knows and understands the science content appropriate to teach the statewide curriculum (Texas Essential Knowledge and Skills [TEKS]) in Earth and space science.

Upon successful completion of Geol 3302, you will be able to:

- 10.1s describe properties and uses of rocks, soils, water, atmospheric gases, and other Earth materials;**
- 10.3s describe forces and processes that change the surface of Earth (e.g., glaciers, earthquakes, weathering);**
- 10.8s analyze a variety of Earth cycles (e.g., rock cycle, water cycle, carbon cycle, nitrogen cycle);**
- 10.9s analyze and describe how human activity and natural processes, both gradual and catastrophic, can alter Earth systems;**
- 10.15s analyze the processes that power the movement of Earth's continental and oceanic plates;**
- 10.16s identify and analyze the effects of plate movement, including faulting, folding, earthquakes, and volcanic activity;**
- 10.18s analyze a given landform to understand its history (e.g., weathering, tectonism);**
- 10.22s classify rocks according to how they are formed during the rock cycle;**
- 10.23s analyze factors (e.g., temperature, pressure, rate of cooling) that influence the formation of rock types;**
- 10.26s analyze the effect of natural events and human activities on the atmosphere;**
- 10.27s analyze the role of the Sun as the major source of energy for phenomena on the Earth's surface (e.g., weather, water cycle);**
- 10.44s compare and contrast the topography of the ocean floor with the topography of the continents;**
- 10.45s evaluate the causes and effects of tides, tidal bores, and tsunamis;**
- 10.48s explain how regional changes in the environment may have a global effect;**
- 10.53s analyze the relationship between current geologic theories for the origin of Earth and the geologic time scale;**
- 10.54s describe and analyze the historical development of the theory of plate tectonics, including continental drift and sea-floor spreading;**
- 10.68s analyze the effects of Earth's rotation, revolution, and tilt of axis on its Environment.**