Syllabus for
PSC/GEO 201—Principles of Earth Science Lecture
3 Credit hours
Spring 2000

I. COURSE DESCRIPTION

An introduction to the subject matter of the earth sciences: geology, oceanography, geomorphology, and meteorology. Discusses the processes at work within the earth, on the surface, and in the air and oceans. Special emphasis is given to plate tectonic theory. Corequisite: PSC 201 Lab.

II. COURSE GOALS

This course is designed to expose the student to the great ideas of the various disciplines concerned with the earth as a unit and earth-space relationships.

III. COURSE OBJECTIVES

A. Terminal Objectives

As a result of successfully completing this course, the student will be able to do the following::

1. identify and differentiate between the basic components of the earth's interior and exterior, lithosphere, hydrosphere, and atmosphere.
2. describe the major events of geologic history, including the fossil record.
3. understand the key components, supporting evidence, and historical application of plate tectonic theory.
4. describe the major creative processes relating to the subject matter of earth science and their controls, and identify the forms created by those processes.
5. discuss the key components of atmospheric processes, including storms.
6. recognize the great questions involved in the interaction of scientific and scriptural thought, and the important philosophic questions of meaning and purpose as they relate to the earth as the home of man.

B. Objectives for Students in Teacher Preparation Programs

The Teacher Preparation Program meets the competency-based requirements established by the Oklahoma Commission on Teacher Preparation. This course meets the following competencies: Subject Competencies (SC) 7.a.1, 7.a.2, 7.a.3, 7.a.4, 7.a.5, and 7.a.6.

SC 7.a.1: Is able to teach with broad understanding of all content areas and understands the interaction between the sciences and process skills as it applies to Earth/Space Science Content: Structure of the earth system.

SC 7.a.2: Is able to teach with broad understanding of all content areas and understands the interaction between the sciences and process skills as it applies to Earth/Space Science Content: Earth’s history.

SC 7.a.3: Is able to teach with broad understanding of all content areas and understands the interaction between the sciences and process skills as it applies to Earth/Space Science Content: Earth in the solar system.

SC 7.a.4: Is able to teach with broad understanding of all content areas and understands the interaction between the sciences and process skills as it applies to Earth/Space Science Content: Energy in the Earth system.

SC 7.a.5: Is able to teach with broad understanding of all content areas and understands the interaction between the sciences and process skills as it applies to Earth/Space Science Content: Geochemical cycles.

SC 7.a.6: Is able to teach with broad understanding of all content areas and understands the interaction between the sciences and process skills as it applies to Earth/Space Science Content: The universe and Earth's system.

IV. TEXTBOOKS

A. Tarbuck, Edward J. and Frederick K. Lutgens. Earth Science, 9th ed. Columbus, OH: Merrill Publ. Co., 1999.

B. Hummel, Charles. Creation or Evolution: Resolving the Crucial Issues. Downers Groves, IL: Intervarsity Press, 1989. (Provided in class)

C. Earth Science Study Guide, 9th Ed. of textbook

V. POLICIES AND PROCEDURES

A. University Policies and Procedures
1. Attendance at each class or laboratory is mandatory at Oral Roberts University
2. Double cuts will be assessed for absences immediately preceding or following holidays .
3. Excessive absences can reduce a student's grade of deny credit for course.
4. Students taking a late exam because of an unauthorized absence will be charged a late exam fee.
5. Students and faculty at Oral Roberts University adhere to all laws addressing the ethical use of others' materials, whether it is in the form of print, video, multimedia, or computer software.

B . Course Policies and Procedures
1. Evaluation Procedures
a. Grading. There are 700 points possible, as outlined below:
400—Four class unit examinations—100 points each
150—Written work
150—Comprehensive Final Exam, plus Chapter 18 (part)
b. Final letter grades will be assigned according to the following schedule:
A - 90%; B - 80%; C - 70%; D - 60%; F - below 60%

c. For test purposes students are specifically responsible for textbook (1) diagrams, (2) italicized phrases and sentences, and (3) terms in boldface type; see also the Glossary of the Key Terms in the back. **Give particular attention to the Study Guide.** Questions will be mostly in a multiple-choice or true-false format.

2. Portfolio Requirements.
None

3. Other Policies and Procedures

a. Seat Number: A seating chart will be made up, at which time each student seat location will become permanent. On **anything** turned in needs to include the student's seat number (e.g., C12).

b. Makeup of Late Examinations

(1.) Students must be prepared to take exams at the scheduled time; this is a key aspect of the college experience. Postponing an exam also gives a competitive advantage over other students. The only acceptable excuses are (1.) administratively approved absences, (2.) legitimate medical problems, or (3.) unexpected circumstances beyond the student's control. Anticipated problems should be dealt with **in advance**.

(2.) Appointments for makeup exams must be made **in person** during the instructor's regular office hours. Failure to meet a makeup exam appointment is the same as missing a regularly scheduled exam. Penalty points are normally charged for unexcused exam absences.

c. Written Assignments

(1.) 40 points—Charles Hummel, Creation or Evolution. Space will be provided on Exam 1.5 for this written assessment. The assignment may also be completed later for 80% or fewer points.

(2.) 100 points—A book review, involving a substantive work related to the earth sciences and written in an essay style and format. Information about this assignment is given in the course Study Guide.

Due date schedule: 20th class meeting, ***March 28, 2000.*** Reports submitted after March 28th but by the 26th class meeting on April 18, 2000, are limited to 80 points possible. Reports submitted after April 18th are limited to 65 points possible.

d. Extra Credit

Extra credit may be earned by reading and submitting notes on articles listed in the Study Guide, or shown on the CCTV. Credit is three points per item subject to the following limitations, to a maximum of the items listed on the following grade schedule:

Maximum toward an A = 30 points (10 items)
Maximum toward a B = 36 points (12 items)
Maximum toward a C = 45 points (15 items)
Maximum toward a D = 54 points (18 items)

e. Office Hours

Monday--Wednesday at 2:30 p.m.
Thursday 12:30 p.m. Friday 9:50 a.m.
Location: LRC 108B (Grand Canyon Country). Office No. **495-6933**

VI. COURSE CALENDAR

A. UNIT I - HISTORICAL GEOLOGY

Date	Day	Lecture No.	
1/13	R	1	Course introduction and syllabus, general philosophy about science and geology. Slide program: "The Joy of Fieldwork"
1/18	T	2	Textbook Introduction, pp. 1-14. The scientific method and the quest for truth. VC: The Universe: Accident or Design
1/20	R	3	Syllabus Review. Film: Crystal Gazing (15m). Ch. 1—Minerals and atomic structure; Ch. 10, pp. 273-77, Radioactivity and Radiometric Dating.
1/25	T	4	Ch. 2---Rocks. Film: Eruption of Kilauea, 1959-1960 (27m)
1/27	R	5	Ch. 8—Volcanoes. Ch. 9—Mountain Building. VC: Why Do We Still Have Mountains? (20m)
2/1	T	6	A. Exam 1.1—(60 points). Book Review information. Grand Canyon Study Trip information
2/3	R	7	Exam 1.1 return. Ch. 10 - Geologic Time. Charles Hummel, Creation or Evolution: Resolving the Crucial Issues (40 point written assignment on Exam 12.5).
2/8	T	8	Ch. 11. Earth History. Meleen: The Cross, Creation, and Science
2/10	R	9	Exam 1.5 (50 points). Written response based on Hummel, Creation or Evolution (40 points)

B. UNIT II—PLATE TECTONICS

Date	Day	Lecture No.	
2/15	T	10	Film: Continents Adrift (15m). Ch. 12—Physical Features of the Ocean Floor. Exam 1.5 return
2/17	R	11	Ch. 6—Earthquakes. VC: When the Bay Area Quakes (19m)
2/22	T	12	Ch. 6—Earthquake Intensity. Earth's Internal Structure.
2/24	R	13	Ch. 7—Plate Tectonics + Ch. 8 and 9---Volcanoes/Mountains
2/29	T	14	VC: In the Path of a Killer Volcano
3/2	R	15	Exam 2 (100 points). Hand in extra credit.

C. UNIT III—GEOMORPHOLOGY

Date	Day	Lecture No.

3/7	T	16	Ch. 4—Hydrology; Work of Streams. VC: The Awesome Power. Exam 2 return.
3/9	R	17	Ch. 4—Groundwater. VC: Lechuguilla: The Hidden Giant.
			SPRING BREAK -- March 13-17, 2000
3/21	T	18	Ch. 3—Weathering and Soil; Mass Wasting
3/23	R	19	Ch. 5—Glaciation. Book Reviews are due (100 points possible)
3/28	T	20	Ch. 5—Deserts; Wind Erosion. ***First extra credit deadline*** (1/2 of total possible)
3/30	R	21	Ch. 12 (314-18). Ch. 13—Ocean Water.
4/4	T	22	Exam 3 (100 points).

D. UNIT IV – METEOROLOGY

Date	**Day**	**Lecture No.**	
4/6	R	23	Ch. 14—The Atmosphere.
4/11	T	24	Ch. 16—Pressure and Wind. Global Atmospheric Circulation
4/13	R	25	Ch. 15—Moisture; Storm Energy. Film: Snowflakes (7m)
4/18	T	26	Ch. 17—Air Masses and Fronts ***Second book review deadline; 80 points maximum.***
4/20	R	27	Ch. 17—Severe Storms.
4/25	T	28	Exam 4 (100 points). ***Final extra credit deadline—in class.***
4/27	R	29	Ch. 18 (pp. 478-86) and final exam information. Special demonstration: "Let There Be Light."

FINAL EXAM (150 points). Comprehensive questions over Chapters 1-17 (see your study guide for review information).

Dr. Nate Meleen
Name of Instructor

MISSION
The lifestyle at ORU is rooted in the word "Wholeness." ORU seeks to educate the whole person, with balanced emphasis placed on the development of mind, spirit, and body.

GENERAL OUTCOMES

1. Spiritual Development
2. Physical Development
3. Communication
4. Analysis
5. Problem Solving
6. Valuing in Decision-making
7. Social Interaction
8. Global Perspectives
9. Effective Citizenship
10. Aesthetic Responsiveness

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MAJOR OUTCOMES

Analysis/Problem Solving
Has the ability to analyze, design, and obtain effective solutions to real world engineering and physics problems.

Communication/Team Work
Demonstrates ability to work on teams and communicate effectively in written and oral forms. Inter-action and communication with other educated persons and the general public.

Fundamental Knowledge Base
Possess fundamental knowledge of principles of engineering, physical sciences, and mathematics.

Global Perspectives
Global understanding of macro and physical processes.

Aesthetic Responsiveness Aesthetic appreciation through knowledge of the landscape.

Christian Stewardship and Ethics
Ethically applies scientific knowledge to the solution of human problems using Christian principles.

Spiritual Development
Spiritual understanding of science, Bible, time, and evolution issues.

Principles of Earth Science
Title of Course

COURSE GOALS
Plate tectonics and geologic history as key tools in understanding the present landscape.

Is scientifically literate in areas covered by the earth sciences.

Identify rock types, landforms, weather phenomena, and the processes controlling these.

Formulates own theory of time, origins, and creation.

Engineering and Physics
Name of Department

ASSESSMENT OF COURSE GOALS

STIMULI:

Explanation through visual aids and analogies

Video resources, especially short illustrations of a concept

Field experience

Book review on selected topics

CRITERIA:

See course Syllabus.