COURSE OUTLINE OF RECORD

Number: GEOL G106  TITLE: Earth Science For Teachers

ORIGINATOR: Bud Benneman  EFF TERM: Fall 2014
FORMERLY KNOWN AS:
DATE OF
OUTLINE/REVIEW: 05-08-2014
CROSS LISTED COURSE:
TOP NO: 1914.00
CID: GEOL 121

SEMESTER UNITS: 4.0
HRS LEC: 54.0  HRS LAB: 54.0  HRS OTHER: 0.0
CONTACT HRS TOTAL: 108.0
STUDY NON-CONTACT HRS RECOMMENDED: 108.0

CATALOG DESCRIPTION:
This lecture/laboratory study of introductory Earth Science includes physical and historical geology, physical oceanography, and meteorology, planetary science and astronomy. The Scientific Method will be employed in relation to Earth Science. The subjects covered are part of the state of California science standards for K-12 classes. Emphasis will be placed on how these topics should be addressed by teachers within the California Science Framework. A field trip will be required.

JUSTIFICATION FOR COURSE:

PREREQUISITES:
COREQUISITES:
ADVISORIES:

ASSIGNED DISCIPLINES:
Earth science

MATERIAL FEE: Yes [ ] No [X] Amount: $0.00

CREDIT STATUS: Noncredit [ ] Credit - Degree Applicable [X] Credit - Not Degree Applicable [ ]

GRADING POLICY: Pass/No Pass [ ] Standard Letter [X] Not Graded [ ] Satisfactory Progress [ ]

OPEN ENTRY/OPEN EXIT: Yes [ ] No [X]

TRANSFER STATUS: CSU Transferable[ ] UC/CSU Transferable[X] Not Transferable[ ]

BASIC SKILLS STATUS: Yes [ ] No [X] LEVELS BELOW TRANSFER: Not Applicable

CALIFORNIA CLASSIFICATION CODES: Y - Not Applicable

NON CREDIT COURSE CATEGORY: Y - Not applicable, Credit Course

OCCUPATIONAL (SAM) CODE: E

REPEATABLE ACCORDING TO STATE GUIDELINES: No [X] Yes [ ] NUMBER REPEATS:

REQUIRED FOR DEGREE OR CERTIFICATE: No [ ] Yes [X]
Anthropology ADT
Anthropology(Associate in Arts for Transfer)
Elementary Teacher Education(Associate in Arts for Transfer)
Elementary Teacher Education(Associate in Arts for Transfer)
Liberal Arts: Emphasis in Science(Associate in Arts)
Liberal Studies for Elementary Education(Associate in Arts)

GE AND TRANSFER REQUIREMENTS MET:
CSU GE Area B: Scientific Inquiry and Quantitative Reasoning
   B1 - Physical Science
   B3 - Laboratory Sciences
COURSE LEVEL STUDENT LEARNING OUTCOME(S) Supported by this course:

1. explain how the Earth’s internal processes occur, how the Earth’s surface processes occur, how plate tectonics occurs and the results of plate tectonics.
2. relate how life on earth has evolved over time; how mineral resources have formed and how their extraction and distribution affects humanity; how the Earth’s oceans have originated, evolved, and are studied and how the Earth’s atmosphere has originated, evolved, and is studied.
3. describe the occurrence and identification of common minerals and rocks; the origin and nature of geologic hazards: earthquakes, volcanoes, etc.; the manner in which the history of the Earth and life on Earth occurred; and the manner in which plate tectonics has been responsible for the structure of the Earth’s crust and mountain building.
4. identify the fundamental processes of physical oceanography; the role of plate tectonics with regard to sea floor features; the interactions between atmosphere, hydrosphere, tectonics, and humans; and the fundamentals of meteorology and climatology, and the history of climate.
5. relate our solar system with planetary science and astronomy to processes, which formed the Earth and made it unique.

COURSE OBJECTIVES:

1. explain how the Earth’s internal processes occur.
2. explain how the Earth’s surface processes occur.
3. explain how plate tectonics occurs and the results of plate tectonics.
4. explain and demonstrate to others how life on earth has evolved over time.
5. explain and demonstrate to others how mineral resources have formed and how their extraction and distribution affects humanity.
6. explain and demonstrate to others how the Earth’s oceans have originated, evolved, and are studied.
7. explain and demonstrate to others how the Earth’s atmosphere has originated, evolved, and is studied.
8. explain the occurrence and identification of common minerals and rocks.
9. explain the origin and nature of geologic hazards: earthquakes, volcanoes, etc.
10. explain the manner in which the history of the Earth and life on Earth occurred.
11. explain the manner in which plate tectonics has been responsible for the structure of the Earth’s crust and mountain building.
12. explain the fundamental processes of physical oceanography.
13. explain the role of plate tectonics with regard to sea floor features.
14. explain the interactions between atmosphere, hydrosphere, tectonics, and humans.
15. explain the fundamentals of meteorology and climatology, and the history of climate.
16. explain the fundamental concepts of astronomy and planetary geology.
17. employ the use of the Scientific Method in understanding the Earth’s internal and external processes

COURSE CONTENT:

LECTURE CONTENT:

A. Introduction
   1. Employ the Scientific Method
   2. Reasons for studying Earth Science
   3. History of geology, oceanography, and meteorology
   4. Plate Tectonics - the unifying theory

B. Earth materials
   1. Minerals
   2. Rocks
3. Economically important materials

C. Surface Processes
   1. The hydrosphere
   2. Weathering, erosion, and the atmosphere
   3. Interaction of geology, meteorology, and oceanography

D. Internal processes
   1. Plate Tectonics
   2. Earthquakes and Earth’s interior
   3. Structural geology and mountain building

E. Geologic history
   1. Geologic time and dating
   2. The fossil record and evolution
   3. History of Earth and Earth’s climate

F. Oceanography
   1. Plate Tectonics and the sea floor
   2. Physical oceanography
   3. History of Earth’s oceans
   4. Physical products of oceans

G. Meteorology and Climate
   1. Pressure, wind, and weather
   2. Weather patterns and storms
   3. Climates; their cause and change through time

H. Planetary science and astronomy
   A. Relate other planets with Earth
   B. Contrast Plate Tectonics, red soils and geological faults

LABORATORY CONTENT:

Introduction
   1. Reasons for studying Earth Science
   2. The Solar System
   3. History of geology, oceanography, and meteorology
   4. Plate Tectonics - the unifying theory

Earth materials
   1. Minerals
   2. Rocks
   3. Economically important materials

Surface Processes
   1. The hydrosphere
   2. Weathering, erosion, and the atmosphere
   3. Interaction of geology, meteorology, and oceanography

Internal processes
   1. Plate Tectonics
   2. Earthquakes and Earth’s interior
   3. Structural geology and mountain building

Geologic history
   1. Geologic time and dating
   2. The fossil record and evolution
   3. History of Earth and Earth’s climate

Oceanography
   1. Plate Tectonics and the sea floor
   2. Physical oceanography
3. History of Earth's oceans
4. Physical products of oceans

Meteorology and Climate
1. Pressure, wind, and weather
2. Weather patterns and storms
3. Climates; their cause and change through time

Planetary science Astronomy
1. Relating Earth to other planets
2. Past tectonic and weathering of rocks on other planets

METHODS OF INSTRUCTION:

A. Lecture:
B. Lab:
C. Independent Study:

INSTRUCTIONAL TECHNIQUES:

COURSE ASSIGNMENTS:
Reading Assignments

The students shall, each week, read the following: 1. Selections from the textbook 2. The introduction to each laboratory exercise 3. Handouts given in class

Out-of-class Assignments

The student, during the course of the semester, shall: 1. Follow earthquake and weather activity at appropriate web sites

Writing Assignments
1. Write brief answers to questions in the lab exercises
2. Write answers to questions at the end of chapters from the text
3. Use deductive reasoning along with measured properties to identify minerals and rocks
4. Use map reading skills and deductive reasoning to interpret topographic, geologic, and weather maps

METHODS OF STUDENT EVALUATION:
Midterm Exam
Final Exam
Short Quizzes
Written Assignments
Objective Examinations
Skills Demonstration

Demonstration of Critical Thinking:

The students shall, during the semester, undertake the following: 1. From measurements taken and observations made from weather stations, perform weather predictions 2. Use the measuring of physical properties of minerals to identify known minerals 3. Identify unknown rocks by using the texture and observed mineralogy 4. From charts of the sea floor and magnetic readings, reconstruct the evidence for sea floor spreading 5. Analyze topographic and geologic maps
**Required Writing, Problem Solving, Skills Demonstration:**
Each week the student shall do one or more of the following: 1. Write brief answers to questions in the lab exercises 2. Write answers to questions at the end of chapters from the text 3. Use deductive reasoning along with measured properties to identify minerals and rocks 4. Use map reading skills and deductive reasoning to interpret topographic, geologic, and weather maps

**TEXTS, READINGS, AND RESOURCES:**

**TextBooks:**

**Other:**
1. Earth Lab by Owen, Piris, and Draper; Brooks/Cole

**LIBRARY:**

*Adequate library resources include:* Print Materials

**Comments:**

**Attachments:**

[Attached Files]