BUTTE COLLEGE
COURSE OUTLINE

I. **CATALOG DESCRIPTION**

PSC 11 - Earth Science with Lab **4 Unit(s)**

Prerequisite(s): NONE
Recommended Prep: Reading Level IV; English Level IV; Math Level IV
Transfer Status: CSU/UC
51 hours Lecture
51 hours Lab

An introduction to the essentials of Earth Science with a laboratory. Topics include the geosphere, atmosphere, hydrosphere, and solar system. This course focuses on the interactions between physical and chemical systems of the Earth such as the tectonic cycle, rock cycle, hydrologic cycle, weather and climate. (C-ID GEOL 121).

II. **OBJECTIVES**

Upon successful completion of this course, the student will be able to:

A. Explain and practically apply the principles of the scientific method.
B. Demonstrate a fundamental understanding of and be able to practically apply concepts, principles and interactions of Earth's systems including: Hydrologic Cycle, Rock Cycle,Plate Tectonics Cycle, Solar System, Geologic Time and Weather and Climate.
C. Be able to explain basic properties of minerals and rocks and to identify representative samples.
D. Explain the processes that shape the Earth and how they change over geologic time.
E. Communicate complex course concepts effectively in writing and diagrams.

III. **COURSE CONTENT**

A. **Unit Titles/Suggested Time Schedule**

Lecture

Topics	Hours
1. Studying Earth Science • What is Earth Science • Introduction to the Scientific Method	6.00
2. Earth's Internal Forces • Plate Tectonics • Geologic Structures • Mountain Building • Earthquakes • Volcanoes	7.00
3. Earth's Materials • Minerals • Igneous, Sedimentary and Metamorphic Rocks • Soils	6.00
4. Earth History • Geologic Time • Relative and Absolute Dating • Fossils and Fossilization	6.00

5.	Earth's External Processes • Surface Water and Groundwater • Glaciers • Deserts	6.00
6.	Oceanography • Ocean Currents • Tides • Shorelines	6.00
7.	Atmosphere • Composition of the Atmosphere • Seasons • Atmospheric Moisture • Weather Patterns and Severe Weather • Climate	7.00
8.	Astronomy • The Solar System • Stars and Stellar Evolution • Interstellar Matter • Formation of the Universe	7.00
Total Hours		51.00

Lab

Topics		Hours
1.	The Scientific Method	4.00
2.	Plate Tectonics, Earthquakes and Volcanoes	4.00
3.	Faults and Folds	4.00
4.	Mineral Properties and Identification	4.00
5.	Rock Properties and Identification	4.00
6.	Groundwater and Subsidence	4.00
7.	Surface Processes	4.00
8.	Astronomy	4.00
9.	Relative and Absolute Dating and Geologic Time	4.00
10.	Oceans	4.00
11.	Fossil Properties and Identification	4.00
12.	Weather Systems and Atmospheric Moisture	4.00
13.	Field Trips	3.00
Total Hours		51.00

IV. **METHODS OF INSTRUCTION**

A. Lecture
B. Class Activities
C. Homework: Students are required to complete two hours of outside-of-class homework for each hour of lecture
D. Discussion
E. Demonstrations
F. Multimedia Presentations

G. Laboratory Experiments

V. **METHODS OF EVALUATION**

A. Exams/Tests
B. Research Projects
C. Homework
D. Lab Projects
E. Written Assignments
F. Class Discussion
G. Lab Reports and Activities
H. Field Trip Reports

VI. **EXAMPLES OF ASSIGNMENTS**

A. Reading Assignments
    1. Read the chapter on plate tectonics. Be prepared to explain the evidence that supports the theory and give two examples of the evidence on a quiz.
    2. Read the chapter on the scientific method. Be prepared to discuss in class whether something is science or pseudoscience.

B. Writing Assignments
    1. Watch Dante's Peak the movie and write a movie critic review from the perspective of a geologist.
    2. Write an imaginative diary, complete with maps and illustrations, to record and document your voyage as a drop of ocean water as you evaporate from the ocean, travel through the atmosphere, rain upon the land, and return to the ocean.

C. Out-of-Class Assignments
    1. Go to a local observatory or planetarium and submit a one page summary of the experience.
    2. Design and create a poster with descriptive captions that discuss ten geological features found in Butte and/or Glenn county.

VII. **RECOMMENDED MATERIALS OF INSTRUCTION**

Textbooks:

A. Tarbuck, E.J.,Lutgens, F.K., Tasa, G. Earth Science. 13th Edition. Prentice Hall, 2011.
B. Congdon, Donald R. BJU Press Earth Science Lab Manual. 4th Edition. BJU Press, 2012.
C. Congdon, D. Earth Science. 2012 Edition. BJU Press, 2012.

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