GROSSMONT COLLEGE

COURSE OUTLINE OF RECORD

Curriculum Committee Approval: 04/26/2022

GCCCD Governing Board Approval: 06/14/2022

GEOLOGY 210 – GEOLOGY OF CALIFORNIA

1. Course Number Course Title Semester Units

GEOL 210 Geology of California 3

Semester Hours

3 hours lecture: 48-54 hours 96-108 outside-of-class hours 144-162 total hours

2. Course Prerequisites

None

Corequisite

None

Recommended Preparation

None

3. Catalog Description

This course examines the development of California’s landscape and scenery by various tectonic and geomorphic processes throughout geologic time. Each of California’s physiographic provinces will be studied in terms of geologic structures, natural resources, mineral, rock, and fossil occurrences, and natural hazards.

4. Course Objectives

The student will:

a. Examine the physical processes that have produced California’s geologic scenery throughout geologic time.

b. Compare and contrast the geology of the several geomorphic provinces of the state.

c. Contrast California’s past, present, and potential mineral resources.

d. Assess man’s impact upon both the terrestrial and marine environments of California.

e. Identify the modern plate boundaries in California and describe the tectonic origin of the associated landforms, faults, and volcanoes.

f. Analyze the nature of scientific pursuit, especially the ways in which scientists collect data, develop explanations, and evaluate and communicate outcomes.

5. Instructional Facilities

a. Standard classroom, but modified to include geologic maps, rocks, and minerals.

b. Course management system such as Canvas.

6. Special Materials Required of Student

1. Access to the internet outside the classroom
2. Electronic storage media
3. Appropriate attire for the field (e.g., jacket, hat, etc.)

7. Course Content

a. California scenery – the mountains and valleys. Geomorphic provinces.

1) Peninsular ranges and Salton Trough.

2) Sierra Nevada.

3) Great Valley.

4) Mohave Desert, and Basin and Range.

5) Coast ranges.

6) Cascade Range and Modoc Plateau.

7) Klamath Range.

8) Death Valley.

b. California rocks and minerals.

1) Minerals of economic importance.

2) Rock-forming minerals.

3) Rocks: igneous, sedimentary, metamorphic.

4) Petroleum.

c. Processes affecting change.

1) Weathering, chemical and mechanical.

2) Land forms due to running water.

3) Land forms due to glaciation.

4) Land forms due to wind action.

5) Landslides.

6) Shoreline processes.

7) Volcanism.

d. Geologic time.

1) Relative time, fossils.

2) Absolute time.

3) Radiometric dating.

4) Geologic timetable; history of its development.

e. Interpreting the geology and geologic history.

1) Unconformities.

2) Folding, faulting, earthquake activity.

3) Rock structures and textures.

4) Relationships to surrounding states and areas.

f. Rocks and life throughout geologic time.

1) Pre-Cambrian, the first four billion years.

2) Paleozoic time.

3) Mesozoic time.

4) Cenozoic time.

g. Dynamic California: “Earthquake Country.”

1) Uplift and tilting of the Sierra Nevada.

2) San Andreas Fault and its earthquake history.

3) Other faults in California.

4) Earthquake activity in the “Ring of Fire,” continental drift theory.

h. Return to the provinces-detailed geologic investigation of each province of 7a.

i. Field trips to locales of geologic interest.

8. Method of Instruction

1. Lecture and demonstrations.
2. Formative Assessments: collaborative learning and group discussion.
3. Field study and observation.
4. Individualized instruction.
5. Online research and computer exercises.
6. Multimedia presentations.

9. Methods of Evaluating Student Performance

1. Examinations - combining objective and essay questions, including a final exam.
2. Participation on a discussion board.
3. Various written and computer-based assignments (e.g., delineating the San Andreas using Google Earth)
4. Final project/presentation based on a geologic process or province discussed in class.

10. Outside Class Assignments

a. Weekend field trip(s) and written field trip reports.

b. Required reading in texts.

c. Assigned reading including papers from scientific journals and magazines.

d. Written and computer based assignments covering geologic processes and principles.

11. Representative Texts

a. Representative Text(s):

Prothero, D.R., *California’s Amazing Geology*. Boca Raton, FL: CRC Press, 2016.

b. Supplementary texts and workbooks:

Appropriate papers, articles, and excerpts will be assigned for readings.

Addendum: Student Learning Outcomes

Upon completion of this course, our students will be able to do the following:

Identify the natural provinces of California and analyze their relationship to plate tectonic processes.