

Chino Valley Unified School District

High School Course Description

CONTACTS

1. School/District Information:	School/District: Chino Valley Unified School District Street Address: 5130 Riverside Dr., Chino, CA 91710 Phone: (909) 628-1201 Web Site: chino.k12.ca.us
2. Course Contact:	Teacher Contact: Chris Horsley Position/Title: Teacher Phone: (909) 591-3902 E-mail: chris_horsley@chino.k12.ca.us

A. COVER PAGE - COURSE ID

1. Course Title:	Geology
2. Transcript Title/Abbreviation:	GEO
3. Transcript Course Code/Number:	5408
4. Seeking Honors Distinction:	No
5. Subject Area/Category:	(d) lab science
6. Grade level(s):	9-12
7. Unit Value:	5 units per semester / 10 total credits – physical science
8. Was this course previously approved by UC?	Yes
9. Is this course classified as a Career Technical Education course:	No
10. Is this course modeled after an UC-approved course?	Yes
11. Repeatable for credit?	No
12. Date of Board Approval:	July 17, 2014

13. Brief Course Description: The goal of Geology is to provide students with the scientific principles, concepts, and methods required to understand physical and historical geology. Physical geology examines the materials that comprise the Earth and processes that operate beneath and upon its surface. Historical geology deals with the origin of the Earth and its development through time. Major topics include plate tectonics, geologic structures such as faults and folds, properties of minerals and rocks, three major rock types, weathering and soil, mountain building, and geologic time. Additionally, emphasis will be placed on the geology of Southern California and its impacts on society.

14. Prerequisites:	Algebra 1
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15. Context for Course:

16. History of Course Development:

16. Textbooks:	Glencoe Earth Science 2007
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17. Supplemental Instructional Materials:	
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B. COURSE CONTENT

Course Purpose: This course provides students with a geology laboratory class that fulfills the state graduation requirement for physical science and fulfills an entrance requirement for the UC/CSU level schools. This course creates a platform of general science and specific geologic knowledge including, but not limited to, historical, physical, and chemical geology in addition to dynamic Earth processes. This course supports pathway integration and cross curricular student experiences.

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Course Outline:

Semester 1

NGSS

I. Introduction to Geology

HS-ESS 1-6

- A. History of geology
- B. Geologic time
- C. Origin of the Earth
- D. The rock cycle

II. Matter and Minerals

**HS-ESS 1-6 / ESS 2-1 / ESS 2-5 / PS 1-1 / PS 1-2 /
PS 1-3 / PS 2-6 / PS 3-4**

- A. Rocks versus mineral
- B. Composition of matter
- C. Physical properties of minerals
- D. Mineral groups
- E. Silicate minerals
- F. Non-silicate minerals

III. Igneous Rocks

**HS-ESS 1-5 / ESS 2-1 / ESS 2-2 / ESS 2-3 / ESS 2-5 /
PS 1-2 / PS 3-4**

- A. Crystallization of magma
- B. Igneous textures
- C. Mineral composition
- D. Naming igneous rocks

IV. Volcanic Activity

**HS-ESS 1-5 / ESS 2-1 / ESS 2-2 / ESS 2-3 / ESS 2-5 /
ESS 2-6**

- A. Eruptive materials
- B. Types of volcanoes
- C. Types of eruptions

V. Sedimentary Rocks

HS-ESS 2-1 / ESS 2-5 / ESS 2-7

- A. Types of sedimentary rocks
- B. Sedimentary rock formation
- C. Classification of sedimentary rocks
- D. Sedimentary structures
- E. Fossils

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VI. Weathering and Soils

HS-ESS 2-2 / ESS 2-5 / ESS 2-6

- A. Weathering – mechanical and chemical
- B. Soil

VII. Deserts and Winds

HS-ESS 2-4 / ESS 3-1 / ESS 3-5 / LS 2-6

- A. Deserts – distribution, formation
- B. Transportation of sediments
- C. Wind erosion
- D. Wind deposits
- E. Evolution of desert landscapes

VIII. Metamorphic Rocks

HS-ESS 1-5 / ESS 2-1 / ESS 2-2 / ESS 2-3 / ESS2-5

- A. Metamorphism
- B. Texture and mineralogy
- C. Common metamorphic rocks
- D. Occurrences of metamorphic rocks

IX. Structural Geology

HS-ESS 1-5 / ESS 2-1 / ESS 2-2 / ESS 2-3

- A. Strike and dip
- B. Faults and folds
- C. Jointing

Semester 2

I. The Earth's Interior

HS-ESS 1-5 / ESS 1-6 / ESS 2-1 / ESS 2-3

- A. The crust
- B. The mantle
- C. The core

II. Plate Tectonics

HS-ESS 1-5 / ESS 2-1 / ESS 2-2 / ESS 2-3 / PS 3-3 /
PS 3-4

- A. Plate boundaries
 - 1. Divergent
 - 2. Convergent
 - 3. Transform
- B. Sea floor spreading
- C. Geomagnetic reversals

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III. Earthquakes

HS-ESS 1-5 / ESS 2-1 / ESS 2-2 / ESS 2-3 / PS 4-1 /
ETS 1-2 / ETS 1-3

- A. What is an earthquake?
- B. Seismology
- C. Locating the source of an earthquake
- D. Earthquake belts
- E. Earthquake depths
- F. Intensity and magnitude
- G. Prediction possibilities

IV. Mass Wasting

HS-ESS 2-1 / ESS 2-2 / ESS 2-5 / ESS 3-1 / PS 2-1 /
PS 2-2 / PS 2-3 / PS 2-4 / ETS 1-2 / ETS 1-3

- A. Type of material
- B. Type of motion
- C. Rate of movement
- D. Slump
- E. Rockslide
- F. Mudflow
- G. Earthflow
- H. Creep

V. Mountain building and the evolution of continents

HS-ESS 1-5 / ESS 2-1 / ESS 2-2 / ESS 2-3 / ESS 2-7 /
ESS 3-1 / LS 2-6 / LS 4-5

- A. Fold mountains
- B. Fault block mountains
- C. Upwarped mountains
- D. Geosyncline concepts
- E. Orogenesis
 - 1. Island arcs
 - 2. Subduction
 - 3. Continental collision
- F. The origin and evolution of continental crust

VI. Geologic Time

HS-ESS 1-5 / ESS 1-6 / ESS 2-1 / PS 1-8

- A. Radiometric dating
- B. Relative dating
- C. The geologic time chart

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VII. Glaciers and Glaciation

HS-ESS 2-1 / ESS 2-2 / ESS 2-4 / ESS 2-5 / ESS 3-1 /
ESS 3-4 / ESS 3-5 / ESS 3-6 / LS 4-5

- A. Formation of glacial ice
- B. Movement of a glacier
- C. Glacial erosion
 - 1. Landforms
- D. Glacial deposits
 - 1. Landforms
- E. Types of glaciers
- F. The ice ages

VIII. Shoreline

HS-ESS 2-1 / ESS 2-2 / ESS 2-4 / ESS 2-5 / ESS 3-4 /
PS 4-1 / ETS 1-2

- A. Waves
- B. Wave erosion
- C. Longshore currents
- D. Shoreline features
- E. Tides

Key Assignments:

- 1. Latitude & Longitude Lab
- 2. Reading topographic maps
- 3. Creating topographic maps
- 4. Creating a map profile
- 5. Rock Cycle Diagram
- 6. Properties of matter
- 7. Atomic model lab/project
- 8. Mineral identification
- 9. Mineral formation
- 10. Modeling crystal formation lab
- 11. Rock classification
- 12. Rock type identification
- 13. Effects of erosion
- 14. Modeling stream velocity and slope lab
- 15. Stream erosion
- 16. Soil testing/pH
- 17. Global Weather & Climate
- 18. Measuring strike & dip angles of faults
- 19. Earth's internal structure project
- 20. Plate Tectonics lab
- 21. Age of seafloor lab
- 22. Paleomagnetism lab
- 23. Epicenter location lab

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24. Natural disaster mapping lab
25. Mapping continental growth
26. Geologic time scale calendar (project)
27. Radiometric dating calculations
28. Creation of barrier islands and their morphology over time

Instructional Methods and/or Strategies:

1. Lecture and class discussion
2. Cooperative group work at lab stations
3. Virtual field studies
4. Virtual speakers
5. Technical reading and writing assignments
6. Use of technology and laboratory equipment
7. Written and oral reporting skills

Assessment Including Methods and/or Tools:

1. Classwork
2. Homework
3. Research Projects
4. Laboratory Investigations
5. Quizzes
6. Written Exams