

**Office of Secondary Curriculum and Instruction
High School Course of Study**

Department	Science			Course Title	Geology 1 A/B		
Course Code			Grade Level	11 - 12		Course Length	Year
Credits/Semester	5.00	Required for Graduation				Elective Credit	X
Prerequisites	“C” or better in Biology, Passing grade in Chemistry						
Community College Articulation			Name of College				
UC/CSU Articulation			Name of University				
Meets UC/CSU “a-g” Requirement		G	Meets NCAA Requirement			Honors Grading Differentiation	

COURSE DESCRIPTION

Geology is a year-long laboratory based science course for 11th and 12th grade students. The course is for motivated students desiring a third year of science, who have demonstrated excellent study skills, and who have met the following prerequisite requirements:

1. A grade of “C” or better in Biology.
2. A passing grade in Chemistry.

The course will include an Introduction to Geology , Minerals, Igneous Rocks, Volcanoes and Other Igneous Activity , Weathering and Soils, Sedimentary Rocks, Metamorphic Rocks, Mass Wasting: The Work of Gravity, Running Water , Groundwater , Glaciers and Glaciation , Deserts and Wind , Shorelines, Earthquakes and Earth's Interior, Plate Tectonics, The Ocean Floor , Mountain Building, Geologic Time , and Earth History. These subjects will be studied at greater depth than in Earth Science 1A/B and the California State Standards for Earth Science. Additionally, the course will include laboratories, field work (field trips), graphing of collected data, and the writing of research papers.

GOALS: (Expected performance outcomes for students)

Mastery of all standards identified as high and medium frequency standards on the California Standards Tests for Earth Science, with a concerted effort to encourage mastery of low frequency standards as well.

Course Outline

Introduction	Course Title				
	Key Terms	Standards*	Model Tasks**		Tools & Text
Earth Science • Standards of	Metric Measurement	There is no standard for this introductory unit. However,	Metric System/ Converting/ Earth Science Topics • Metric Conversions	A	“Essentials of Geology”- Lutgens and Tarbuck

Measure Lab Safety	Lab Safety Dimension, Mass, Volume, and Density Scientific Method	information contained therein is essential to completing the tasks required by this course. 9.d. Students know how to analyze published geologic hazard maps of California and know how to use the map's information to identify evidence of geologic events of the past and predict geologic changes in the future. IE1.h. Read and interpret topographic and geological maps.	L L	- Dimensional Analysis - SI Conversions - Density Drills - Safety Regulations in the Science Lab - Lab - Mass, Volume, and Density Hazard Map Lab Topographic Map Lab using various landforms to help student understand meaning of topographic symbols. Stereoscope Lab will help students relate flat maps to relief of land.	B B	California Geological Hazard Maps Topographic Map Lab Stereoscopes w/ Geological Landforms
	Support -- for students struggling with content	Content: PowerPoint presentations with visuals Process: Cooperative small group activities, Lab extensions that take the concept deeper and further challenge the exceptional student. Product:				
	Extension – for high achieving students. Required activities for all honors courses.	Content: Process: Product:				

Differentiation	Support -- for students struggling with content	Content: PowerPoint presentations with visual Process: Cooperative small group activities, Lab extensions that take the concept deeper and further challenge the exceptional student. Product:				
	Extension – for high achieving students. Required activities for all honors courses.	Content: Process: Product:				
Evaluation	Formative Assessments: Homework, Laboratory Write-ups, Classwork, Participation Summative Assessments: Chapter tests, research papers, Individual and group projects, PowerPoint presentations, CST's (Earth Science), and final exams.					

Unit 2	Course Title				
	Key Terms	Standards*	Model Tasks**		Tools & Text
Internal Processes • Igneous Activity o Volcanoes		3e. Students know there are two kinds of volcanoes: one kind with violent eruptions producing steep slopes and the other kind with	M	Volcano Model Lab –understand the formation of the various types of volcanoes.	A National Geographic Video – Volcano Volcano Model Kits Convection Demo

• Plate Tectonics • Crustal Deformation		voluminous lava flowsproducing gentle slopes. 3f.* Students know the explanation for the location and properties of volcanoes that are due to hot spots and the explanation for those that are due to subduction. 9b. Students know the principal natural hazards in different California regions and the geologic basis of those hazards. 3a. Students know features of the ocean floor (magnetic patterns, age, and seafloor topography) provide evidence of the plate tectonic theory. 1 E1a. Select and use appropriate tools and technology(such as computer-linked probes, spreadsheets, and graphing calculators) to perform tests collect data, analyze relationships, and display data. 3b. Students know the principal structures that form at the three different kinds of plate boundaries. 9b. Students know the principal natural hazards in different California regions and the geologic	M M M L M M	USGS “RealTime” and other internet (Volcano World) research on volcanic eruptions Field Trip to observe volcanic and Seismic sites in the Southern California area. Mapping the Ocean Floor Lab – understand through graphing, mapping of earth’s surface. Various activities to understand plate movement Understand rock forming processes associated with plate tectonics. EQ Triangulation (Location) Lab	A C B A A	Lab USGS internet Activity Field Trip: California Volcanism and Seismicity, USGS – Cal Tech Computers w/ Pasco Probeware (Mapping the Ocean Floor Lab) Plate Tectonics Lab Pangaea Globe Lithospheric Plate Model Hydrographic Relief Globe <u>Plate ‘Snack-tonics’</u> from www.windows.ucar.edu Plate Boundary Rock Sample Kits Lab – Epicenter Triangulation
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Earthquakes		basis of those hazards. 3d. Students know why earthquakes occur and the scales used to measure their intensity and magnitude. 9b. Students know the principal natural hazards in different California regions and the geologic basis of those hazards.	M M	Strike/Slip Fault Model Lab Internet USGS Earthquake Research and realtime EQ Observation Earthquake Simulation/Safe Building Design Project	A D	Strike/Slip Fault Model Lab USGS CL - Tsunami of December 26th, 2004 Internet Research Readings – CNN.com ‘Tsunami’ CL – Earthquake Internet Activity EQ Stress and Strain Activity Lab - Earthquake Simulation Project
Differentiation	Support -- for students struggling with content	Content: PowerPoint presentations with visual Process: Cooperative small group activities, Lab extensions that take the concept deeper and further challenge the exceptional student. Product:				
	Extension – for high achieving students.	Content: Process: Product:				
Evaluation	Formative Assessments: Homework, Laboratory Write-ups, Classwork, Participation Summative Assessments: Chapter Tests, research papers, Individual and group projects, PowerPoint presentations, CST (Earth Science), and final exams.					

Unit 3	Course Title					
	Key Terms	Standards*		Model Tasks**		Tools & Text
External Processes • Hydrologic Cycle • Running Water • Groundwater • Glaciers • Deserts • Coastal Processes		9c. Students know the importance of water to society, the origins of California's fresh water, and the relationship between supply and need.	M	Labs – Stream Table and Various Stream Table Accessories	D	Streamtables w/Accessories
		5d. Students know properties of ocean water, such as temperature and salinity, can be used to explain the layered structure of the oceans, the generation of horizontal and vertical ocean currents, and the geographic distribution of marine organisms.	M	Groundwater Simulation System Lab	C	
				Mass Wasting Lab	B	
				Aquifers and Water Flow Lab	B	
				Wind Erosion Lab		
9c. Students know the importance of water to society, the origins of California's fresh water, and the relationship between supply and need.	M	Wave Erosion Lab				
Differentiation	Support -- for students struggling with content	Content: PowerPoint presentations with visual				
		Process: Cooperative small group activities, Lab extensions that take the concept deeper and further challenge the exceptional student.				
		Product:				

	Extension – for high achieving students. Required activities for all honors courses.	Content: Process: Product:
Evaluation	Formative Assessments: Homework, Laboratory Write-ups, Summative Assessments: Chapter tests, research papers, Individual and group projects, PowerPoint presentations, CST (Earth Science), and final exams.	

Unit 4	Course Title				
	Key Terms	Standards*	Model Tasks**		Tools & Text
Geologic Time		8.b. Students know how the composition of the Earth's atmosphere has evolved over geologic time and know the effect of outgassing, the variations of carbon dioxide concentration, and the origin of atmospheric oxygen.	H M L		D C B A
Differentiation	Support -- for students struggling with content	Content: PowerPoint presentations with visual Process: Cooperative small group activities, Lab extensions that take the concept deeper and further challenge the exceptional student. Product:			

	Extension – for high achieving students. Required activities for all honors courses.	Content: Process: Product:
Evaluation	Formative Assessments: Homework, Laboratory Write-ups, Summative Assessments: Chapter tests, research papers, Individual and group projects, PowerPoint presentations, CST (Earth Science), and final exams.	