

Class #      Theme  
 Class #      date

### Fall semester 15 classes

Class #	date	Theme	Activities	Standards
1	9/1	Scientific method. Chemical mixture vs chemical reaction	Balloons with Acid/base reaction	Physical science 4 Energy
2	9/8	Acid and base. Definition of pH.	pH measuring of common household solutions. Acid reflux experiment.	
3	9/15	Intro to chemical reactions	Eggs in different acids. Spherification reaction (string slime). Oscillation reaction demo.	
4	9/22	Chemical mixture. Solutions. Going over the basic terminology with a few experiments (solute, solvent, dilution, saturated, dissolving etc.)	Making various solutions.	
5	9/29	Chemical mixture. Heterogeneous mixtures. Colloids.	Using laser pointer to identify colloids. Pearls as solid sol. Making foam.	
6	10/06	Mixture separation. Going over different methods and devices.	Separate mixtures creatively How to use a centrifuge? Marble in the spinning glass.	
7	10/13	Oil and Water. Are they friends?	Water/oil separation. Hydrophobic coating. Milk experiments. Making cheese and whipped cream.	
8	10/20	Definition of Density.	Float or sink? Check items in fresh, salty and Dead Sea salinity water. Build density tower using liquids with different density.	

LP1

LP2

LP3

Year	Unit	Topic	Activities	Learning Objectives
10	11/3	Convection currents. States of matter and Layers of Earth	Expansion with heat and convection. Melting soap, making oobleck, Earth density model/column. Olivine.	Earth science
11	11/10	Plate tectonic theory.	Model of the seafloor spreading. Continental drift puzzle. Oreo cookie demo. Ring of fire song. Hot cocoa on the pan – tectonics demo.	Earth science
<b>4 Earth's Systems: Processes that Shape the Earth</b>				
LP4	12	11/17 Volcanos. Class 1 Hot spots, structure, explosivity index, hazards: lava, pyroclastic flows, properties of volcanic ash	Hot spot demo. Volcano models: elephant toothpaste, chocolate explosion and eruption with ash. Analyse 2 types of real ash. Preserving a balloon in the volcanic ash	
	13	12/1 Volcanos. Class 2 hazards: lahars and landslide. Mt St Helens. Volcanic gases. Acid rains. Carbon cycle.	Working with rock collection: sulfur containing rocks. Gas to acid reaction, detection with indicator.	
	14	12/8 Volcanos. Class 3 Classification. Caldera. Underwater volcanos. Igneous rocks.	Underwater volcano model. Caldera model. Working with rock collection: igneous rocks. Compare properties of pumice and scoria. Making bracelet from vesicular basalt.	
LP5	15	12/15 Weathering, Erosion and Deposition. Class 1 Water and Temperature.	Frozen egg. Hatch and grow "erosion". Acid test. Exfoliation of rock and glass. Working with rock collection: limestones.	
<b>Spring semester 18 classes</b>				
LP5	16	1/5 Weathering, Erosion and Deposition. Class 2 Wind and waves. Sedimentary rocks.	Weathering sugar cube. Working with rock collection: chert, conglomerate. Tumbled rocks. Creating sedimentary rock with plaster.	Earth science
<b>4 Earth's Systems: Processes that Shape the Earth</b>				

- 17 1/12 Paleontology. Fossil types. Relative dating.  
Crack rocks with hammer to find carbonized fossil. Working with rock collection: fossilized rocks. Make a carbonized fossil model. Make a fossil magnet. Polish amber. Sort fossils. Play dough model. Working with rock collection: metamorphic rocks and minerals. Marble/quartzite test.
- 18 1/26 Metamorphic rocks. Rock cycle.
- 19 2/2 Learn how sand forms. Different sand types and their forming minerals.  
Analyse sand sample under the microscope. Looks at the different sand samples (green, purple, white, black).
- 20 2/9 Minerals – building blocks of rocks. Identification techniques.  
Working with rock collection: minerals. Identify a mineral using acid, streak, fracture and cleavage, and fluorescence tests.
- 21 2/23 Soil  
Compare different types of soil, change soil pH.

LP6

- 22 3/2 Atom structure. Static electricity  
Atom demo, static electricity with PVC and balloons, electrostatic generator

LP7

Physical science  
3–5 Engineering Design

- 23 3/9 Electric circuits 1. Elements: batteries. Multimeter.  
How to use multimeter, experiments with batteries and LEDs.
- 24 3/16 Electric circuits 2. Elements: load, conductor, and switch. Series and parallel circuits.  
Test lamps and resistors. Work with wires, test energy wand.
- 25 3/23 Magnetism. Electromagnetism.  
Create a device to separate different materials. Tricks with magnets.

LP8

- 26 4/6 Food chain and energy pyramid.  
LIFE animals. Making food chain collages.

Biology  
(ecology)

4 Structure, Function, and Information Processing

- 27 4/13 Human impact on biosphere. Orangutan project. Learn about animals facing extinction. Rain forest.  
Taste orangutan's food, draw like orangutan (holding brush in your feet)

- 28 4/20 Dessert definition. Camel vs Polar bear. Adaptation. Build a desert biome. Fat as a mechanism against cold. Real camel hair vs synthetic. Taste camel milk.
- 29 4/27 Oak woodland, Chapparal, grassland. Possible Mt Diablo Foothill field trip. Mt Diablo habitats. Signs of landslides erosion, sedimentary rocks, sulfur springs.
- 30 5/4 Intro to microscopy. Protists. Looking under the microscope at the water samples from different sources.
- 31 5/11 Ecosystems and adaptations. Possible field trip to Salt marsh ecosystem, Martinez McNabney Marsh: key species and adaptations, vertisol, biocrust, human influence, water tests.
- 32 5/18 Diversity of organisms. Systematics. Using keys to identify. Tree Walk will introduce you to forty-five different species of trees. Possible Markham Arboretum field trip.
- 33 5/25 Th Possible half day ocean trip (ecology, geology, Earth's interaction with celestial objects). Pescadero. Low tide -1'8" (very rare) at 7.45 am Comparing 2 types of intertidal zones (sandy and rocky), reviewing rock types. Algae and animals of the intertidal zone. Crab identification using keys. Algae buffet.

LP9

LP10