

Dr. Karina Nikulina, 5th grade science, 1.5h classes, 2020_2021
Hands on activities and experiments Standard

Class #	Class date	Theme		
LP1	1	9/4	Scientific method. Variables.	<p>Popcorn experiment. Samples of popcorn (dried, soaked in water and control) will pop differently.</p> <p>Biology</p> <p>5-LS2 Ecosystems: Interactions, Energy, and Dynamics</p> <p>5-LS1 From Molecules to Organisms: Structures and Processes</p> <p>3-5-ETS1 Engineering Design</p>
	2	9/11	Species. Systematics. Protists.	<p>Looking under the microscope at the water samples from different sources.</p>
	3	9/18	Ecosystems and adaptations. Field trip to Salt marsh ecosystem, Martinez	<p>McNabney Marsh: key species and adaptations, vertisol, biocrust, human influence, water tests.</p> <p>Animal and plant cells under the microscope</p>
	4	9/25	Cell structure. Organelles	
LP2	5	10/2	Plant tissues and organ system	<p>Match produce and plant organs. Flower dissection.</p>
	6	10/9	Animal organ systems	<p>Fish dissection. Japanese fish printing art.</p>
	7	10/16	Fungi	<p>Making kombucha and yogurt, looking at mold on the bread and cheese. Dissecting mushrooms, making spore print.</p>
LP3	8	10/23	Earth systems. Oceans.	<p>Water distribution on Earth model. Salinity experiments (evaporate water from different sources and compare salt concentration). Save the ocean demo.</p> <p>5-ESS2 Earth's Systems</p>

9	10/30	Earth systems. Water states and water cycle.	Evaporation, condensation and melting experiments. Cobalt chloride test. Problem solving: how to get fresh water?	5-PS1 Matter and Its Interactions
10	11/6	Earth systems. Water class 3. Usage, saving and purification.	Water purification column, coagulation methods, water distillation.	
11	11/13	The Los Vaqueros Reservoir field trip.	Follow the path of the drinking water in our area. Mallard Slough, Reservoir, Contra Costa Canal, Bollman Water Treatment Plant	
12	11/20	Oil and Water interaction	Experiments with milk.	
LP4				
13	12/4	Space. Class 1. Planets. Sun.	Sun/earth model, sun experiments (filters, box viewer, sun paper, energy beads), painting project (one stroke method)	Space
LP5				
14	12/11	Space. Class 2. Comets, meteorites, stars.	Make a crater. Play with light to explore stars. Use phone app to view sky objects, make a constellation.	5-ESS1 Earth's Place in the Universe 3-5-ETS1 Engineering Design
15	12/18	Space. Class 3. Exploration by humans. Rockets, telescope, and International Space station.	Make a rocket. Life on space station, Infrared demo.	
16	1/8	Human circulatory system.	Blood under the microscope. Lamb heart dissection.	Anatomy
LP5				
17	1/15	Human muscle-skeletal system	Mark bones on the small skeleton. Muscle tissue under the scope. Mitochondria in the flying muscle. Arm X-ray to detect age.	5-LS1 From Molecules to Organisms: Structures and Processes

18	1/22	Human digestive system	Test for protein, carbohydrates, and fat in the egg. Science of antacids.	
19	1/29	Human respiratory system	Identify your lung's volume. Insect trachea under the microscope.	
LP6				
20	2/5	Solutions. Review. Crystallization.	Making saturated solutions to grow crystals. Looking at the crystal collection with UV lamp	Physical science
LP7				
21	2/12	Chemical mixture. Alloys. US penny as an example of alloy. Gas in liquid solutions (sparkly drinks). Liquid in liquid solutions (water/ethanol).	Turning a penny green. Penny in acid – separating layers. Malachite chemical reaction. Factors effecting gas solubility in water (coke-cola and Pepsi at different temperature and pressure).	5-PS1 Matter and Its Interactions
22	2/26	Chemical mixture. Heterogenous mixtures. Types of colloids	Making suspensions and colloids. Using laser to identify colloids. Pearls as solid sol. Making foam. Elephant toothpaste.	5-ESS3 Earth and Human Activity
23	3/5	Mixture separation. Going over different methods and devices. Centrifugation theory. Inertia and centripetal force.	Separate 5 solid mixtures creatively Learning how to use centrifuge. Move marble in the spinning glass.	5-PS1 Matter and Its Interactions
24	3/12	Density and pressure review.	Experiments showing change of density and pressure with changing temperature.	
LP8				
25	3/19	STEAM Grapefruit project. Class 1. Genetics of citrus fruit. Fruit anatomy	Tasting variety of citrus fruits. Experiment with citrus oil (flammable), oil glands under microscope, parasites from the tree under microscope	Biology
3–5-ETS1 Engineering Design				
5-LS1 From Molecules to Organisms: Structures and Processes				

26	4/9	STEAM Grapefruit project. Class 2. Technology, engineering, and art activities.	Picking grapefruits from the tree and building a battery and a tower
27	4/16	Possible field trip to the newt pond (Old Briones road trail, Martinez)	Newts, frogs, insects
28	4/23	Life cycle plants and animals. Embryogenesis. Seeds and germination.	Looking at the seeds and seedlings germinating at different conditions. Silk moth cycle. Frog cycle.
29	4/30	Photosynthesis	Pigment extraction from "light" and "dark" seedlings, chromatography, starch detection in leaves.
30	5/7	Biomes. Dessert definition. Camel vs Polar bear. Adaptation.	Build a dessert biome. Fat as a mechanism against cold. Real camel hair vs synthetic. Taste camel milk.
			Ecology
			5-ESS3 Earth and Human Activity
			5-LS2 Ecosystems: Interactions, Energy, and Dynamics
31	5/14	Human impact on biosphere. Orangutan project. Learn about animals facing extinction. Rain forest biome.	Taste orangutan's food, draw like orangutan (holding brush in your feet)
32	5/21	Water biomes. Getting ready for the field trip. Invertebrate animals of the intertidal zone.	Save the whale project. Crab identification with dichotomous keys. Dry animals and shell collection.
33	5/30 (Su)	Possible ocean trip (ecology, geology, Earth's interaction with celestial objects). Pescadero, half day trip. Low tide -1'8" (very rare) at 7.45	Comparing 2 types of intertidal zones (sandy and rocky), reviewing rock types. Algae and animals of the intertidal zone. Algae buffet.

LP9

LP10