



Palo Alto Junior Museum and Zoo

Classes Offered 2017 –18

CA 2004 Science Framework Aligned

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* Requires two class periods.

† Parent volunteers required.

‡ Not recommended as a stand-alone lesson, but as an intro to unit.



Palo Alto Junior Museum and Zoo Classes Offered – Kindergarten CA 2004 Science Framework Aligned

Life Science	
Zoo Animal Program	Students will meet a variety of different animals from the Junior Museum and Zoo. The lesson could include a general overview or a focus on a specific group, such as reptiles, mammals, insects, etc. If you have a special request please speak with the instructor.
Five Senses	Students will be introduced to scientific observation by utilizing their own senses to investigate various substances. <i>Not recommended as a stand-alone lesson, but as an introduction to on-going science lessons.</i>
Biomes	
Rainforest	Students will learn about what makes a rainforest unique. They will smell and taste food products and be introduced to real rainforest flora and fauna. <i>Please advise instructor of any allergies in advance.</i>
Polar	Students will learn about what makes polar regions unique. They will investigate glaciers, icebergs, and animal adaptations.
Desert	Students will learn about what makes desert regions unique. They will be introduced to a variety of authentic desert flora and fauna.
Riparian (local creeks)	Students will learn about what makes the riparian biome unique. They will create a scientific model of a riparian corridor and meet some riparian flora and fauna.
Wood	
Floating and Sinking	Students will learn about the scientific method and perform an experiment to discover what makes an object sink or float.
Making Paper	Students will learn about the composition of paper and past paper technology. Each student will make their own piece of paper out of recycled pulp. <i>Parent Volunteers Required.</i>
Paper Towers	Students will discover the surprising strength of paper. They will learn how to manipulate paper in order to increase its strength by building paper towers.
Engineering	
Engineering: Paper Bridges	In this two-part introduction to engineering, students will discover the surprising strength of paper. In groups, they will learn how to manipulate paper by building paper bridges and testing them. They will then apply their new knowledge in order to rebuild and re-test even stronger bridges. <i>Requires two class periods.</i>



Palo Alto Junior Museum and Zoo

Classes Offered – 1st Grade

CA 2004 Science Framework Aligned

Organisms	
Adaptations	Students will use their own bodies in a simulation of how adaptations affect an animal's survival. Students will also meet a zoo animal and discuss its adaptations.
Camouflage	Students will learn about ways in which organisms avoid being seen. Students will perform an experiment and collect data in order to understand how camouflage works. Students will also meet a zoo animal that is a master of camouflage.
Habitats	Students will learn about what most animals need to survive. In groups, students will build a temporary terrarium to maintain and observe in the classroom.
Bats	Students will learn about fascinating bats. They will learn the differences between micro and mega bats, see a variety of bat artifacts, and meet real fruit bats.
Air and Weather	
Air Pressure	Students will observe various experiments that demonstrate the air's influence on our daily life.
Wind	Students will learn about what causes wind. Each student will construct an anemometer and use it to test wind speed.
Storms	Students will learn about storms and what causes them. The lesson will focus on tornados, lightning, and hurricanes.
Solids and Liquids	
What is a Liquid?	Students will learn about liquids by observing and interacting with several mysterious liquids and attempting to identify them. <i>Not recommended as a stand-alone lesson, but as an introduction to the full unit.</i>
Viscosity Experiment	Students will perform an experiment and record data in order to determine the viscosity of four liquids.
Phase Change	Students will learn about how a substance can change from one phase to another. They will perform an investigation and observe examples of phase change.
Surface Tension	Students will learn about surface tension by performing experiments comparing a liquid with high surface tension to one with low surface tension.
Engineering	
Engineering: Biomimicry	In this two-part engineering lesson, using live carnivorous plants as a model, students will observe and mimic the methods these plants use to capture their prey in order to design a hex-bug trap. <i>Requires two class periods. Only available Sept-Oct and Apr-June.</i>



Palo Alto Junior Museum and Zoo
Classes Offered – 2nd Grade
CA 2004 Science Framework Aligned

Insects	
Life Cycles	Students will learn about animal and plant life cycles through hands-on activities using photographs and illustrations. <i>Not recommended as a stand-alone lesson, but as an introduction to the full unit.</i>
Arthropods	Students will learn about and meet a variety of live arthropods and artifacts including insects, arachnids, crustaceans, and myriapods.
Bee Society	Students will learn about honey bees and their unique behavior and life. They will see artifacts, taste honey, and observe specimens under microscopes.
Pebbles, Sand, and Silt	
Rock Cycle and Sort	Students will discover how rocks are created and learn to scientifically categorize them.
Weathering and Erosion	Students will learn about how Earth structures break apart and move. They will conduct an experiment demonstrating how water erodes sand.
Sand Investigation	Students will learn about the diversity of sand across the Earth. They will explore the color, size, and special properties of sand.
Fossils	Students will learn about the process of fossilization, handle a variety of real fossils, and create their own casts.
Balance and Motion	
Balance and Falling	Students will discover the critical role of center of gravity in order to create their own balance toys.
Bouncing and Rolling	Students will conduct a scientific experiment and record data in order to discover what makes an object bounce and roll.
Speed and Friction	Students will conduct a scientific experiment and record data in order to discover how different surfaces affect how far a ball rolls.
Sound	
Sound Exploration	Students will learn about various properties of sound. They will learn about waves, vibrations, and the science behind musical instruments.
Engineering	
Engineering: Seed Pods	In this two-part lesson, students will learn about the needs and challenges plants face in reproduction. They will build, document and test their own seed dispersal designs. <i>Requires two class periods.</i>



Palo Alto Junior Museum and Zoo

Classes Offered – 3rd Grade

CA 2004 Science Framework Aligned

Adaptations	
Plants of the Baylands	Students will learn about four native plants of the local baylands. They will see real specimens and create scientific drawings.
Birds of the Baylands	Students will learn about the adaptations of bird's beaks and feet as they pertain to their life in the local baylands. Students will observe and sketch real bird skulls and bird feet.
Fish Adaptations	Students will learn about fish form and function. Each student will design and create a fish modeling real adaptations.
Sun Moon and Stars	
The Reason for the Seasons	Students will learn about what causes the seasons. They will perform an experiment and record data in order to discover some of the quantifiable differences between the seasons.
Telescopes	Students will learn about how telescopes work and how they enable us to learn more about the world around us. They will make daytime observations with real telescopes. <i>Requires parent volunteers.</i>
Starlab Planetarium	Students will learn about stars including their size, temperature, life-cycle, and color. The entire class will enter a portable planetarium and learn about our local stellar neighborhood. <i>Starlab requires a large empty space measuring 19 feet in diameter and 11 feet high.</i>
Energy and Matter	
Periodic Table	Students will learn about the different elements and how they combine to form the world around us. Students will create models of common molecules.
Chemical Reactions	Students will learn about chemical reactions and perform a scientific experiment by mixing different chemicals together and recording the results.
Potential vs. Kinetic Energy	Students will learn about mechanical energy and its many forms. Each student will create a toy that is powered by elastic potential energy.
Solar Energy	Students will discuss the many forms of energy and Earth's primary energy source, the sun. Students will each build a mini solar cooker to take home.
Engineering	
Engineering: Marble Paths	In this two-part lesson, students will work in groups to design and build a marble ramp in order to meet a specific challenge. They will learn about energy and forces. Students will need substantial time in class between lessons to work on their projects. <i>Requires two class periods.</i>



Palo Alto Junior Museum and Zoo Classes Offered – 4th Grade CA 2004 Science Framework Aligned

Environments and Animal Studies	
Animal Classification	Students will learn about how scientists group animals through taxonomy and how it helps us to learn about them. They will also meet a live animal from the zoo.
Carnivorous Plants	Students will be introduced to several live carnivorous plants. They will record observations on each type of carnivorous plant in order to determine how they capture their prey. <i>Only available Sept-Oct and Apr-June.</i>
Squid Dissection	Students will learn about squid form and function and animal morphology by dissecting real squid specimens.
Earth Science	
Rock Identification	Students will learn about the rock cycle and how to accurately identify rocks by their scientific category.
Mineral Identification	Students will learn how to identify minerals using real scientific methods and apply their knowledge to identify “mystery” minerals.
Advanced Mineral Identification	Students will use scientific instruments to measure and calculate density and assess other properties in order to identify specific mineral samples. Students should already be familiar with basic mineral identification techniques.
Electricity	
Static Electricity	Students will learn how electricity is present in more than just electronics. They will perform experiments with static and interact with a Van de Graaff generator.
Intro to Electric Circuits	Students will learn about how electricity functions in circuitry. They will build parallel and series circuits.
Electric Cars	Students will put their electrical knowledge into action in this two-part lesson. Each student will construct an electric car and wire its circuitry. <i>Requires two class periods. Requires prior basic understanding of circuits.</i>
Solar-Powered Circuits	Students will learn about solar energy, and use real solar panels to make circuits. <i>Requires prior basic understanding of circuits.</i>
Engineering	
Engineering - Earthquake Construction	In this two-part lesson, students will learn about earthquakes. They will design, test, and re-design/re-test a building to withstand the shaking of the Earth. <i>Requires two class periods.</i>
Engineering: Wind Power	In this two-part lesson, students will work in groups to design, build, and test a wind powered mechanism with the goal of lifting an object. <i>Requires two class periods.</i>



Palo Alto Junior Museum and Zoo
Classes Offered – 5th Grade
CA 2004 Science Framework Aligned

Human Body	
Microscopes and Cells	Students will learn about the function of cells in the human body. They will learn how to use compound microscopes, prepare slides, and observe their own hair and cheek cells.
Mammal Eye Dissection	Students will learn to identify the major parts of the eye and describe how our sense of sight works. They will dissect and examine real cow eyes.
Lung Model	Students will learn about the human respiratory system and build working models of the lungs and diaphragm.
Digestion Lab	Students will learn the process of digestion in the human body. They will discover the unexpected properties of salivary amylase and hear the gurgle of their esophageal sphincter.
Water Planet	
Air Pressure	Using bottles, pumps, and suction cups, students will learn about air pressure. They will experiment with different pressures within a bottle, and they will view multiple demonstrations within a real vacuum chamber.
Water Pollution	Students will learn about the Earth's fresh water and how so much of it becomes polluted. Students will create their own model of polluted water.
Water Filtration	Students will learn about how we treat polluted water to make it safe for consumption. Students will learn to filter polluted water using real-world techniques.
Dew Point	Students will discuss condensation and the water cycle. They will perform a scientific experiment and record data in order to determine the dew point inside and outside their classroom.
Mixtures and Solutions	
Identifying Mixtures and Solutions	Students will learn to differentiate between mixtures, solutions, and suspensions. They will perform an experiment using mixtures and solutions and record observations.
White Powder Lab	Students will analyze several properties, such as pH and solubility, of various white powdered kitchen chemicals and use their knowledge to identify a "mystery" white powder.
Thermochemistry	Students will learn to define, describe, and identify endothermic and exothermic reactions. They will conduct a scientific experiment by mixing different chemicals together, measuring temperature change, and observing the reaction.
Engineering	
Engineering: Submarines	In this two-part lesson, students will explore the concept of buoyancy while they build, modify, and test individual small submarines. Each student will take home their own submarine. Students will need substantial class time between lessons to test materials for their projects. <i>Requires two class periods.</i>



Palo Alto Junior Museum and Zoo Classes Offered – FIELD TRIPS

Outdoor Lesson and Locations	Description
Explore the Salt Marsh at Palo Alto Baylands	<p>Students discover the inner workings of the salt marsh ecosystem through exploration of microorganisms, plants, birds, and fish in this exciting hands-on program. Go birding to discover the amazing adaptations of our bay birds; spend time in the lab learning about the microscopic life at the base of this ecosystem; discover unique plants that are adapted to living in the salt marsh.</p> <p>Grade Levels: 1st through 6th grade (max 30 students plus 1 chaperone per 5 students). Fishing available for 3rd - 6th graders. Time: 1-3 hours (2.5 hour minimum with fishing) NGSS Disciplinary Core Ideas: LS1.C, LS2.A, LS2.B, LS4.C, LS4.D, ESS2.A, ESS2.C</p>
Amazing Life of Birds at Palo Alto Baylands	<p>Bay birds offer an opportunity for experiential discovery of food chains, ecosystems, and adaptations. Students head outside with binoculars to study bay birds in their natural habitat, play a game of bird beak buffet to understand the importance of beak adaptations, and inspect and discuss our authentic collection of wings, feathers, skulls, and bird mounts with an experienced naturalist.</p> <p>Grade Levels: 1st through 6th grade (max 30 students plus 1 chaperone per 5 students) Time: 2 Hours NGSS Disciplinary Core Ideas: LS1.A, LS1.D, LS2.D, LS3.B, LS4.B, LS4.D</p>
Unlock the Secrets of the Foothills at Foothills Park or Arastradero Park	<p>Soak up the sights, sounds, and smells of the local foothills on an engaging mile hike through beautiful natural parklands. Students take on the role of nature detectives and search for clues to discover the secrets of oak woodland, chaparral, riparian, or grassland ecosystems.</p> <p>Grade Levels: 1st through 6th grade (max 30 students plus 1 chaperone per 5 students) Time: 2 Hours NGSS Disciplinary Core Ideas: LS1.A, LS2.A, LS2.C, LS4.D, ESS2.A, ESS2.E</p>
Can You Survive as an Ohlone? at Foothills Park	<p>Wake up to a day filled with fire-making drills, acorn grinding, stories, and Ohlone games. Students will experience life as an Ohlone child by reenacting their daily activities at our 'trailside village'. End the day with a mile hike to a lake to twist cattails into cordage.</p> <p>Grade Levels: 3rd through 5th grade (max 24 students plus 1 chaperone per 5 students) Time: 2 ½ Hours NGSS Disciplinary Core Ideas: LS2.D, LS4.D, ESS2.E, ESS3.A, ESS3.C</p>

For more information about outdoor programs, contact 650-329-2506 or naturalist@cityofpaloalto.org

Junior Museum & Zoo Visit at Palo Alto Junior Museum and Zoo	<p>Bring your students to our onsite classroom for a standards-based science lesson of your choice and stay to enjoy the museum, zoo, and nearby park afterwards. Alternatively, school groups may schedule a self-guided field trip with a low per person fee.</p> <p>Grade Levels: pre-K through 5th grade (max 24 students plus 1 chaperone per 5 students)</p>
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Advance registration for group museum visits is required. Please call: 650-329-2111.



Palo Alto Junior Museum and Zoo Science Program Fees 2017 – 18

School Programs

Number of Programs	Resident Fee	Per Program	Non-Resident Fee	Per Program
1	\$164	\$164	\$189	\$189
2	\$311	\$156	\$357	\$179
3	\$458	\$153	\$527	\$176
4	\$604	\$152	\$695	\$173
5	\$751	\$150	\$864	\$172
6	\$898	\$150	\$1,032	\$172
7	\$1,045	\$149	\$1,202	\$171
8	\$1,191	\$149	\$1,370	\$171
9	\$1,338	\$149	\$1,539	\$171
10	\$1,409	\$141	\$1,620	\$162
11	\$1,543	\$141	\$1,775	\$161
12	\$1,678	\$140	\$1,930	\$161
13	\$1,813	\$140	\$2,086	\$161
14	\$1,949	\$140	\$2,240	\$160
15 or more	-	\$139	-	\$160

Field Trips

Field Trip	Program Length	Resident Fee	Non-Resident Fee
Explore a Salt Marsh (with fishing)	2.5 hours	\$295	\$325
	3 hours	\$355	\$390
	1 hour	\$164	\$189
Explore a Salt Marsh (no fishing)	2 hours	\$240	\$275
	2.5 hours	\$275	\$315
	3 hours	\$315	\$360
Can You Survive as an Ohlone?	2.5 hours	\$315	\$365
Unlock the Secrets of the Foothills	2 hours	\$240	\$275
Amazing Life of Birds	2 hours	\$240	\$275
Museum Visit, self-guided	†	-	\$5 per child
Museum Visit with classroom lesson	†	\$164	\$189

†for museum visits, program length varies. Call 650-329-2111 for details.