

# Chaparral to Ocean Science School

## LINKS TO CALIFORNIA SCIENCE CONTENT STANDARDS

All Ocean Institute programs are based around California Content Standards. The activities and investigations that your students participate in during the Chaparral to Ocean Science School Program coincide with the concepts being taught back in your classroom.

Here is a list of the general California Science Content Standards that are included in the Chaparral to Ocean Science School Program. If there are specific concepts that you would like to see focused on during the program, please contact us in advance. We are happy to adjust the program to meet your needs.

### **Grade Four**

#### Life Sciences

- 2.a. Students know plants are the primary source of matter and energy entering most food chains.
- 2.b. Students know producers and consumers (herbivores, carnivores, omnivores, and decomposers) are related in food chains and food webs and may compete with each other for resources in an ecosystem.
- 2.c. Students know decomposers recycle matter from dead plants and animals.
- 3.a. Students know ecosystems can be characterized by their living and nonliving components.
- 3.b. Students know that in any particular environment, some kinds of plants and animals survive well, some survive less well, and some cannot survive at all.
- 3.c. Students know many plants depend on animals for pollination and seed dispersal, and animals depend on plants for food and shelter.

#### Investigation and Experimentation

- 6.a. Students will differentiate observation from inference (interpretation) and know scientists' explanations come partly from what they observe and partly from how they interpret their observations.
- 6.b. Students will measure and estimate the weight, length, or volume of objects.
- 6.c. Students will formulate and justify predictions based on cause-and-effect relationships.
- 6.d. Students will conduct multiple trials to test a prediction and draw conclusions about the relationships between predictions and results.
- 6.e. Students will construct and interpret graphs from measurements.
- 6.f. Students will follow a set of written instructions for a scientific investigation.

### **Grade Five**

#### Life Sciences

- 2.a. Students know many multicellular organisms have specialized structures to support the transport of materials.
- 2.c. Students know the sequential steps of digestion and the roles of teeth and the mouth, esophagus, stomach, small intestine, large intestine, and colon in the function of the digestive system.
- 2.e. Students know how sugar, water, and minerals are transported in a vascular plant.
- 2.f. Students know plants use carbon dioxide and energy from sunlight to build molecules of sugar and release oxygen.
- 2.g. Students know plant and animal cells break down sugar to obtain energy, a process resulting in carbon dioxide (CO<sub>2</sub>) and water (respiration).

#### Investigation and Experimentation

- 6.a. Students will classify objects in accordance with appropriate criteria.
- 6.b. Students will develop a testable question.
- 6.c. Students will plan and conduct a simple investigation based on a student-developed question and write instructions others can follow to carry out the procedure.
- 6.f. Students will select appropriate tools and make quantitative observations.
- 6.g. Students will record data by using appropriate graphic representations and make inferences based on those data.

- 6.h. Students will draw conclusions from scientific evidence and indicate whether further information is needed to support a specific conclusion.

**Grade Six**Ecology (Life Sciences)

- 5.a. Student know energy entering ecosystems as sunlight is transferred by producers into chemical energy through photosynthesis and then from organism to organism through food webs.
- 5.b. Students know matter is transferred over time from one organism to others in the food web and between organisms and the physical environment.
- 5.c. Students know populations of organisms can be characterized by the functions they serve in an ecosystem.
- 5.d. Students know different kinds of organisms may play similar ecological roles in similar biomes.
- 5.e. Students know the number and types of organisms an ecosystem can support depends on the resources available and on abiotic factors, such as quantities of light and water, a range of temperatures, and soil composition.

Investigation and Experimentation

- 7.a. Students will develop a hypothesis.
- 7.b. Students will select and use appropriate tools and technology to perform tests, collect data, and display data.
- 7.c. Students will construct appropriate graphs from data and develop qualitative statements about the relationships between variables.
- 7.e. Students will recognize whether evidence is consistent with a proposed explanation.
- 7.f. Students will read a topographic map and a geologic map for evidence provided on maps and construct and interpret a simple scale map.
- 7.g. Students will interpret events by sequence and time from natural phenomena.
- 7.h. Students will identify changes in natural phenomena over time without manipulating the phenomena.

