Biology (Life Sciences) -- Grades 9, 10, 11, and 12

California State Science Content Standards

Covered in:
Hands-on science labs, demonstrations, & activities.
Investigation and Experimentation.

Presented by Climate Change Education .org during

Mobile Climate Science Labs

- Professional development for teachers
  - In school presentations
- Climate science and hands-on education specialists presenting alongside teachers and teaching assistants
- Presentations at CSTA, NSTA, AAAS conferences
- For school field trips, as presented at local science museums

As aligned with existing science content standards, adopted 1997
Referencing: Science Framework for California Public Schools
Adopted by the California State Board of Education
Published by the California Department of Education

Enabling teachers and schools to provide outstanding education
called for in the standards under Investigation and Experimentation sections.
Requirements for a minimum of 20-25% hands-on education in science.

Index of Standards Alignment—other grades, courses and standards:
http://climatechangeeducation.org/labs/k12_standards/index.html

Themes: http://climatechangeeducation.org/labs/themes/index.html

In the following, sections of standards noted are part of one or more lab theme.
Sections highlighted in green are a primary focus of one or more hands-on science lab.

Updated April 27, 2011
Standard Set 1 Cell Biology

1. b. Students know enzymes are proteins that catalyze biochemical reactions without altering the reaction equilibrium and the activities of enzymes depend on the **temperature**, ionic conditions, and the **pH of the surroundings**.

1. f. Students know usable energy is captured from sunlight by chloroplasts and is stored through the synthesis of sugar from carbon dioxide.

Standard Set 2-5 Genetics

Standard Set 6 Ecology

6. Stability in an ecosystem is a balance between competing effects. As a basis for understanding this concept:

   6. a. Students know biodiversity is the sum total of different kinds of organisms and is affected by alterations of habitats.

   6. b. Students know how to analyze changes in an ecosystem resulting from changes in climate, human activity, introduction of nonnative species, or changes in population size.

   6. d. Students know how water, carbon, and nitrogen cycle between abiotic resources and organic matter in the ecosystem and how oxygen cycles through photosynthesis and respiration.

Standard Set 7 Evolution (Population Genetics)

Standard Set 8 Evolution (Speciation)

8. b. Students know a great diversity of species increases the chance that at least some organisms survive major changes in the environment.

Standard Set 9 Physiology

9. As a result of the coordinated structures and functions of organ systems, the internal environment of the human body remains relatively stable (homeostatic) despite changes in the outside environment. As a basis for understanding this concept:
9. a. Students know how the complementary activity of major body systems provides cells with oxygen and nutrients and removes toxic waste products such as carbon dioxide.