



OFFICE OF CURRICULUM, INSTRUCTION, & PROFESSIONAL DEVELOPMENT

MIDDLE SCHOOL COURSE OUTLINE

(Revised April 2011)

Department	Science	Course Code	4110
Course Title	Science 7		
Abbreviation	Science 7	Grade Level	7
Course Length	1 semester	Prerequisites	None

COURSE DESCRIPTION:

Seventh grade science is a standards and laboratory based program. Students should spend approximately forty percent (40%) of their class time on hands-on activities. Introductory principles of life science will be explored in detail, with some related topics from physical and Earth sciences included. Constructivist methods of teaching are employed to ensure the best possible comprehension and retention of science concepts. Science activities will be based on the California Science Standards as delineated in the California Science Framework and will utilize the skills and techniques outlined in the Investigation and Experimentation Strand of the Content Standards.

GOALS: (Student needs this course is intended to meet)

- Students will learn all of the California State Standards for 7th Grade Science, which emphasize life sciences. The use of well-designed, memorable experiences and the application of scientific knowledge and methodology are essential in helping students achieve appropriate comprehension of the content.
- Students will improve their ability to learn independently by drawing generalizations from science related articles, books, graphs, charts, and diagrams. Regular opportunities are provided for students to clearly communicate their understanding through oral and written explanations of science concepts.
- Students will study the applications of science in everyday life to inspire them to consider pursuing advanced studies in science and explore the wide variety of related career choices available.

CONTEXT: CONTENT SCOPE AND SEQUENCE

	Physical Sciences	Earth Sciences	Life Sciences
6th	Density (Qualitative) ----- (CA 8) Energy Temperature vs. Heat Heat Transfer	Earth's Layers Plate Tectonics Mountain Building Earthquakes, Faults, and Epicenters Volcanoes California Geology Mechanical & Chemical Weathering Minerals Rock Cycle (Igneous, Metamorphic, and Sedimentary Rocks) Sun's Effect on Weather Convections Solar Energy Atmospheric Conditions Natural Resources Stratigraphy: Fossil Locations Rock--(CA 7) Geol. Timeline of Earth's History----- (CA 7) Formation of Fossils ----- (CA 7) Methods of Dating Earth's History----(CA 7)	Food Chains / Food Webs Ecosystems Human Impacts on Ecosystems ----- (LB)
			Six Designated Lessons from Project ALERT Health Curriculum
7th			Cell Similarities & Differentiation Function of Cell Structures Energy at the Cellular Level Photosynthesis / Respiration Mitosis Genetics DNA → RNA → Protein ----- (LB) Sexual / Asexual Reproduction Meiosis ----- (LB) DNA, Genes, & Alleles Dominant & Recessive Traits Theory of Evolution Natural Selection Body Systems Taxonomic Keys ----- (LB) Kingdoms & Major Phyla ----- (LB)
8th	Observing and Defining Motion Forces and their Effects Gravity's Largest Scale Effects Basic Atomic Theory Periodic Table as a Tool Metals, Non-metals, Inert Gases Electrons beyond the Bohr Model Ions and Isotopes Physical & Chemical Properties Element vs. Compound Properties Chemical Bonding Atoms and Ions Forming Solids Phases and Molecular Motion Chemical Formulas Chemical Equations & Conservation of Matter Exothermic vs. Endothermic Acids, Bases, and pH Density & Buoyancy Sound and Light Energy ----- (CA 7)	Galaxies and Stars Life Cycles of Stars (Nebular Theory, Novas, etc.) Distances in Astronomy Light Sources and Reflectors in the Universe Cosmology (Universe Origin)----- (LB) Solar System	Simple Machines and the Human Body ----- (CA 7) Blood Pressure and Heart Valves---(CA 7) Organic Chem. / Biochem.
			Three Designated Lessons from Project ALERT Health Curriculum
		<p><u>Notes regarding non-aligned content:</u></p> <p>(LB) => Long Beach specific content; not found in CA Science Content Standards</p> <p>(CA 7) => 7th grade content which has been moved to 6th or 8th grade to accommodate reduced science instruction in 7th grade</p> <p>(CA 8) => 8th grade content which should be presented qualitatively in 6th grade to help explain convections and other Earth science related content</p>	

CONTEXT: SKILLS SCOPE AND SEQUENCE

Investigation and Experimentation:

Scientific progress is made by asking meaningful questions and conducting careful investigations. As a basis for understanding this concept and addressing the content in the other three strands, students should develop their own questions and perform investigations. Students will:

6th

- 7a. Develop a hypothesis.
- b. Select and use appropriate tools and technology (including calculators, computers, balances, spring scales, microscopes, and binoculars) to perform tests, collect data, and display data.
- c. Construct appropriate graphs from data and develop qualitative statements about the relationships between variables.
- d. Communicate the steps and results from an investigation in written reports and oral presentations.
- e. Recognize whether evidence is consistent with a proposed explanation.
- f. Read a topographic map and a geologic map for evidence provided on the maps and construct and interpret a simple scale map.
- g. Interpret events by sequence and time from natural phenomena (e.g., the relative ages of rocks and intrusions).
- h. Identify changes in natural phenomena over time without manipulating the phenomena (e.g., a tree limb, a grove of trees, a stream, a hillslope).

7th

- 7a. Select and use appropriate tools and technology (including calculators, computers, balances, spring scales, microscopes, and binoculars) to perform tests, collect data, and display data.
- b. Utilize a variety of print and electronic resources (including the World Wide Web) to collect information as evidence as part of a research project.
- c. Communicate the logical connection among hypothesis, science concepts, tests conducted, data collected, and conclusions drawn from the scientific evidence.
- d. Construct scale models, maps and appropriately labeled diagrams to communicate scientific knowledge (e.g., motion of Earth's plates and cell structure).
- e. Communicate the steps and results from an investigation in written reports and verbal presentations.

8th

- 9a. Plan and conduct a scientific investigation to test a hypothesis.
- b. Evaluate the accuracy and reproducibility of data.
- c. Distinguish between variable and controlled parameters in a test.
- d. Recognize the slope of the linear graph as the constant in the relationship $y=kx$ and apply this to interpret graphs constructed from data.
- e. Construct appropriate graphs from data and develop quantitative statements about the relationships between variables.
- f. Apply simple mathematical relationships to determine one quantity given the other two (including speed = distance/time, density = mass/volume, force = pressure x area, volume=area x height).
- g. Distinguish between linear and non-linear relationships on a graph of data.

CA CONTENT STANDARDS

NOTE: [LS10] indicates standards that will be assessed on the 10th grade No Child Left Behind Biology/Life Science Test.

Grade 7 Focus On Life Science:

Cell Biology

1. All living organisms are composed of cells, from just one to many trillions, whose details usually are visible only through a microscope. As a basis for understanding this concept, students know ...
 - a. cells function similarly in all living organisms.
 - b. the characteristics that distinguish plant cells from animal cells, including chloroplasts and cell walls.
 - c. the nucleus is the repository for genetic information in plant and animal cells. [LS10]
 - d. that mitochondria liberate energy for the work that cells do, and chloroplasts capture sunlight energy for photosynthesis. [LS10]
 - e. cells divide to increase their numbers through a process of mitosis, which results in two daughter cells with identical sets of chromosomes. [LS10]
 - f. that as multicellular organisms develop, their cells differentiate.

Genetics

2. A typical cell of any organism contains genetic instructions that specify its traits. Those traits may be modified by environmental influences. As a basis for understanding this concept, students know...
 - a. the differences between the life cycles and reproduction methods of sexual and asexual organisms. [LS10]
 - b. sexual reproduction produces offspring that inherit half their genes from each parent.
 - c. an inherited trait can be determined by one or more genes. [LS10]
 - d. plant and animal cells contain many thousands of different genes and typically have two copies of every gene. The two copies (or alleles) of the gene may or may not be identical, and one may be dominant in determining the phenotype while the other is recessive. [LS10]
 - e. DNA (deoxyribonucleic acid) is the genetic material of living organisms and is located in the chromosomes of each cell. [LS10]

Evolution

3. Biological evolution accounts for the diversity of species developed through gradual processes over many generations. As a basis for understanding this concept, students know: ...
 - a. both genetic variation and environmental factors are causes of evolution and diversity of organisms. [LS10]
 - b. the reasoning used by Darwin in making his conclusion that natural selection is the mechanism of evolution. [LS10]
 - c. how independent lines of evidence from geology, fossils, and comparative anatomy provide a basis for the theory of evolution. [LS10]
 - d. how to construct a simple branching diagram to classify living groups of organisms by shared derived characteristics, and how to expand the diagram to include fossil organisms.
 - e. that extinction of a species occurs when the environment changes and the adaptive characteristics of a species are insufficient for its survival.

Note: This section has been moved to 6th grade in Long Beach to accommodate single-semester 7th grade science programs.

Earth and Life History (Earth Science)

4. Evidence from rocks allows us to understand the evolution of life on Earth. As the basis for understanding this concept, students know ...
 - a. Earth processes today are similar to those that occurred in the past and slow geologic processes have large cumulative effects over long periods of time.
 - b. the history of life on Earth has been disrupted by major catastrophic events, such as major volcanic eruptions or the impacts of asteroids.
 - c. that the rock cycle includes the formation of new sediment and rocks and that rocks are often found in layers, with the oldest generally on the bottom.
 - d. that evidence from geologic layers and radioactive dating indicates Earth is approximately 4.6 billion years old and that life on this planet has existed for more than 3 billion years.

**Moved
to 6th**

- e. fossils provide evidence of how life and environmental conditions have changed
- f. how movements of the Earth's continental and oceanic plates through time, with associated changes in climate and geographical connections, have affected the past and present distribution of organisms.
- g. how to explain significant developments and extinctions of plant and animal life on the geologic time scale.

Structure and Function in Living Systems

- 5. The anatomy and physiology of plants and animals illustrate the complementary nature of structure and function. As a basis for understanding this concept, students know ...
 - a. plants and animals have levels of organization for structure and function, including cells, tissues, organs, organ systems, and the whole organism. [LS10]
 - b. organ systems function because of the contributions of individual organs, tissues, and cells. The failure of any part can affect the entire system.
 - c. how bones and muscles work together to provide a structural framework for movement. [LS10]
 - d. how the reproductive organs of the human female and male generate eggs and sperm and how sexual activity may lead to fertilization and pregnancy.
 - e. the function of the umbilicus and placenta during pregnancy.
 - f. the structures and processes by which flowering plants generate pollen, ovules, seeds, and fruit.
 - g. how to relate the structures of the eye and ear to their functions.

Note: This section has been moved to 8th grade in Long Beach to accommodate single-semester 7th grade science programs.

Physical Principles in Living Systems (Physical Science)

- 6. Physical principles underlie biological structures and functions. As a basis for understanding this concept, students know ...
 - a. visible light is a small band within a very broad electromagnetic spectrum.
 - b. that for an object to be seen, light emitted by or scattered from it must be detected by the eye.
 - c. light travels in straight lines if the medium it travels through does not change.
 - d. how simple lenses are used in a magnifying glass, the eye, a camera, a telescope, and a microscope.
 - e. that white light is a mixture of many wavelengths (colors) and that retinal cells react differently to different wavelengths.
 - f. light can be reflected, refracted, transmitted, and absorbed by matter.
 - g. the angle of reflection of a light beam is equal to the angle of incidence.
 - h. how to compare joints in the body (wrist, shoulder, thigh) with structures used in machines and simple devices (hinge, ball-and-socket, and sliding joints).
 - i. how levers confer mechanical advantage and how the application of this principle applies to the musculoskeletal system.
 - j. that contractions of the heart generate blood pressure and that heart valves prevent backflow of blood in the circulatory system. [LS10]

Investigation & Experimentation

- 7. Scientific progress is made by asking meaningful questions and conducting careful investigations. As a basis for understanding this concept and addressing the content in the other three strands, students should develop their own questions and perform investigations. Students will ...
 - a. select and use appropriate tools and technology (including calculators, computers, balances, spring scales, microscopes, and binoculars) to perform tests, collect data, and display data.
 - b. use a variety of print and electronic resources (including the World Wide Web) to collect information and evidence as part of a research project.
 - c. communicate the logical connection among hypothesis, science concepts, tests conducted, data collected, and conclusions drawn from the scientific evidence. [LS10]
 - d. construct scale models, maps and appropriately labeled diagrams to communicate scientific knowledge (e.g., motion of Earth's plates and cell structure).
 - e. communicate the steps and results from an investigation in written reports and verbal presentations.

DISTRICT PERFORMANCE STANDARDS:

The Long Beach Unified School District has common assessments and assignments that are required for seventh grade science. The Performance Standard Criteria are shown in the table below. The objective is to have all students achieve at or above the Proficient Level and receive a C or better in the course. Performance level is determined by the average of the assessments or assignments.

Science Performance Standard Criteria

	Not Proficient	Partial Proficient	Proficient	Advanced Proficient
Graded Student Work	Average is a 1 or less than 60%	Average is a 2 or 60% - 69%	Average is a 3 or 70% - 84%	Average is a 4 or 85% - 100%
Standards-Based Classroom Assessments	Less than 60%	60% - 69%	70% - 84%	85% - 100%
Written Response / Lab Report / OES (6 point scale)	1-2	3	4	5-6
Written Response / Lab Report / OES (4 point scale)	1	2	3	4
End-Of-Course Exam	Less than 45%	45% - 59%	60% - 84%	85% - 100%

OUTLINE OF CONTENT AND RECOMMENDED TIME ALLOTMENT:

Content sequencing and time allocations are only suggestions and may be adjusted to suit school site curriculum plans and student needs.

SCIENCE 7**Cell Biology**

1. All living organisms are composed of cells, from just one to many trillions, whose details usually are visible only through a microscope.

Standards and Assessments "Students know..."	Task Analysis "Students are able to ..."	Adopted Textbook Correlation(s)	Connections	Appx Time (per 180 days)
<p>... cells function similarly in all living organisms. (1,a)</p> <p><u>DISTRICT ASSESSMENTS:</u> CR: <u>Divide and Conquer</u></p>	<ul style="list-style-type: none"> Summarize the 3 points of the cell theory. Differentiate unicellular from multicellular organisms. Cite significant differences between cells in different environments (the variety of cells in animals and plants, bacteria such as Escherichia bacterium living in an intestine or a Thermophilus bacterium living in a superheated geyser). Explain the common functions within cells in all living organisms (i.e., all cells contain DNA genome which is expressed by a universal code; cell division and energy production are very similar in all living cells). 	<p><u>Focus on LS,</u> Ch 1:1,2</p> <p><i>PH FoLS, Ch 1:1-2</i></p>	<p><u>KEY VOCABULARY:</u> cell multicellular cell theory bacteria unicellular genome</p> <p><u>SKILLS FOCUS:</u> Classifying, comparing, organizing, and contrasting</p> <p>Communicate the logical connection among hypothesis, science concepts, tests conducted, data collected, and conclusions drawn from the scientific evidence. (I&E 7.c [LS10])</p> <p><u>LABS / DEMOS:</u></p> <ul style="list-style-type: none"> View prepared slide of cork cells, and different kinds of specialized cells (nerve cell, blood cell, muscle cell, Escherichia bacterium, Thermophilus bacterium, etc.) <u>Focus on LS,</u> 1:2, Conc's in Motion, Interactive Table of cell structures, p. 63 <u>Focus on LS,</u> 1:2, Mini Lab, "... model a cell", p. 65 <u>Focus on LS,</u> 4-in-1 Lab, The Compound Light Microscope, pp. 1-4 <u>Focus on LS,</u> Ch 1 Transparency "Organic compounds" "A Factory Analogy" <u>Wikipedia:</u> Extremophiles http://en.wikipedia.org/wiki/Extremophile 	5 Days

Cell Biology (Cont'd)

1. All living organisms are composed of cells, from just one to many trillions, whose details usually are visible only through a microscope.

Standards and Assessments "Students know..."	Task Analysis "Students are able to ..."	Adopted Textbook Correlation(s)	Connections	Appx Time (per 180 days)
<p>... the characteristics that distinguish plant cells from animal cells, including chloroplasts and cell walls. (1,b)</p> <p>DISTRICT ASSESSMENTS: CR: <u>Divide and Conquer</u></p>	<ul style="list-style-type: none"> Identify the parts/ function of a compound microscope. Manipulate the compound microscope. Differentiate magnification vs. resolution. Prepare and examine wet mount slides to identify major cell organelles that differentiate plant cells from animal cells. Explain that plants have rigid cell walls while animal cells have a shape defined by an underlying cytoskeleton. Explain that many plant cells contain chloroplasts and a central vacuole, which are not found in animal cells. Compare and contrast plant cells and animal cells using a Venn diagram. 	<p>Focus on LS, Ch 1:2,3</p> <p><i>PH FoLS, Ch 1:1-2</i></p>	<p>KEY VOCABULARY: compound microscope wet mount slide cell wall cell membrane</p> <p>cytoplasm cytoskeleton organelle chloroplast central vacuole</p> <p>SKILLS FOCUS: Comparing, contrasting, organizing</p> <p>Select and use appropriate tools and technology (including microscopes) to perform tests, collect data, and display data. (I&E 7.a)</p> <p>Construct scale models, maps and appropriately labeled diagrams to communicate scientific knowledge. (I&E 7.d)</p> <p>LABS / DEMOS:</p> <ul style="list-style-type: none"> Demonstrate microscope parts and use View plant and animal cells under microscope to compare and contrast Focus on LS: Brain Pop Movies online, "Cell Specialization" Focus on LS: 1:2, "Conc's In Motion", Visualizing plant cells, p. 58, and animal cells, p. 59 Focus on LS: 1:2, Demo., Cell Wall, p. 58 Focus on LS: 1:2, Demo., Fluid in Cells, p. 59 Cell structure board game and jigsaw activity Micro-slides (to be used with micro viewer): Plant Cells, Animal Cells (Blood cell, nerve cell, cheek cell etc.) Model making of a wet mount slide. 	8 Days
<p>... the nucleus is the repository for genetic information in plant and animal cells. (1,c) [LS10]</p> <p>DISTRICT ASSESSMENTS: CR: <u>Your Basic Unit</u></p>	<ul style="list-style-type: none"> Explain that DNA molecules contain the code, or "blueprint", for organisms. Explain that the DNA molecules make up structures called chromosomes. Identify the nucleus and chromosomes on prepared slides of plant and/or animal cells. Explain that if cells are not actively dividing, the DNA will be contained within the nucleus, but is not condensed and will therefore not be visible. Explain that when the cell is actively dividing, the chromosomes will be condensed and visible, but the nuclear membrane will not be present. 	<p>Focus on LS, Ch 1:1,2</p> <p><i>PH FoLS, Ch 1:2</i></p>	<p>KEY VOCABULARY: DNA genetic chromosomes</p> <p>nucleus nuclear membrane</p> <p>SKILLS FOCUS: Observe</p> <p>Select and use appropriate tools and technology (including microscopes) to perform tests, collect data, and display data. (I&E 7.a)</p> <p>LABS / DEMOS:</p> <ul style="list-style-type: none"> Using a microscope, view a fixed and stained section of onion root tip, focusing on the DNA within the nucleus. (Framework p.104) Focus on LS: 1:1, Data Lab, "... observe DNA in a cell", p. 54 	3 Days

Cell Biology (Cont'd)

1. All living organisms are composed of cells, from just one to many trillions, whose details usually are visible only through a microscope.

Standards and Assessments "Students know..."	Task Analysis "Students are able to ..."	Adopted Textbook Correlation(s)	Connections	Appx Time (per 180 days)														
<p>... that mitochondria liberate energy for the work that cells do and chloroplasts capture sunlight energy for photosynthesis. (1,d) [LS10]</p> <p>DISTRICT ASSESSMENTS: CR: Your Basic Unit</p>	<ul style="list-style-type: none"> • Explain that an organism's food is broken down by digestion into simple sugar molecules that travel to all of the individual cells. • Demonstrate that chemical energy is stored in the bonds that hold the atoms together in a sugar molecule. • Diagram how mitochondria in every cell efficiently extract the chemical energy from these sugar molecules by breaking the sugars (6-carbon) into carbon dioxide (1-carbon). • Describe how the mitochondria convert the sugar's energy into another form of chemical energy in molecules that are easily used by the cell. • Create an analogy to express mitochondrial function such as, considering the sugar to be like crude oil that a car cannot run on until it is refined into an easily used form – gasoline. • Explain that chloroplasts use pigments to capture the energy of sunlight. • Make a diagram showing how the energy captured in chloroplasts drives a chemical reaction that takes carbon dioxide molecules (1-carbon) from the air and connects them together to form sugar molecules (6-carbon). • Explain that plants are called producers because they produce (synthesize) their own food, in the form of sugar molecules, from light (photo), air, and water. This is why the process is called photosynthesis. 	<p>Focus on LS, Ch 1:3</p> <p><i>PH FoLS, Ch 2:1-2</i></p>	<p>KEY VOCABULARY:</p> <table border="0"> <tr> <td>photosynthesis</td> <td>simple</td> </tr> <tr> <td>sugar</td> <td>cycle</td> </tr> <tr> <td>chemical energy</td> <td>pigment</td> </tr> <tr> <td>energy captured</td> <td>stomata</td> </tr> <tr> <td>stored energy</td> <td>source</td> </tr> <tr> <td>chlorophyll</td> <td>nitrogen</td> </tr> <tr> <td>cellular respiration</td> <td>consumers</td> </tr> </table> <p>SKILLS FOCUS: Analyzing, summarizing</p> <p>Select and use appropriate tools and technology (including calculators, computers, balances, spring scales, microscopes, and binoculars) to perform tests, collect data, and display data. (I&E 7.a)</p> <p>Construct scale models, maps and appropriately labeled diagrams to communicate scientific knowledge (e.g., motion of Earth's plates and cell structure). (I&E 7.d)</p> <p>LABS / DEMOS:</p> <ul style="list-style-type: none"> • Focus on LS, 1:3, Identifying Misconceptions, p. 69 TE • Focus on LS: 1:2, "Conc's In Motion", animation of cell resp, p. 60 • Focus on LS, 1:3, Practice Skills, p. 71 TE • Focus on LS, 1:3, Fig. 25, p. 71 • Focus on LS, 1:3, Mini Lab, "... see photosynthesis", p. 73 	photosynthesis	simple	sugar	cycle	chemical energy	pigment	energy captured	stomata	stored energy	source	chlorophyll	nitrogen	cellular respiration	consumers	<p>9 Days</p>
photosynthesis	simple																	
sugar	cycle																	
chemical energy	pigment																	
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cellular respiration	consumers																	

Cell Biology (Cont'd)

1. All living organisms are composed of cells, from just one to many trillions, whose details usually are visible only through a microscope.

Standards and Assessments "Students know..."	Task Analysis "Students are able to ..."	Adopted Textbook Correlation(s)	Connections	Appx Time (per 180 days)
<p>... cells divide to increase their numbers through a process of mitosis, which results in two daughter cells with identical sets of chromosomes. (1,e) [LS10]</p> <p>DISTRICT ASSESSMENTS: CR: <u>Divide and Conquer</u></p>	<ul style="list-style-type: none"> Define mitosis as the process by which individual cells reproduce themselves. Explain that before a cell divides, it must replicate a copy of the DNA in the nucleus and double the number of organelles in the cytoplasm, such as mitochondria and chloroplasts. Diagram and explain the events that occur during mitosis. Diagram and explain how replicated DNA chromosomes segregate so that each daughter cell receives the same number of chromosomes (two of each type to make a diploid organism). Compare and contrast (in a Venn diagram, for instance) the "cell cycle" to the life cycle of an animal. 	<p>Focus on LS, Ch 2:1 <i>PH FoLS, Ch 2:3</i></p>	<p>KEY VOCABULARY: cell division prophase chromatin metaphase mitosis anaphase cell cycle telophase cytokinesis DNA replication interphase daughter cells diploid</p> <p>SKILLS FOCUS: Predicting, observing, calculating</p> <p>Construct scale models, maps and appropriately labeled diagrams to communicate scientific knowledge (e.g., motion of Earth's plates and cell structure). (I&E 7.d)</p> <p>LABS / DEMOS:</p> <ul style="list-style-type: none"> Micro slides: Plant Mitosis Focus on LS, Brain Pop Movies online, "Mitosis" Focus on LS, Ch 2 Transparency "Animal Cell Division" Tissue Slides from SMRC Stained section of onion root tip showing cells undergoing mitosis with visible, condensed chromosome structures Class Role Play: DNA replication CellsAlive.com: Mitosis animation http://www.cellsalive.com/mitosis.htm 	6 Days

Genetics

2. A typical cell of any organism contains genetic instructions that specify its traits. Those traits may be modified by environmental influences.

Standards and Assessments "Students know..."	Task Analysis "Students are able to ..."	Adopted Textbook Correlation(s)	Connections	Appx Time (per 180 days)
<p>... DNA (deoxyribonucleic acid) is the genetic material of living organisms and is located in the chromosomes of each cell. (2,e) [LS10]</p> <p>DISTRICT ASSESSMENTS: CR: <u>Mutations</u></p>	<ul style="list-style-type: none"> Explain that the chromosomes in eukaryotes are made of a combination of DNA and protein. Distinguish between the roles of proteins in a chromosome, which help to support the DNA structure and functions, and DNA, which stores all of the genetic information. Infer that chromosomes organize genetic information of a cell into discrete units. For instance, sex-linked traits are all located on the X and Y chromosomes. Recall that humans have 23 pairs of chromosomes that vary in size. Explain that chromosomes are normally loosely stretched out in the nucleus and are not visible under a microscope until they pull together in condensed form for mitosis. 	<p>Focus on LS, Ch 1:2 and 2:1, 4:2 <i>PH FoLS, Ch 3:3 and 4:1</i></p>	<p>KEY VOCABULARY: chromosomes sex-linked chromatin</p> <p>SKILLS FOCUS: Abstract reasoning</p> <p>Construct scale models, maps and appropriately labeled diagrams to communicate scientific knowledge (e.g., cell structure). (I&E 7.d)</p> <p>LABS / DEMOS:</p> <ul style="list-style-type: none"> Focus on LS, 4:2, Critical Thinking, "Infer", p. 186 TE 	5 Days

Cell Biology (Cont'd)

1. All living organisms are composed of cells, from just one to many trillions, whose details usually are visible only through a microscope.

Standards and Assessments "Students know..."	Task Analysis "Students are able to ..."	Adopted Textbook Correlation(s)	Connections	Appx Time (per 180 days)
<p>* ... DNA serves as the template for all functional (enzyme) and structural proteins in cells. (LBUSD)</p> <p>DISTRICT ASSESSMENTS: OES:</p>	<ul style="list-style-type: none"> Contrast structural proteins from proteins that facilitate chemical reactions in cells called enzymes. Explain that codes from various segments of the DNA molecules are transcribed into a similar molecule called RNA, which in turn is translated into protein molecules needed by the cell. Explain that the mechanism that selects which parts of the DNA are transcribed is the mechanism that determines the cell type. 	<p>Focus on LS, Ch 1:1 pp. 53-54</p> <p><i>PH FoLS, Ch 3:4</i></p>	<p>KEY VOCABULARY: protein code RNA transcription translation</p> <p>SKILLS FOCUS: Model, correlate</p> <p>Communicate the logical connection among hypothesis, science concepts, tests conducted, data collected, and conclusions drawn from the scientific evidence. (I&E 7.c [LS10])</p> <p>LABS / DEMOS:</p> <ul style="list-style-type: none"> Teachers Domain: Making Proteins animation http://www.teachersdomain.org/resources/lps07/sci/life/stru/cell/protein/index.html 	<p>1 Day</p>
<p>... that as multicellular organisms develop, their cells differentiate. (1,f)</p> <p>DISTRICT ASSESSMENTS: CR: <u>Divide and Conquer</u></p>	<ul style="list-style-type: none"> Examine a variety of tissue samples showing differentiated cells in plants and animals. Research the variety of cell types in humans. Explain that all of the different cell types in a multicellular organism began as a single fertilized egg. Give evidence that a fertilized egg cell goes through several mitosis divisions creating apparently identical cells. Point out evidence from pictures/diagrams that at very early stages, cells begin to form distinct structures, implying that the cells are no longer identical. Define cells that have become identifiable types as differentiated cells. Contrast early differentiation (cells which will become stomach and intestines can be distinguished from those which will become the nervous system) from later, more fine differentiation (retinal cells becoming either rods for dim light vision, or cones for color vision). Cite evidence that plant cells often retain the ability to differentiate into other tissue types. For example, plants which can root from clippings. Explain that after differentiation, most animal cells lose the ability to become other types of cells, except for the germ cells that produce sperm and eggs. 	<p>Focus on LS, Ch 2:2</p> <p><i>PH FoLS, Ch 16:1 & 23:3</i></p>	<p>KEY VOCABULARY: embryo differentiation fertilized egg different</p> <p>SKILLS FOCUS: Observing, classifying, communicating, organizing</p> <p>Communicate the logical connection among hypothesis, science concepts, tests conducted, data collected, and conclusions drawn from the scientific evidence. (I&E 7.c [LS10])</p> <p>LABS / DEMOS:</p> <ul style="list-style-type: none"> Observe prepared slides of plant and animal tissues. Focus on LS, Lab, "Exploring the Unknown", p. 74 Focus on LS, 2:2, Identifying Misconceptions, p. 102 TE Focus on LS, Brain Pop Movies online, "Cell Specialization" Wikipedia: cellular differentiation http://en.wikipedia.org/wiki/Cellular_differentiation NOVA Online: animation of early embryo development and differentiation http://www.pbs.org/wgbh/nova/odyssey/clips/ 	<p>3 Days</p>

End District Quarter 1 (or 3) Exam Material

Begin District Quarter 2 (or 4) Exam Material

Genetics

2. A typical cell of any organism contains genetic instructions that specify its traits. Those traits may be modified by environmental influences.

Standards and Assessments "Students know..."	Task Analysis "Students are able to ..."	Adopted Textbook Correlation(s)	Connections	Appx Time (per 180 days)
<p>* ... meiosis is the process germ cells undergo to produce the haploid cells needed for sexual reproduction. (LBUSD)</p> <p>DISTRICT ASSESSMENTS: OES:</p>	<ul style="list-style-type: none"> List organisms whose cells are diploid, having two sets of chromosomes (animals, plants, fungi) and organisms whose cells have only one set of chromosomes (bacteria). Demonstrate that diploid organisms must produce gamete cells with half the normal chromosome number (haploid), in order to produce an offspring with chromosomes from both parents. Diagram and describe the steps of meiosis that germ cells undergo to produce haploid cells (sperm and egg in animals) needed for sexual reproduction. 	<p>Focus on LS, Ch 3:1 & 13:1 Start w/ Fig 5, p 508 then see Fig 3, p 506</p> <p><i>PH FoLS, Ch 3:3</i></p>	<p>KEY VOCABULARY: meiosis haploid germ cell gamete</p> <p>SKILLS FOCUS: Organization</p> <p>Construct appropriately labeled diagrams to communicate scientific knowledge. (I&E 7.d)</p> <p>LABS / DEMOS:</p> <ul style="list-style-type: none"> Focus on LS, 3:1, Mini Lab, "What Does Meiosis Look Like?", p. 132 Focus on LS: 3:1, "Conc's In Motion", animation of meiosis, p. 131 Access Excellence: meiosis diagram http://www.accessexcellence.org/RC/LL/GG/meiosis.php Cells Alive: meiosis animation http://www.cellsalive.com/meiosis.htm 	<p>2 Days</p>
<p>... the differences between the life cycles and reproduction methods of sexual and asexual organisms. (2,a) [LS10]</p> <p>DISTRICT ASSESSMENTS: CR: <u>Mutations</u></p>	<ul style="list-style-type: none"> Diagram and explain fertilization as the key step in sexual reproduction for animals when a haploid egg and sperm cell fuse to form a diploid fertilized egg (zygote). Diagram the parallel sexual reproduction process in plants where pollination of haploid cells in flowering plants produces diploid seeds. Explain how sexual reproduction produces new organisms that are genetically related to both parents. Explain how hermaphroditic sexual reproduction occurs when sperm and egg generated by a single organism fuse. Define reproduction without fertilization as asexual. Describe different types of asexual reproduction (i.e., fission, budding, vegetative propagation). Cite examples of organisms that reproduce asexually. Give examples of organisms have both sexual and asexual reproduction methods. Compare and contrast sexual and asexual reproduction. Explain that growth into a new adult organism involves many cell divisions (mitosis) and developmental stages. 	<p>Focus on LS, Ch 3:1-4</p> <p><i>PH FoLS, Ch 8:2, 11:3, 12:1,3, and 23:2</i></p>	<p>KEY VOCABULARY: fission budding fertilization zygote pollination gymnosperm angiosperm seed sperm flower egg hermaphroditic sexual reproduction asexual reproduction sexual reproduction vegetative propagation</p> <p>SKILLS FOCUS: Comparing, contrasting</p> <p>Communicate the steps and results from an investigation in written reports and verbal presentations. (I&E 7.e)</p> <p>LABS / DEMOS:</p> <ul style="list-style-type: none"> Flow chart (each type of reproduction) Focus on LS, Lab, "Plant Propagation", pp. 158-159 Use microscope (with Flex Cam, if available) to show budding yeast in varying temperatures of water Focus on LS, 3:4, Mini Lab, "How Do Yeast Reproduce?", p. 153 Tell Me Why video, "Flowers" Grow sweet potato plants in class Focus on LS: Ch 3 Transparencies "It's Raining, It's Spring" "Fern Life Cycle" "Spuds and Buds" "Asexual Reproduction" 	<p>5 Days</p>

Structure and Function in Living Systems (cont'd)

5. The anatomy and physiology of plants and animals illustrate the complementary nature of structure and function.

Standards and Assessments "Students know..."	Task Analysis "Students are able to ..."	Adopted Textbook Correlation(s)	Connections	Appx Time (per 180 days)														
<p>... the structures and processes by which flowering plants generate pollen, ovules, seeds, and fruit. (5,f)</p> <p>DISTRICT ASSESSMENTS: CR: Flower Power</p>	<ul style="list-style-type: none"> Explain how the flower is the reproductive structure of angiosperms, which may contain male, female or both parts. Describe the male reproductive parts of the flower, including: stamen, anther, pollen granules, filament and receptacle. Describe the female reproductive parts of the flower, including pistil, stigma, pollen grains, style, pollen tube, ovary, ovules, and ova. Describe the process after fertilization from seed to fruit. 	<p>Focus on LS, Ch 3:2</p> <p><i>PH FoLS, Ch 11:3</i></p>	<p>KEY VOCABULARY:</p> <table border="0"> <tr> <td>angiosperm</td> <td>stigma</td> </tr> <tr> <td>stamen</td> <td>style</td> </tr> <tr> <td>anther</td> <td>pollen tube</td> </tr> <tr> <td>pollen</td> <td>ovary</td> </tr> <tr> <td>filament</td> <td>ovule</td> </tr> <tr> <td>receptacle</td> <td>ova</td> </tr> <tr> <td>pistil</td> <td></td> </tr> </table> <p>SKILLS FOCUS: Observation</p> <p>Select and use appropriate tools and technology (including calculators, computers, balances, spring scales, microscopes, and binoculars) to perform tests, collect data, and display data. (I&E 7.a)</p> <p>LABS / DEMOS:</p> <ul style="list-style-type: none"> Focus on LS, Virtual Lab "The Simple Life: What is the life cycle of a simple plant?" at ca7.msscience.com Focus on LS, 3:2, Demo., "Plant Reproduction", p. 137 TE Focus on LS, 3:2, Mini Lab "What's in a flower?", p. 138 Focus on LS, 3:2, Conc's in Motion: animation of the angiosperm life cycle, p. 139 Focus on LS, 3:2, Demo., "Model Diversity" using fruit, p 140 TE Focus on LS, Ch 3 Transparency "It's Raining, It's Sporing?" 	angiosperm	stigma	stamen	style	anther	pollen tube	pollen	ovary	filament	ovule	receptacle	ova	pistil		<p>1 Days</p>
angiosperm	stigma																	
stamen	style																	
anther	pollen tube																	
pollen	ovary																	
filament	ovule																	
receptacle	ova																	
pistil																		

Structure and Function in Living Systems (cont'd)

5. The anatomy and physiology of plants and animals illustrate the complementary nature of structure and function.

Standards and Assessments "Students know..."	Task Analysis "Students are able to ..."	Adopted Textbook Correlation(s)	Connections	Appx Time (per 180 days)																		
<p>NOTE: This unit requires parent notification.</p> <p>... how the reproductive organs of the human female and male generate eggs and sperm and how sexual activity may lead to fertilization and pregnancy. (5,d)</p> <p>DISTRICT ASSESSMENTS: CR: <u>Life Begins</u> CR: <u>Can't You See it?</u></p>	<ul style="list-style-type: none"> Describe the male reproduction system, including testes, scrotum, and sperm. Describe sperm production from immature cells in the walls of the seminiferous tubules to flagellated cells stored in the epididymis. Explain that during sexual arousal millions of sperm are transported to the urethra and ejaculated through the penis and that some may exit before ejaculation without the man's knowledge. Explain how sexual activity without ejaculation can release sperm causing fertilization and pregnancy. Describe the female reproduction system. Explain ovulation following the path of the egg (oocyte) from a ruptured follicle of the ovaries (ovulation), to the Fallopian tubes, and uterus. Explain how a sperm can be deposited in or near the vagina and can fertilize the egg. Describe pregnancy from the implantation and development of the fertilized egg in the uterus to the delivery of a baby, typically 9 months later. Explain the physiology of why menstruation occurs noting that when the cycle stops, this can be the first sign of pregnancy. 	<p>Focus on LS, Ch 13:1</p> <p><i>PH FoLS, 23:2,3</i></p>	<p>KEY VOCABULARY:</p> <table border="0"> <tr><td>penis</td><td>ovaries</td></tr> <tr><td>testes</td><td>ovulation</td></tr> <tr><td>scrotum</td><td>oocyte</td></tr> <tr><td>sperm</td><td>Fallopian tubes</td></tr> <tr><td>urethra</td><td>vagina</td></tr> <tr><td>ejaculation</td><td>uterus</td></tr> <tr><td>fertilization</td><td>menstruation</td></tr> <tr><td>pregnancy</td><td>follicle</td></tr> <tr><td>embryo</td><td>fetus</td></tr> </table> <p>SKILLS FOCUS: Evaluating, predicting, graphing</p> <p>Communicate the logical connection among hypothesis, science concepts, tests conducted, data collected, and conclusions drawn from the scientific evidence. (I&E 7.c [LS10])</p> <p>LABS / DEMOS:</p> <ul style="list-style-type: none"> NOVA Video: "The Miracle of Life", 60 min., (CA standards 5,d and 5,e) Focus on LS: 13:1 Data Lab, "Which hormones control ovulation?", p. 509 Focus on LS: Ch 13 Transparencies "Thoughts on Reproduction" "Male and Female Reproductive Systems" "Fertilization" 	penis	ovaries	testes	ovulation	scrotum	oocyte	sperm	Fallopian tubes	urethra	vagina	ejaculation	uterus	fertilization	menstruation	pregnancy	follicle	embryo	fetus	<p>½ Day</p>
penis	ovaries																					
testes	ovulation																					
scrotum	oocyte																					
sperm	Fallopian tubes																					
urethra	vagina																					
ejaculation	uterus																					
fertilization	menstruation																					
pregnancy	follicle																					
embryo	fetus																					
<p>NOTE: This unit requires parent notification.</p> <p>... the function of the umbilicus and placenta during pregnancy. (5,e)</p> <p>DISTRICT ASSESSMENTS: CR: <u>Life Begins</u></p>	<ul style="list-style-type: none"> Explain the role of the placenta in a developing fetus. Explain the role of the umbilical cord (noting that the blood of the mother and fetus do not mix together). Discuss how drugs, alcohol and infectious viruses, including HIV, can easily pass from the mother's blood to the blood of the fetus. 	<p>Focus on LS, Ch 13:2</p> <p><i>PH FoLS, Ch 23:3</i></p>	<p>KEY VOCABULARY:</p> <table border="0"> <tr><td>placenta</td><td>umbilical cord</td></tr> <tr><td>fetus</td><td>amniotic sac</td></tr> </table> <p>SKILLS FOCUS: Comparing</p> <p>Utilize a variety of print and electronic resources (including the World Wide Web) to collect information as evidence as part of a research project. (I&E 7.b)</p> <p>LABS / DEMOS:</p> <ul style="list-style-type: none"> Focus on LS: 13:2, "Conc's in Motion" Interactive Table about the stages of pregnancy, p. 516 Focus on LS: 13:2, Data Lab: "folic acid ... birth defects?", p. 519 Focus on LS: 13:2, "Conc's In Motion", Interactive Table on stages of pregnancy, p. 516 Focus on LS: 13:2, Design Your Own Lab, "A Healthy Pregnancy" , p. 522-523 Focus on LS: 13:2, Real World Science: Science & Society, p. 525 Focus on LS: Ch 13 Transparencies "A New Development" "Human Development" 	placenta	umbilical cord	fetus	amniotic sac	<p>½ Day</p>														
placenta	umbilical cord																					
fetus	amniotic sac																					

Genetics (cont'd)

2. A typical cell of any organism contains genetic instructions that specify its traits. Those traits may be modified by environmental influences.

Standards and Assessments "Students know..."	Task Analysis "Students are able to ..."	Adopted Textbook Correlation(s)	Connections	Appx Time (per 180 days)
<p>... sexual reproduction produces offspring that inherit half their genes from each parent. (2,b)</p> <p>DISTRICT ASSESSMENTS: CR: Mutations CR: In the Pink CR: A Very Hairy Problem</p>	<ul style="list-style-type: none"> • Illustrate how sexual reproduction combines genetic material from two distinct cells to form a new and unique combination. • Show by models or illustrations that nearly half of the genetic material comes from each parent. • Recall that mitochondrial DNA comes solely from the mother. • Demonstrate how mitochondrial DNA allows for tracing heritage from grandmothers to grandchildren with great certainty. 	<p>Focus on LS, Ch 3:1-3 mitochondrial DNA: p 65 and p 187 "Maternal Inheritance"</p> <p><i>PH FoLS, Ch 3:2 and 4:1</i></p>	<p>KEY VOCABULARY: offspring probability genotype trait</p> <p>SKILLS FOCUS: Inferring, classifying</p> <p>Communicate the logical connection among hypothesis, science concepts, tests conducted, data collected, and conclusions drawn from the scientific evidence. (I&E 7.c [LS10])</p> <p>LABS / DEMOS:</p> <ul style="list-style-type: none"> • Use of Blood Type chart(shows which combinations of alleles result in each blood type) • Focus on LS, 3:1, Science Skills, "Make a Table", p. 128 TE • Focus on LS: Ch 3 Transparency "Fertilization" 	<p>5 Days</p>
<p>... an inherited trait can be determined by one or more genes. (2,c) [LS10]</p> <p>DISTRICT ASSESSMENTS: CR: In the Pink CR: A Very Hairy Problem</p>	<ul style="list-style-type: none"> • Define genes as portions of the DNA that code for specific traits. • Define inherited traits as physical characteristics that have been passed down through generations by DNA. • Explain that single genes may affect more than one trait or feature. • Cite examples that some traits, like hair and eye color, are the result of multiple genes. 	<p>Focus on LS, Ch 4:2</p> <p><i>PH FoLS, Ch 4:1</i></p>	<p>KEY VOCABULARY: gene pedigree</p> <p>SKILLS FOCUS: Observation, logic</p> <p>Utilize a variety of print and electronic resources (including the World Wide Web) to collect information as evidence as part of a research project. (I&E 7.b)</p> <p>LABS / DEMOS:</p> <ul style="list-style-type: none"> • Focus on LS, 4:2, Science Concepts, "Activity", p. 184 TE • Focus on LS: Ch 4 Transparency "Genetic Inheritance" 	<p>4 Days</p>

Genetics (cont'd)

2. A typical cell of any organism contains genetic instructions that specify its traits. Those traits may be modified by environmental influences.

Standards and Assessments "Students know..."	Task Analysis "Students are able to ..."	Adopted Textbook Correlation(s)	Connections	Appx Time (per 180 days)
<p>... plant and animal cells contain many thousands of different genes and typically have two copies of every gene. The two copies (or alleles) of the gene may or may not be identical, and one may be dominant in determining the phenotype while the other is recessive. (2,d) [LS10]</p> <p>DISTRICT ASSESSMENTS: CR: <u>In the Pink</u> CR: <u>A Very Hairy Problem</u></p>	<ul style="list-style-type: none"> Analyze traits of people to appreciate that there are tens of thousands of traits controlled by genes. Explain that genes exist in multiple versions, called alleles. Account for the diversity of individuals by explaining that every person has the same genes as other people, but in a combination of alleles unique to the individual. Logically show that by definition, diploid organisms will have two copies (or alleles) of every gene, which may be identical or different. Explain that one of the alleles in a pair may be dominant over the other (recessive allele) so that it is expressed outwardly. Define phenotype as the outward expression of genes as traits. Predict phenotypic expression of traits in offspring of sexual reproduction using a 2x2 Punnett square. Explain that genetic disorders are not caused by the presence of a gene that other individuals lack. They are caused by an abnormal allele being expressed. 	<p>Focus on LS, Ch 4:1,2 <i>PH FoLS, Ch 3:1,2 and 4:2</i></p>	<p>KEY VOCABULARY: alleles dominant genotype recessive phenotype expression Punnett square</p> <p>SKILLS FOCUS: Diagram, organize</p> <p>Communicate the logical connection among hypothesis, science concepts, tests conducted, data collected, and conclusions drawn from the scientific evidence. (I&E 7.c [LS10])</p> <p>LABS / DEMOS:</p> <ul style="list-style-type: none"> Focus on LS, 4:1, Practice Skills, "Make a Table", p. 174 TE Focus on LS, 4:1, Science Concepts, "Use Models", p. 1774 TE Focus on LS, Ch4 Transparency "Pedigree" 	<p>4 Days</p>

Evolution

3. Biological evolution accounts for the diversity of species developed through gradual processes over many generations.

Standards and Assessments "Students know..."	Task Analysis "Students are able to ..."	Adopted Textbook Correlation(s)	Connections	Appx Time (per 180 days)
<p>... both genetic variation and environmental factors are causes of evolution and diversity of organisms. (3,a) [LS10]</p> <p>DISTRICT ASSESSMENTS: CR: <u>Adapt or Die</u></p>	<ul style="list-style-type: none"> List examples of variations among individuals in a population. Explain that genetic variability means there are favorable and unfavorable traits in a population. Discuss how genetic homogeneity (ex. cheetah) makes a population more susceptible to extinction (ex. succumbing to an infectious disease for which there is no natural resistance). Give reasons why genetic variation is important for survival. Explain that environmental factors (such as habitat loss, climate change, and the introduction of non-native species) may be a cause of natural selection. 	<p>Focus on Life Science, Ch 5:1,2, 6:1</p> <p><i>PH FoLS: Ch 5:1</i></p>	<p>KEY VOCABULARY: evolution species theory variation evidence natural selection populations extinction ancestry</p> <p>SKILLS FOCUS: Interpreting data, drawing conclusions</p> <p>Communicate the logical connection among hypothesis, science concepts, tests conducted, data collected, and conclusions drawn from the scientific evidence. (I&E 7.c [LS10])</p> <p>LABS / DEMOS:</p> <ul style="list-style-type: none"> Focus on LS: 5:1, Launch Lab, "...attracts insects to flowers?" p. 207 Focus on LS: 5:1, Mini Lab, "...the strongest survivors?", p. 228 Focus on LS: 4-in-1 Lab, "Differences in Species", pp. 23-24 Focus on LS: 4-in-1 Lab, "Seed Adaptations", p. 33-36 Focus on LS: Culturally Responsive Teaching, "... Seeds for a Healthy Planet", p. 19 Focus on LS: Ch 5 Transparencies "It's a Camel Now" "A Family Reunion" 	<p>3 Days</p>
<p>... the reasoning used by Darwin in making his conclusion that natural selection is the mechanism of evolution. (3,b) [LS10]</p> <p>DISTRICT ASSESSMENTS: CR: <u>Adapt or Die</u></p>	<ul style="list-style-type: none"> Define natural selection, noting that it is considered the primary mechanism for evolution. Provide examples of how differences in offspring occur randomly and may affect an individual's ability to survive and reproduce. Give examples of environment and ecological conditions that affect the survival and reproduction of species. State the reasoning and evidence that Darwin gave in forming his law of natural selection. Explain that scientists' work is based on the ideas and work of other scientists (e.g., the work of Thomas Malthus influenced the development of Charles Darwin's proposal that natural selection is the mechanism for evolution). Explain how natural selection accounts for the great variety of species seen today, and for the great number of extinct and non-extinct species found in the fossil record. 	<p>Focus on LS, Ch 5:1</p> <p><i>PH FoLS, Ch 5:1,2</i></p>	<p>KEY VOCABULARY: natural selection species Charles Darwin offspring fossil record environment adaptation ecological evolution reproduce</p> <p>SKILLS FOCUS: Comparing, observing, interpreting data, inferring</p> <p>Communicate the logical connection among hypothesis, science concepts, tests conducted, data collected, and conclusions drawn from the scientific evidence. (I&E 7.c [LS10])</p> <p>LABS / DEMOS:</p> <ul style="list-style-type: none"> Focus on LS: 5:1, Mini Lab "... shape of a bird's beak ...?", p. 214 Focus on LS: 4-in-1 Lab, "Bird Beaks and Physical Adaptations", p. 25-28 Focus on LS: 5:2, Design Your Own Lab, "... apply ... natural selection to island species?", p. 230-231 Focus on LS: 6:4, Real World Science, p. 268-269 	<p>2 Days</p>

Evolution (cont'd)

3. Biological evolution accounts for the diversity of species developed through gradual processes over many generations.

Standards and Assessments "Students know..."	Task Analysis "Students are able to ..."	Adopted Textbook Correlation(s)	Connections	Appx Time (per 180 days)
<p>... how independent lines of evidence from geology, fossils, and comparative anatomy provide a basis for the theory of evolution. (3,c) [LS10]</p> <p>DISTRICT ASSESSMENTS: CR: The Leg Bon's Connected to the ...</p>	<ul style="list-style-type: none"> Describe the process of fossilization and explain how fossils preserve evidence of ancient life. Describe how paleontologists use radioactive dating methods and geologic interpretation of the organisms in rock layers to provide evidence for evolution. Cite evidence from comparative anatomy (homologous structures) that can be seen as evidence that all vertebrates descended from a common ancestor. Cite evidence from geology, the fossil record, molecular biology, and studies of comparative anatomy that supports the theory of evolution. 	<p>Focus on LS, Ch 6:1,2 7:1,2</p> <p><i>PH FoLS: Ch 5:2-3 & 6:1-4</i></p>	<p>KEY VOCABULARY: evolution theory homologous structures absolute age dating radioactive dating relative age dating comparative anatomy preserve index fossil fossil record variation fossil fossilization anatomy paleontologist population geology vertebrates protein Law of Superposition</p> <p>SKILLS FOCUS: Classifying, organizing, inferring, drawing conclusions, comparing, contrasting</p> <p>Communicate the logical connection among hypothesis, science concepts, tests conducted, data collected, and conclusions drawn from the scientific evidence. (I&E 7.c [LS10])</p> <p>LABS / DEMOS:</p> <ul style="list-style-type: none"> Focus on LS: 6:1, Mini Lab, "How do fossils form,?" p. 249 Focus on LS: 6:2, Data Lab, "... proteins tell us about evolution" p. 255 Focus on LS: Ch 6 Transparencies "Fossil Formation" "Guess Again" "Ancient Geography" 	<p>2 Days</p>

Evolution (cont'd)

3. Biological evolution accounts for the diversity of species developed through gradual processes over many generations.

Standards and Assessments "Students know..."	Task Analysis "Students are able to ..."	Adopted Textbook Correlation(s)	Connections	Appx Time (per 180 days)
<p>...how to construct a simple branching diagram to classify living groups of organisms by shared derived characteristics and how to expand the diagram to include fossil organisms. (3,d)</p> <p>DISTRICT ASSESSMENTS: PT: <u>A Leafy Situation</u></p>	<ul style="list-style-type: none"> Define systematics as the classification of organisms according to their characteristics. Discuss how classification groups organisms together based on shared characteristics (using the system developed by Carolus Linnaeus). Create a branching tree diagram that shows the probable evolutionary relationships among living organisms and their ancestors. 	<p>Focus on LS, Ch 6:4</p> <p><i>PH FoLS, 5:2 7:3</i></p>	<p>KEY VOCABULARY: systematics classification branching tree ancestors evolutionary relationships</p> <p>SKILLS FOCUS: Comparing, contrasting, inferring, interpreting data, diagraming, organizing, classifying</p> <p>Communicate the logical connection among hypothesis, science concepts, tests conducted, data collected, and conclusions drawn from the scientific evidence. (I&E 7.c [LS10])</p> <p>LABS / DEMOS:</p> <ul style="list-style-type: none"> Focus on LS: 6:4, "Conc's In Motion", Interactive Table of levels of classification, p. 263 Focus on LS: 6:4, Mini Lab, "... create a dichotomous key?", p. 264 Focus on LS: 6:4, Lab "Classifying the Students in your Class", p. 266-267 Focus on LS: 4-in-1 Lab, "Classification", p. 29-31 Focus on LS: 4-in-1 Lab, "Designing a Classification System", p. 97-98 Focus on LS: Ch 6 Transparencies "It's a Bird! It's a Plane! It's all of the Above!" "Modern Classification" "Bear Evolution" Focus on LS: Ch 8 Transparencies "Geologic Time" "Geologic Time Scale" Berkeley/NSF: Cladistics "T-Rex" http://www.ucmp.berkeley.edu/education/explorations/tours/Trex/index.html 	<p>1 Day</p>
<p>...use a taxonomic key to classify organisms, recognizing the microscopic and macroscopic differences between the taxonomic groups. (LBUSD)</p> <p>DISTRICT ASSESSMENTS: OES:</p>	<ul style="list-style-type: none"> Learn and practice the use of taxonomic dichotomous keys. Develop and use dichotomous keys for a set of non-living objects. List the seven levels of classification. Describe the similarities in body shape and function (morphological similarities) among organisms of one taxonomic group. Compare and contrast prokaryotic and eukaryotic cells. 	<p>Focus on LS, Ch 6:4, Ch 1:2, p. 64-66 Ch 2:2, p.98-100</p> <p><i>PH FoLS, 7:3,4 and 9:1</i></p>	<p>KEY VOCABULARY: taxonomy morphology dichotomous key prokaryotic classification eukaryotic</p> <p>SKILLS FOCUS: Comparing, contrasting, inferring, interpreting data, organizing, classifying</p> <p>Communicate the logical connection among hypothesis, science concepts, tests conducted, data collected, and conclusions drawn from the scientific evidence. (I&E 7.c [LS10])</p> <p>LABS / DEMOS:</p> <ul style="list-style-type: none"> Focus on LS: 6:4, Mini Lab, "...dichotomous key?", p. 264 Focus on LS: Ch 6 Transparency "Modern Classification" 	<p>(optional)</p>

Evolution (cont'd)

3. Biological evolution accounts for the diversity of species developed through gradual processes over many generations.

Standards and Assessments "Students know..."	Task Analysis "Students are able to ..."	Adopted Textbook Correlation(s)	Connections	Appx Time (per 180 days)
<p>... that extinction of a species occurs when the environment changes and the adaptive characteristics of a species are insufficient for its survival. (3,e)</p> <p>DISTRICT ASSESSMENTS: CR: <u>Adapt or Die</u></p>	<ul style="list-style-type: none"> Explain how the fossil record indicates that most of the species that once lived on Earth are now extinct. Enumerate specific factors that contribute to species extinction. Describe how extinction of a species occurs when adaptive characteristics of the species are no longer sufficient to allow the species to survive under changing environmental conditions. Discuss how random mutations may result in variations of traits that give some organisms advantages to survive changing environmental conditions. Cite examples of factors that affect the process of natural selection (overproduction, competition, and variations). Describe how natural selection will ultimately lead to the existence of populations better able to survive and reproduce in the current environmental conditions. 	<p>Focus on LS, Ch 5:2, 6:3, Ch 8:2,3 p. 324-343</p> <p><i>PH FoLS, 5:1,2 3:4</i></p>	<p>KEY VOCABULARY: extinction fossil record species environment mutations overproduction competition variation geographic isolation populations</p> <p>SKILLS FOCUS: Comparing, contrasting, inferring, interpreting data, making models, classifying</p> <p>Communicate the logical connection among hypothesis, science concepts, tests conducted, data collected, and conclusions drawn from the scientific evidence. (I&E 7.c [LS10])</p> <p>LABS / DEMOS:</p> <ul style="list-style-type: none"> Focus on LS, 5:2, "Conc's In Motion", Interactive Table on causes of extinction, p. 226 Focus in LS, 5:2, Science & Society, "Habitat Degradation ...", p. 233 Focus on LS, 8:3, Lab, "...CA Change over geologic time", p. 342-343 Focus on LS, Ch 5 Transparency "Skull Shape and the Brain" Focus on LS, Ch 6 Transparency "Ancient Geography" "Mountain Building and Evolution" 	<p>2 Days</p>

Structure and Function in Living Systems

5. The anatomy and physiology of plants and animals illustrate the complementary nature of structure and function.

Standards and Assessments "Students know..."	Task Analysis "Students are able to ..."	Adopted Textbook Correlation(s)	Connections	Appx Time (per 180 days)
<p>... plants and animals have levels of organization for structure and function, including cells, tissues, organs, organ systems, and the whole organism.</p> <p>(5,a) [LS10]</p> <p>DISTRICT ASSESSMENTS: CR: <u>Organized Organisms</u></p>	<ul style="list-style-type: none"> • Explain how a one-celled organism (such as an amoeba) performs all of the functions necessary for life. • Explain that plants and animals are multicellular organisms. • Cite specific examples of cellular specialization (differentiation). • Give several examples of cells which function together as tissue, which is part of an organ within an organ system, which is necessary for the life of an organism. • Provide analogies from the community or school of similar organizational structures. For instance, an athlete (cell) works as part of a team (tissue), which represents its school (organ) and school district (organ system) providing healthy activity and attitudes that benefit the nation (organism). • Describe how the musculoskeletal system of animals is made up of many muscle groups. • Explain the organization of a muscle, starting with its organelles (such as mitochondria that provide energy for muscle contraction), to groups of muscle cells to bundles of muscle fibers that together enable the organism to move. 	<p>Focus on LS, Ch 2:2, Ch 9:1, p. 364-365</p> <p><i>PH FoLS, 16:1, 7:1, 17:2, and 22:1,2</i></p>	<p>KEY VOCABULARY: multicellular musculoskeletal tissue bundle organ fiber organ system</p> <p>SKILLS FOCUS: Organizing, analyzing</p> <p>Communicate the logical connection among hypothesis, science concepts, tests conducted, data collected, and conclusions drawn from the scientific evidence. (I&E 7.c [LS10])</p> <p>LABS / DEMOS:</p> <ul style="list-style-type: none"> • Focus on LS, 2:2, Mini Lab, "What is a Tissue?", p. 103 • Focus on LS: 5;2, "Conc's In Motion", Interactive Table on human organ systems, p. 105 • Focus on LS, 2:2, Demo., Bone Tissues, p. 106 • Focus on LS, 2:2, Design your own lab, "Design an Organ", p. 108-109 • Focus on LS, 2:2, Virtual Lab "Cell, How do animal and plant cells work?", p. 106 TE • Focus on LS, Ch 2 Transparency "At Home in the Salt" • Focus on LS, Ch 9 Transparency "Human Bones" 	<p>1 Day</p>

Structure and Function in Living Systems (cont'd)

5. The anatomy and physiology of plants and animals illustrate the complementary nature of structure and function.

Standards and Assessments "Students know..."	Task Analysis "Students are able to ..."	Adopted Textbook Correlation(s)	Connections	Appx Time (per 180 days)														
<p>... organ systems function because of the contributions of individual organs, tissues, and cells. The failure of any part can affect the entire system. (5,b)</p> <p>DISTRICT ASSESSMENTS: CR: <u>Organized Organisms</u></p>	<ul style="list-style-type: none"> Review (from grade 5) how oxygen and carbon dioxide are exchanged in the lungs and body tissues. Explain how the pulmonary – circulatory system functions as a whole. Describe how heart attacks, suffocation, pneumonia, and strokes are each caused by a particular failure of the pulmonary-circulatory system. 	<p>Focus on LS, Ch 2:2, and 10:1,2</p> <p><i>PH FoLS, 15:3, 19:1-4, and 20:1</i></p>	<p>KEY VOCABULARY:</p> <table border="0"> <tr> <td>pulmonary</td> <td>circulatory</td> </tr> <tr> <td>lungs</td> <td>artery</td> </tr> <tr> <td>diaphragm</td> <td>vein</td> </tr> <tr> <td>pneumonia</td> <td>capillaries</td> </tr> <tr> <td>alveoli</td> <td>atherosclerosis</td> </tr> <tr> <td>heart attack</td> <td>suffocation</td> </tr> <tr> <td>stroke</td> <td>shock</td> </tr> </table> <p>SKILLS FOCUS: Modeling</p> <p>Utilize a variety of print and electronic resources (including the World Wide Web) to collect information as evidence as part of a research project. (I&E 7.b)</p> <p>LABS / DEMOS:</p> <ul style="list-style-type: none"> Focus on LS, 10:1, Launch Lab: "Does your pulse change?", p. 389 Focus on LS, 10:1, Science Concepts, Activity, p. 394 Focus on LS, 10:1, Demo., "Air Pressure", p. 397 Focus on LS, 10:1, Conc's in Motion, Interactive Table on components of whole blood, p. 397 Focus on LS, 10:1, Data Lab, "... illness affect the cardiopulmonary system?", p. 404 Focus on LS, 10:1, Virtual Lab "Hypertension", p. 389 Focus on LS, 10:2, Demo., "Model a Diaphragm", p. 407 Focus on LS, 10:2, Science Concepts Activity, "Heart Rate", p. 408 Focus on LS, 10:2, Conc's in Motion: animation of blood flow through the heart, p. 409 Focus on LS, 10:2, Mini Lab "... cardiopulmonary system", p. 412 Focus on LS, 10:2, Applying Math "Blood Pressure Variations", p. 413 Focus on LS, 10:2, Design Your Own Lab "Model and Invent", p. 414-415 Focus on LS, 10:2, Real World Science: Science & Career, p. 416 Focus on LS, Ch 10 Transparencies "A friend in need" "Circulation" "How to Relax in Traffic" Focus on LS, Ch 1 Transparency "Oxygen and the Body" 	pulmonary	circulatory	lungs	artery	diaphragm	vein	pneumonia	capillaries	alveoli	atherosclerosis	heart attack	suffocation	stroke	shock	<p>1 Day</p>
pulmonary	circulatory																	
lungs	artery																	
diaphragm	vein																	
pneumonia	capillaries																	
alveoli	atherosclerosis																	
heart attack	suffocation																	
stroke	shock																	

Structure and Function in Living Systems (cont'd)

5. The anatomy and physiology of plants and animals illustrate the complementary nature of structure and function.

Standards and Assessments "Students know..."	Task Analysis "Students are able to ..."	Adopted Textbook Correlation(s)	Connections	Appx Time (per 180 days)
<p>... how bones and muscles work together to provide a structural framework for movement. (5,c) [LS10]</p> <p>DISTRICT ASSESSMENTS: CR: <u>Cooperative Movement</u></p>	<ul style="list-style-type: none"> Describe how the skeletal system provides support and protection to the body. Describe the relationships between muscles, tendons and bones with the nervous system. Explain how contraction and relaxation of different muscle groups cause movement. Demonstrate examples of flexion and extension, such as with the biceps and triceps, describing what happens to the angle between the humerus and ulna during these coordinated movements. Discuss the roles of opposing muscle groups. Demonstrate how one muscle group can be a prime mover of bone, while the opposing muscle group can be involved in controlling the motion and protecting the joint, as during a lifting motion. 	<p>Focus on LS, Ch 9:1</p> <p><i>PH FoLS, 17:1-3</i></p>	<p>KEY VOCABULARY: tendon biceps ligament triceps contraction humerus relaxation ulna flexion opposing muscles extension skeletal system</p> <p>SKILLS FOCUS: Observe, experiment</p> <p>Communicate the steps and results from an investigation in written reports and verbal presentations. (I&E 7.e)</p> <p>LABS / DEMOS:</p> <ul style="list-style-type: none"> Focus on LS, Virtual Labs, "Bones", p. 357 Focus on LS, 9:1, Demo., "Flexion", p. 364 TE Focus on LS, 9:1, Mini Lab "How do bones and muscles interact?", p. 366 Focus on LS, 9:1, Real World Science: Career and Society, p. 380-381 Focus on LS, Ch 9 Transparency "No Sweat" 	<p>1 Day</p>

Structure and Function in Living Systems (cont'd)

5. The anatomy and physiology of plants and animals illustrate the complementary nature of structure and function.

Standards and Assessments "Students know..."	Task Analysis "Students are able to ..."	Adopted Textbook Correlation(s)	Connections	Appx Time (per 180 days)												
<p>... how to relate the structures of the eye and ear to their functions. (5,g)</p> <p>DISTRICT ASSESSMENTS: CR: The Eyes Have it</p>	<ul style="list-style-type: none"> Identify and explain the function of the different parts of the eye, including: retina, iris, pupil, lens, cone cells and rod cells. Explain the structure and function of the different parts of the human ear, including external ear (of humans and other mammals), middle ear, tympanic membrane, malleus, incus, stapes, inner ear. Identify the different parts of the ear and explain how those parts work together to transmit sensory information through sound waves. 	<p>Focus on LS, Ch 11:4, and 12:1,2</p> <p><i>PH FoLS, Ch 22:4</i></p>	<p>KEY VOCABULARY:</p> <table border="0"> <tr> <td>lens</td> <td>tympanic membrane</td> </tr> <tr> <td>iris</td> <td>malleus</td> </tr> <tr> <td>pupil</td> <td>incus</td> </tr> <tr> <td>retina</td> <td>stapes</td> </tr> <tr> <td>cone cell</td> <td>inner ear</td> </tr> <tr> <td>rod cell</td> <td></td> </tr> </table> <p>SKILLS FOCUS: Analyzing, making models</p> <p>Construct scale models and appropriately labeled diagrams to communicate scientific knowledge. (I&E 7.d)</p> <p>LABS / DEMOS:</p> <ul style="list-style-type: none"> Focus on LS: 11:4, p. 451 Identifying Misconceptions: seeing in the dark; have students test iris response to light and dark Focus on LS: 11:4, "Conc's in Motion" animation of lens and light through eye, p. 452 Focus on LS: 11:4, "Conc's in Motion" Interactive table on structures and functions of the eye, p. 453 Focus on LS: 11:4, Lab, "Can a cow teach you about your eyes?", p. 458-459 Focus on LS: 11:4, Real World Science: Science & Technology, p. 460 Focus on LS: 12:1, Launch Lab: "How many sounds can you make?", p. 469 Focus on LS: 12:1, Demo., "Vibrations Cause Sound", p. 472 Focus on LS: 12:2, Mini Lab "How does the ear hear?", p. 489 Focus on LS: 12:2, Lab "Animal Hearing", p. 490-491 Focus on LS: 12:2, Real World Science: Science & Technology, p. 492 Focus on LS: Ch 11 Transparency "The Eye" Focus on LS: Ch 12 Transparency "The Ear" "Sound" 	lens	tympanic membrane	iris	malleus	pupil	incus	retina	stapes	cone cell	inner ear	rod cell		<p>1 Day</p>
lens	tympanic membrane															
iris	malleus															
pupil	incus															
retina	stapes															
cone cell	inner ear															
rod cell																

APPLICATION OF COURSE CONTENT:

Career Connection:

Related Major Skills & Characteristics – objective observation, careful measurement, curiosity, problem solving, organizational skills, numerical reasoning, ability to analyze & interpret data, critical thinking, reading comprehension, concise and accurate communication skills, computer literacy, logical thinking, team skills, testing skills, practical safety awareness, evidence evaluating

Related Careers – Students who continue in the sciences can prepare for the following careers:

Aeronautical Engineer (<i>Rocket Scientist</i>)	Chemical Engineer	Mining Geologist	Physiologist
Agricultural Ecologist	Electrical Engineer	National Park Ranger	Professor
Analytical Chemist	Energy	Neurobiologist	Quality Control Specialist
Aquatic Microbial Ecologist	Fire Fighter	Nuclear Physicist	Radiologist
Astronomer	Geologist	Nurse	Refrigeration Technician
Automotive Engineer	Geneticist	Paleontologist	Science Fiction Writer
Biochemist	Immunologist	Pathologist	Seismologist
Biologist	Marine Biologist	Pediatrician	Teacher
Biotechnologist	Materials Scientist	Petroleum Geologist	Technical Editor
Botanist	Medical Researcher	Pharmacist	Veterinarian
Cell Biologist	Meteorologist	Physician	Virologist
	Microbiologist	Physicist	Wildlife Ecologist

METHODS:

Lesson Design & Delivery: Teachers will incorporate these components of lesson design during direct instruction and inquiry activities. The order of components is flexible, depending on the teacher’s vision for the individual lesson. For instance, the objective and purpose, while present in the teacher’s lesson plan, are not made known to the students at the beginning of an inquiry lesson.

<p>Essential Elements of Effective Instruction Model for Lesson Design Using Task Analysis</p>	<p>Anticipatory Set Objective Standard Reference Purpose Input Modeling Check for Understanding Guided Practice Closure Independent Practice</p>
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Some components may occur once in a lesson, but others will recur many times. Checking for understanding occurs continually; input, modeling, guided practice and closure may occur several times. There may even be more than one anticipatory set when more than one content piece is introduced.

Active Participation: Teachers will incorporate the principles of active participation and specific strategies to ensure consistent, simultaneous involvement of the minds of all learners in the classroom. Teachers should include both covert and overt active participation strategies, incorporating cooperative learning structures and brain research. Some of the possible active participation strategies include:

COVERT	OVERT (Oral)	OVERT (Written)	OVERT (Gestures)
<ul style="list-style-type: none"> • Recall • Imagine • Observe • Consider 	<ul style="list-style-type: none"> • Pair/Share • Idea Wave • Choral Response • Give One, Get One • Socratic Seminar • Cooperative Discussion Groups (i.e. Talking Chips, Gambit Chips) 	<ul style="list-style-type: none"> • Restate in Journals / Notes • Response Boards • Graphic Organizers • Folded Paper • Ticket Out of Class 	<ul style="list-style-type: none"> • Hand Signals • Model with Manipulatives • Stand up/ Sit down • Point to Examples

Baldrige Quality Tools: Students can become more positively involved in their education through goal setting, self-assessment, and data tracking and analysis by making use of the following strategies:

BALDRIDGE TOOL	PURPOSES
Affinity Diagram	– finding consensus, organizing complex information
Flowchart	– describing a process, planning a project, identifying problem steps in a process
Force Field Diagram	– identifying obstacles, finding causes and solutions to problems
Issues / Ideas Bin	– handling individual questions/requests without stopping a group activity, providing anonymous input, obtaining diverse input in specific areas.
Data Folder	– tracking goals and actual results
Plus / Delta	– tracking improvement efforts, identifying opportunities for change, finding out what's working and what's not working in a process, procedure, activity, etc.
Class Data Graphs	– displaying trends for goal setting

Learning styles and learning challenges of your students may be addressed by implementing combinations of the following:

Reading Strategies in Science

- Learning Logs
- Pre-teaching
- Vocabulary
- Pre-reading
- Text Structures
- Trail Markers
- Reciprocal Teaching
- Functional Text

SDAIE Strategies for English

Learners

- Tapping/Building Prior Knowledge (Graphic Organizers, Schema)
- Grouping Strategies
- Multiple Intelligences
- Adapt the Text
- Interactive Learning (Manipulatives, Visuals)
- Acquisition Levels
- Language Sensitivity
- Lower the Affective Filter (including Processing Time)
- Home/School Connection (including Cultural Aspects)

Differentiation for Advanced Learners

- Curriculum Compacting
- Tiered Assignments
- Flexible Grouping
- Acceleration
- Depth and Complexity
- Independent Study

Significant, Proven Science Strategies for ALL Science Students

- | | | |
|---|---|---|
| <input type="checkbox"/> Hands-On Labs | <input type="checkbox"/> Short/Long-term projects | <input type="checkbox"/> Current Events |
| <input type="checkbox"/> Inquiry Activities | <input type="checkbox"/> Essential Questions | <input type="checkbox"/> Peer Teaching |
| <input type="checkbox"/> Written/Oral Presentations | <input type="checkbox"/> Summarization | <input type="checkbox"/> Guest Speakers |

Please note that these strategies often overlap and should not be limited to specifically defined courses or student populations.

MATERIALS:

Basic Textbook and Supplementary Materials: Glencoe Science: Focus on Life Science, McGraw-Hill Glencoe, 2007

Science Online: ca7.msscience.com

- Study Tools, Extensions, For Teachers

safety equipment: goggles, latex gloves, fire extinguisher

glassware: flasks, beakers, test tubes, etc.

measuring devices: triple beam balance, rulers, volumetric containers

chemical reagents

microscopes, microviewers, hand lenses, dissection equipment

appropriate technology

❖ Many items are available through Science/Math Resource Center (SMRC).

RESOURCES:*Documents*

- ❑ Science Framework: <http://www.cde.ca.gov/re/pn/fd/documents/scienceframework.pdf>
[or find it posted in sections at the LBUSD Science Office website]
- ❑ CST / NCLB Test Blueprints: <http://www.cde.ca.gov/ta/tg/sr/blueprints.asp>
- ❑ CST Reference Sheets: <http://www.cde.ca.gov/ta/tg/sr/cstsciref.asp>
- ❑ CST Released Test Questions <http://www.cde.ca.gov/ta/tg/sr/css05rtq.asp>
- ❑ National Science Standards: <http://www.nap.edu/readingroom/books/nses/html/>
- ❑ Science Safety Handbook for CA Public Schools (1999)
can be ordered from the CDE at <http://www.cde.ca.gov/re/pn/rc/>
- ❑ LBUSD Approved Chemicals List, Chemical Hygiene Plan, and Science Fair Resources:
http://www.lbusd.k12.ca.us/Main_Offices/Curriculum/Areas/Science/teacher_resources.cfm

District Offices

- ❑ **Science Curriculum Office** (562) 997-8000 (ext. 2963)
 - K-12 science standards, curriculum, professional development, science fair
- ❑ **Science / Math Resource Center (SMRC)** (562) 997-8000 (ext. 2964)
 - hands-on materials, consumable material orders, alternative standards-based curriculum packets
- ❑ **Instructional Materials Workshop (IMW)** (562) 997-8000 (ext. 2965)
 - standards-based instructional materials
 - content integrated instructional materials
 - monthly theme-based literacy supplements for science
 - wood shop / lumber room
 - copying, enlarging, and laminating
- ❑ **Office of Multimedia Services (OMS)** (562) 997-8000 (ext. 7145)
 - videos for check out to fit the curriculum (see your librarian for current catalogs)
 - district TV channels programming
- ❑ **PALMS Office** Program Assistance for Language Minority Students (562) 997-8000 (ext. 8031)
 - technical assistance and professional development for English Language Development (ELD) and Specially Designed Academic Instruction In English (SDAIE)
 - assistance in the implementation and maintenance of programs addressing the needs of English Language Learners (ELLs)
- ❑ **Health Curriculum Office** (562) 997-8000 (ext. 2967)
 - curriculum and training for mandated health content

EVALUATION: Student achievement in this course will be measured using multiple assessment tools. Assessments will be used for diagnosing student understanding before instruction, monitoring student learning during instruction, and evaluating student understanding after instruction.

SUGGESTED EVALUATION TOOLS:

Source	Diagnose	Monitor	Evaluate
District Developed Assessments	Grade Level Pretest	Open-Ended Science Performance Task	End of Course Exam
Glencoe Science: Focus on Life Science	Reading Essentials: Before You Read Launch Labs New Vocabulary	Reading Check questions Science Notebook, "Summarize It" Lesson Review: Summarize, Using Vocabulary, Understanding Main Ideas, Applying Science Reading Essentials: Think it Over, Reading Check, Picture This Applying Math Foldables Active Folders Mini Lab and Lab Standards Review	Standards Assessment Performance Assessment Sci Activities for Adv. Learners Chapter & Unit Tests Rubric Scored Projects, Labs, and Writings
Teacher Developed Assessments	Pre-quiz Pre-Test Vocab. Knowledge Rating	Warm-Up Quiz Proving Behavior Lab	Chapter / Unit Test Practicum Semester Final Exam

SUGGESTED GRADE WEIGHTING:
(with some possible examples)

- | | |
|---|--------------------------|
| 1. Assessment | ~30% |
| <ul style="list-style-type: none"> o objective tests including comprehensive finals o performance tasks (rubric scored) o open-ended questions (rubric scored) o portfolios o student self-evaluations | |
| 2. Homework | not more than 10% |
| <ul style="list-style-type: none"> o discovery assignments o assignments reinforcing class lesson o essays o organization o research | |
| 3. Labs | ~20% |
| <ul style="list-style-type: none"> o lab reports o active participation | |
| 4. Projects | ~20% |
| <ul style="list-style-type: none"> o science fair projects o research-based reports and projects | |
| 5. Classwork | ~20% |
| <ul style="list-style-type: none"> o note taking skills o organization skills o oral presentations o individual and group projects and assessments | |

STANDARD GRADING SCALE:		
Advanced Proficient	A	90 – 100%
	B	80 – 89%
Proficient	C	70 – 79%
Partial Proficient	D	60 – 69%
Not Proficient	F	0 – 59%

Submitted by: Eric Brundin (S. Garcia)
 School: Science Office
 Date: 4/15/11
 Revised Board Date: 10/4/11