

**ALABAMA COURSE OF STUDY—SCIENCE**  
**THIRD GRADE**  
**2006**

<b>Content Standards:</b> Physical Science, Life Science, Earth & Space Science	<b>Woods Walk</b>	<b>Forest Critters</b>	<b>Creepy Crawlies</b>	<b>Pond &amp; Stream</b>	<b>Down To Earth</b>	<b>Rock Query</b>	<b>Feathers In Focus</b>	<b>Alabama Neighbors</b>	<b>Big Screen</b>	<b>Refuge</b>	<b>Trail of Discovery</b>	<b>Connections</b>	<b>Food For Thought</b>
3. Describe ways energy from the sun is used. Examples: plant growth, light, heat <ul style="list-style-type: none"> <li>• Identifying fossil fuels as a source of energy</li> </ul>	<b>X</b>				<b>X</b>							<b>X</b>	<b>X</b>
7. Describe the life cycle of plants, including seed, seed germination, growth, and reproduction. <ul style="list-style-type: none"> <li>• Describing the role of plants in a food chain</li> <li>• Describing how plants occupy space and use light, nutrients, water, and air</li> <li>• Classifying plants according to their features (Examples: evergreen or deciduous, flowering or nonflowering)</li> <li>• Identifying helpful and harmful effects of plants (Examples: helpful—provide food, control erosion; harmful—cause allergic reactions, produce poisons)</li> <li>• Identifying how bees pollinate flowers</li> <li>• Identifying photosynthesis as the method used by plants to produce food</li> </ul>	<b>X</b>		<b>X</b>							<b>X</b>		<b>X</b>	<b>X</b>
8. Identify how organisms are classified in the Animalia and Plantae kingdoms.	<b>X</b>	<b>X</b>	<b>X</b>	<b>X</b>	<b>X</b>		<b>X</b>	<b>X</b>				<b>X</b>	

# AL COS, 3<sup>rd</sup> Grade

(Continued)

Content Standards: Physical Science, Life Science, Earth & Space Science	Woods Walk	Forest Critters	Creepy Crawlies	Pond & Stream	Down To Earth	Rock Query	Feathers In Focus	Alabama Neighbors	Big Screen	Refuge	Trail of Discovery	Connections	Food For Thought
9. Describe how fossils provide evidence of prehistoric plant life. (Example: plant fossils in coal or shale providing evidence of existence of prehistoric ferns)					<b>X</b>	<b>X</b>						<b>X</b>	
10. Determine habitat conditions that support plant growth and survival. (Examples: deserts support cacti, wetlands support ferns and mosses)	<b>X</b>		<b>X</b>									<b>X</b>	<b>X</b>
11. Describe Earth's layers, including inner and outer cores, mantle, and crust. <ul style="list-style-type: none"> <li>• Classifying rocks and minerals by characteristics, including streak, color, hardness, magnetism, luster, and texture</li> </ul>						<b>X</b>							
13. Describe ways to sustain natural resources, including recycling, reusing, conserving, and protecting the environment. <ul style="list-style-type: none"> <li>• Recognizing the impact of society on human health and environmental conditions</li> </ul>	<b>X</b>	<b>X</b>	<b>X</b>	<b>X</b>	<b>X</b>	<b>X</b>	<b>X</b>	<b>X</b>	<b>X</b>	<b>X</b>	<b>X</b>	<b>X</b>	<b>X</b>
14. Describe the position of Earth, the moon, and the sun during the course of a day or month									<b>X</b>				

**ALABAMA COURSE OF STUDY—SCIENCE**  
**Fourth Grade**  
**2006**

<b>Content Standards:</b> Physical Science, Life Science, Earth & Space Science	<b>Woods Walk</b>	<b>Forest Critters</b>	<b>Creepy Crawlies</b>	<b>Pond &amp; Stream</b>	<b>Down To Earth</b>	<b>Rock Query</b>	<b>Feathers in Focus</b>	<b>Alabama Neighbors</b>	<b>Big Screen</b>	<b>Refuge</b>	<b>Trail of Discovery</b>	<b>Connections</b>
1. Describe how electrical circuits can be used to produce light, heat, sound, and magnetic fields. <ul style="list-style-type: none"> <li>• Identifying ways to use and conserve electrical energy</li> </ul>					X						X	X
2. Compare different pitches of sound produced by changing the size, tension, amount, or type of vibrating material. <ul style="list-style-type: none"> <li>• Describing the relationship between the structure of the ear and hearing</li> </ul>							X	X				
5. Describe the interdependence of plants and animals. <ul style="list-style-type: none"> <li>• Describing behaviors and body structures that help animals survive in particular habitats (Examples: behaviors—migration, hibernation, mimicry; body structures—quills, fangs, stingers, webbed feet)</li> <li>• Describing life cycles of various animals to include incomplete and complete metamorphosis</li> <li>• Tracing the flow of energy through a food chain (Example: producer, first-level consumer, second-level consumer, and third-level consumer)</li> <li>• Identifying characteristics of organisms, including growth and development, reproduction, acquisition and use of energy, and response to the environment</li> </ul>	X	X	X	X			X	X		X	X	X

**AL COS, 4th Grade**  
(Continued)

<b>Content Standards:</b> Physical Science, Life Science, Earth & Space Science	<b>Woods Walk</b>	<b>Forest Critters</b>	<b>Creepy Crawlies</b>	<b>Pond &amp; Stream</b>	<b>Down To Earth</b>	<b>Rock Query</b>	<b>Feathers in Focus</b>	<b>Alabama Neighbors</b>	<b>Big Screen</b>	<b>Refuge</b>	<b>Trail of Discovery</b>	<b>Connections</b>
6. Classify animals as vertebrates or invertebrates and as endotherms or ectotherms. <ul style="list-style-type: none"> <li>• Describing the organization of cells into tissues, organs, and organ systems</li> <li>• Describing the grouping of organisms into populations, communities, and ecosystems</li> <li>• Classifying common organisms into kingdoms, including Animalia, Plantae, Protista, Fungi, Archaeobacteria, and Eubacteria</li> </ul>	X	X	X	X			X	X			X	X
7. Describe geological features of Earth, including bodies of water, beaches, ocean ridges, continental shelves, plateaus, faults, canyons, sand dunes, and ice caps.				X	X	X				X	X	X
9. Describe the appearance and movement of Earth and its moon. <ul style="list-style-type: none"> <li>• Identifying the waxing and waning of the moon in the night sky</li> <li>• Identifying lunar and solar eclipses</li> </ul>									X			
10. Describe components of our solar system. <ul style="list-style-type: none"> <li>• Defining comets, asteroids, and meteors</li> </ul>									X			

**ALABAMA COURSE OF STUDY—SCIENCE**  
**Fifth Grade**  
**2006**

<b>Content Standards:</b> Physical Science, Life Science, Earth & Space Science	<b>Woods Walk</b>	<b>Forest Critters</b>	<b>Pond and Stream</b>	<b>Creepy Crawlies</b>	<b>Down To Earth</b>	<b>Rock Query</b>	<b>Big Screen</b>	<b>Night Hike</b>	<b>Refuge</b>	<b>Connection</b>
4. Describe forms of energy, including chemical, heat, light, and mechanical. <ul style="list-style-type: none"> <li>● Describing alternatives to the use of fossil fuels</li> </ul>					X					X
5. Contrast ways in which light rays are bent by concave and convex lenses. <ul style="list-style-type: none"> <li>● Describing the relationship between the structure of the eye and sight</li> </ul>								X		
6. Compare effects of gravitational force on Earth, on the moon, and within space.							X			
8. Identify major body systems and their functions, including the circulatory system, respiratory system, excretory system, and reproductive system.			X	X						
9. Describe the relationship of populations within a habitat to various communities and ecosystems. <ul style="list-style-type: none"> <li>● Describing the relationship between food chains and food webs</li> <li>● Describing symbiotic relationships</li> </ul>	X	X	X	X					X	X
10. Identify spheres of Earth, including the geosphere, atmosphere, and hydrosphere. <ul style="list-style-type: none"> <li>● Describing the rock cycle</li> </ul>			X		X	X				X
11. Compare distances from the sun to planets in our solar system. <ul style="list-style-type: none"> <li>● Relating the size of Earth to the size of other planets in our solar system</li> </ul>							X			

**ALABAMA COURSE OF STUDY—SCIENCE**  
**Sixth Grade**  
**2006**

<b>Content Standards: Earth and Space Science</b>	<b>Woods Walk</b>	<b>Value of a Tree</b>	<b>Pond &amp; Stream</b>	<b>Stream Studies</b>	<b>Creepy Crawlies</b>	<b>Down To Earth</b>	<b>Rock Query</b>	<b>Big Screen</b>	<b>Refuge</b>	<b>Trail of Discovery</b>	<b>Food For Thought</b>	<b>Connections</b>
2. Describe factors that cause changes to Earth’s surface over time. (Examples: earthquakes, volcanoes, weathering, erosion, deposition, water flow, tornadoes, hurricanes, farming and conservation, mining and reclamation, deforestation and reforestation, waste disposal, global climate changes, greenhouse gases) <ul style="list-style-type: none"> <li>• Comparing constructive and destructive natural processes and their effects on land formations (Examples: constructive—volcanic and mountain-building processes; destructive—erosion by wind, water, and ice)</li> <li>• Distinguishing rock strata by geologic composition (Examples: predicting relative age of strata by fossil depth, predicting occurrence of natural events by rock composition in a particular strata)</li> </ul>	<b>X</b>	<b>X</b>	<b>X</b>	<b>X</b>		<b>X</b>	<b>X</b>		<b>X</b>	<b>X</b>	<b>X</b>	<b>X</b>
3. Describe water and carbon biogeochemical cycles and their effects on Earth	<b>X</b>	<b>X</b>	<b>X</b>	<b>X</b>		<b>X</b>					<b>X</b>	<b>X</b>
4. Explain the plate tectonic theory. Example: using terminology such as continental drift, seafloor spreading, lava, magma, eruption, epicenter, focus, seismic wave, and subduction zone							<b>X</b>					<b>X</b>
6. Describe regions of the oceanic lithosphere, including the continental shelf, continental slope, and abyssal plain.							<b>X</b>					<b>X</b>

**AL COS, 6th Grade**  
(Continued)

<b>Content Standards:</b> Physical Science, Life Science, Earth & Space Science	<b>Woods Walk</b>	<b>Value of a Tree</b>	<b>Pond &amp; Stream</b>	<b>Stream Studies</b>	<b>Down To Earth</b>	<b>Rock Query</b>	<b>Big Screen</b>	<b>Refuge</b>	<b>Trail of Discovery</b>	<b>Food For Thought</b>	<b>Connections</b>
7. Describe Earth's biomes. Examples: aquatic biomes, grasslands, deserts, chaparrals, taigas, tundras <ul style="list-style-type: none"> <li>• Identifying geographic factors that cause diversity in flora and fauna, including elevation, location, and climate</li> </ul>	<b>X</b>	<b>X</b>	<b>X</b>	<b>X</b>	<b>X</b>	<b>X</b>		<b>X</b>	<b>X</b>		<b>X</b>
8. Describe how Earth's rotation, Earth's axial tilt, and distance from the equator cause variations in the heating and cooling of various locations on Earth.							<b>X</b>				<b>X</b>
9. Identify the moon's phases. <ul style="list-style-type: none"> <li>• Describing lunar and solar eclipses</li> </ul>							<b>X</b>				<b>X</b>
10. Describe components of the universe and their relationships to each other, including stars, planets and their moons, solar systems, and galaxies. <ul style="list-style-type: none"> <li>• Mapping seasonal changes in locations of constellations in the night sky</li> </ul>							<b>X</b>				<b>X</b>
11. Describe units used to measure distance in space, including astronomical units and light years.							<b>X</b>				<b>X</b>

**ALABAMA COURSE OF STUDY—SCIENCE**  
**Seventh Grade**  
**2006**

Content Standards: Life Science	Rock Query	Value of a Tree	Stream Studies	Alabama Neighbors	Feathers In Focus	Refuge	Trail of Discovery	Connections
1. Describe characteristics common to living things, including growth and development, reproduction, cellular organization, use of energy, exchange of gases, and response to the environment. <ul style="list-style-type: none"> <li>• Predicting how an organism’s behavior impacts the environment</li> </ul>		<b>X</b>	<b>X</b>	<b>X</b>	<b>X</b>	<b>X</b>	<b>X</b>	<b>X</b>
3. Relate major tissues and organs of the skeletal, circulatory, reproductive, muscular, respiratory, nervous, and digestive systems to their functions.			<b>X</b>	<b>X</b>	<b>X</b>			<b>X</b>
4. Describe organisms in the six-kingdom classification system by their characteristics. <ul style="list-style-type: none"> <li>• Recognizing genus and species as components of a scientific name</li> </ul>		<b>X</b>	<b>X</b>	<b>X</b>	<b>X</b>			<b>X</b>
5. Identify major differences between plants and animals, including internal structures, external structures, methods of locomotion, methods of reproduction, and stages of development. <ul style="list-style-type: none"> <li>• Describing the processes of photosynthesis and cellular respiration</li> </ul>		<b>X</b>	<b>X</b>					<b>X</b>
6. Describe evidence of species variation due to climate, changing landforms, interspecies interaction, and genetic mutation. Examples: fossil records over geologic time,	<b>X</b>	<b>X</b>						<b>X</b>
7. Describe biotic and abiotic factors in the environment. Examples: biotic—plants, animals; abiotic—climate, water, soil <ul style="list-style-type: none"> <li>• Classifying organisms as autotrophs or heterotrophs</li> <li>• Arranging the sequence of energy flow in an ecosystem through food webs, food chains, and energy pyramids</li> </ul>	<b>X</b>	<b>X</b>	<b>X</b>	<b>X</b>	<b>X</b>			<b>X</b>

**ALABAMA COURSE OF STUDY—SCIENCE**  
**Eighth Grade**  
**2006**

Content Standards: Physical Science	Stream Studies	Down to Earth	Rock Query	Connections	Food For Thought
1. Identify steps within the scientific process. <ul style="list-style-type: none"> <li>• Applying process skills to interpret data from graphs, tables, and charts</li> <li>• Measuring dimension, volume, and mass using <i>Système International d'Unités</i> (SI units)</li> <li>• Identifying examples of hypotheses</li> <li>• Identifying appropriate laboratory glassware, balances, time measuring equipment, and optical instruments used to conduct an investigation</li> </ul>	<b>X</b>	<b>X</b>		<b>X</b>	<b>X</b>
2. Describe the structure of atoms, including the location of protons, neutrons, and electrons.	<b>X</b>				
6. Define solution in terms of solute and solvent. <ul style="list-style-type: none"> <li>• Defining isotonic, hypertonic, and hypotonic solutions</li> <li>• Describing acids and bases based on their hydrogen ion concentration</li> </ul>	<b>X</b>				
7. Describe states of matter based on kinetic energy of particles in matter. <ul style="list-style-type: none"> <li>• Explaining effects of temperature, concentration, surface area, and catalysts on the rate of chemical reactions</li> </ul>	<b>X</b>	<b>X</b>	<b>X</b>		
11. Explain the law of conservation of energy and its relationship to energy transformation, including chemical to electrical, chemical to heat, electrical to light, electrical to mechanical, and electrical to sound.		<b>X</b>			<b>X</b>