

SCIENCE SAURUS:  
A STUDENT HANDBOOK ©2005  
**Grades 4 & 5**

correlated to

**North Carolina  
Science Standard Course of  
Study and Grade Level  
Competencies**



EDUCATION GROUP



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**YOUR NORTH CAROLINA GREAT SOURCE REPRESENTATIVES**

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**Standard Course of Study and Grade Level Competencies**  
**Grade 4**

**COMPETENCY GOAL 1**

**The learner will make observations and conduct investigations to build an understanding of animal behavior and adaptation.**

Competency Objectives, Grade 4	ScienceSaurus, Grades 4-5
1.01 Observe and describe how all living and nonliving things affect the life of a particular animal including: <ul style="list-style-type: none"> <li>• Other animals.</li> <li>• Plants.</li> <li>• Weather.</li> <li>• Climate.</li> </ul>	<b>Student Handbook:</b> 3, 91, 132-138
1.02 Observe and record how animals of the same kind differ in some of their characteristics and discuss possible advantages and disadvantages of this variation.	<b>Student Handbook:</b> 128, 185
1.03 Observe and discuss how behaviors and body structures help animals survive in a particular habitat.	<b>Student Handbook:</b> 79, 127, 146-155
1.04 Explain and discuss how humans and other animals can adapt their behavior to live in changing habitats.	<b>Student Handbook:</b> 77, 127
1.05 Recognize that humans can understand themselves better by learning about other animals.	<b>Student Handbook:</b> 357

## COMPETENCY GOAL 2

**The learner will conduct investigations and use appropriate technology to build an understanding of the composition and uses of rocks and minerals.**

Competency Objectives, Grade 4	ScienceSaurus, Grades 4-5
2.01 Describe and evaluate the properties of several minerals.	<b>Student Handbook:</b> 160-163
2.02 Recognize that minerals have a definite chemical composition and structure, resulting in specific physical properties including: <ul style="list-style-type: none"> <li>• Hardness.</li> <li>• Streak color.</li> <li>• Luster.</li> <li>• Magnetism.</li> </ul>	<b>Student Handbook:</b> 161, 162-165, 247
2.03 Explain how rocks are composed of minerals.	<b>Student Handbook:</b> 160, 164
2.04 Show that different rocks have different properties.	<b>Student Handbook:</b> 162-163, 166-167
2.05 Discuss and communicate the uses of rocks and minerals.	<b>Student Handbook:</b> 331
2.06 Classify rocks and rock-forming minerals using student-made rules.	<b>Student Handbook:</b> 164, 166-167, 331

## COMPETENCY GOAL 3

**The learner will make observations and conduct investigations to build an understanding of magnetism and electricity.**

Competency Objectives, Grade 4	ScienceSaurus, Grades 4-5
3.01 Observe and investigate the pull of magnets on all materials made of iron and the pushes or pulls on other magnets.	<b>Student Handbook:</b> 258, 272-305
3.02 Describe and demonstrate how magnetism can be used to generate electricity.	<b>Student Handbook:</b> 306-307, 357

<b>Competency Objectives, Grade 4</b>	<b>ScienceSaurus, Grades 4-5</b>
3.03 Design and test an electric circuit as a closed pathway including an energy source, energy conductor, and an energy receiver.	<b>Student Handbook:</b> 300-303
3.04 Explain how magnetism is related to electricity.	<b>Student Handbook:</b> 306-307
3.06 Describe and identify materials that are conductors and nonconductors of electricity.	<b>Student Handbook:</b> 247, 293, 299
3.07 Observe and investigate that parallel and series circuits have different characteristics.	<b>Student Handbook:</b> 300-303
3.08 Observe and investigate the ability of electric circuits to produce light, heat, sound, and magnetic effects.	<b>Student Handbook:</b> 300-303
3.09 Recognize lightning as an electrical discharge and show proper safety behavior when lightning occurs.	<b>Student Handbook:</b> 212, 297

## COMPETENCY GOAL 4

**The learner will conduct investigations and use appropriate technology to build an understanding of how food provides energy and materials for growth and repair of the body.**

<b>Competency Objectives, Grade 4</b>	<b>ScienceSaurus, Grades 4-5</b>
4.01 Explain why organisms require energy to live and grow.	<b>Student Handbook:</b> 77-81, 133, 285
4.03 Discuss how foods provide both energy and nutrients for living organisms.	<b>Student Handbook:</b> 76, 78, 101, 103, 116, 117
4.05 Determine that foods are made up of a variety of components.	<b>Student Handbook:</b> 78



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**Grade 5**

**COMPETENCY GOAL 1**

**The learner will conduct investigations to build an understanding of the interdependence of plants and animals.**

Competency Objective, Grade 5	ScienceSaurus, Grades 4-5
1.01 Describe and compare several common ecosystems (communities of organisms and their interaction with the environment).	<b>Student Handbook:</b> 130-131
1.02 Identify and analyze the functions of organisms within the population of the ecosystem: <ul style="list-style-type: none"> <li>• Producers.</li> <li>• Consumers.</li> <li>• Decomposers.</li> </ul>	<b>Student Handbook:</b> 133-136
1.03 Explain why an ecosystem can support a variety of organisms.	<b>Student Handbook:</b> 130-131, 132
1.04 Discuss and determine the role of light, temperature, and soil composition in an ecosystem's capacity to support life.	<b>Student Handbook:</b> 132, 287
1.05 Determine the interaction of organisms within an ecosystem.	<b>Student Handbook:</b> 130-131, 133-136, 137
1.06 Explain and evaluate some ways that humans affect ecosystems. <ul style="list-style-type: none"> <li>• Habitat reduction due to development.</li> <li>• Pollutants.</li> <li>• Increased nutrients.</li> </ul>	<b>Student Handbook:</b> 325, 334-343, 350-351

Competency Objective, Grade 5	ScienceSaurus, Grades 4-5
1.07 Determine how materials are recycled in nature.	<b>Student Handbook:</b> 137, 138

## COMPETENCY GOAL 2

**The learner will make observations and conduct investigations to build an understanding of landforms.**

Competency Objective, Grade 5	ScienceSaurus, Grades 4-5
2.01 Identify and analyze forces that cause change in landforms over time including. <ul style="list-style-type: none"> <li>• Water and Ice.</li> <li>• Wind.</li> <li>• Gravity.</li> </ul>	<b>Student Handbook:</b> 170-173
2.02 Investigate and discuss the role of the water cycle and how movement of water over and through the landscape helps shape land forms.	<b>Student Handbook:</b> 158, 188-189
2.03 Discuss and consider the wearing away and movement of rock and soil in erosion and its importance in forming: <ul style="list-style-type: none"> <li>• Canyons.</li> <li>• Valleys.</li> <li>• Meanders.</li> <li>• Tributaries.</li> </ul>	<b>Student Handbook:</b> 165, 172-173, 488
2.04 Describe the deposition of eroded material and its importance in establishing landforms including: <ul style="list-style-type: none"> <li>• Deltas.</li> <li>• Flood Plains.</li> </ul>	<b>Student Handbook:</b> 172, 450
2.05 Discuss how the flow of water and the slope of the land affect erosion.	<b>Student Handbook:</b> 172, 183, 329
2.06 Identify and use models, maps, and aerial photographs as ways of representing landforms.	<b>Student Handbook:</b> 176-177, 403-407

Competency Objective, Grade 5	ScienceSaurus, Grades 4-5
2.07 Discuss and analyze how humans influence erosion and deposition in local communities, including school grounds, as a result of: <ul style="list-style-type: none"> <li>• Clearing land.</li> <li>• Planting vegetation.</li> <li>• Building dams.</li> </ul>	<b>Student Handbook:</b> 172, 329, 351

### COMPETENCY GOAL 3

**The learner will conduct investigations and use appropriate technology to build an understanding of weather and climate.**

Competency Objective, Grade 5	ScienceSaurus, Grades 4-5
3.01 Investigate the water cycle including the processes of: <ul style="list-style-type: none"> <li>• Evaporation.</li> <li>• Condensation.</li> <li>• Precipitation.</li> <li>• Run-off.</li> </ul>	<b>Student Handbook:</b> 188-189, 204, 205, 208, 210, 287
3.02 Discuss and determine how the following are affected by predictable patterns of weather: <ul style="list-style-type: none"> <li>• Temperature.</li> <li>• Wind direction and speed.</li> <li>• Precipitation.</li> <li>• Cloud cover.</li> <li>• Air pressure.</li> </ul>	<b>Student Handbook:</b> 189, 198-199, 200-207
3.03 Describe and analyze the formation of various types of clouds and discuss their relation to weather systems.	<b>Student Handbook:</b> 207
3.04 Explain how global atmospheric movement patterns affect local weather.	<b>Student Handbook:</b> 202, 208
3.05 Compile and use weather data to establish a climate record and reveal any trends.	<b>Student Handbook:</b> 208, 210-211
3.06 Discuss and determine the influence of geography on weather and climate: <ul style="list-style-type: none"> <li>• Mountains</li> <li>• Sea breezes</li> <li>• Water bodies.</li> </ul>	<b>Student Handbook:</b> 216-217

## COMPETENCY GOAL 4

**The learner will conduct investigations and use appropriate technologies to build an understanding of forces and motion in technological designs.**

Competency Objective, Grade 5	ScienceSaurus, Grades 4-5
4.01 Determine the motion of an object by following and measuring its position over time.	<b>Student Handbook:</b> 275
4.02 Evaluate how pushing or pulling forces can change the position and motion of an object.	<b>Student Handbook:</b> 269, 277-278
4.03 Explain how energy is needed to make machines move. <ul style="list-style-type: none"> <li>• Moving air.</li> <li>• Gravity.</li> </ul>	<b>Student Handbook:</b> 278-279
4.04 Determine that an unbalanced force is needed to move an object or change its direction.	<b>Student Handbook:</b> 278
4.05 Determine factors that affect motion including: <ul style="list-style-type: none"> <li>• Force.</li> <li>• Friction.</li> <li>• Inertia.</li> <li>• Momentum.</li> </ul>	<b>Student Handbook:</b> 275-278
4.06 Build and use a model to solve a mechanical design problem. <ul style="list-style-type: none"> <li>• Devise a test for the model.</li> <li>• Evaluate the results of test.</li> </ul>	<b>Student Handbook:</b> 279
4.07 Determine how people use simple machines to solve problems.	<b>Student Handbook:</b> 280-283



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