

## PURPOSE

The science component of the North Carolina *Standard Course of Study (SCS)* is designed to provide learning opportunities for all students to become scientifically literate. Scientific literacy implies an understanding of the scientific concepts and processes needed for personal decision-making, participation in civic affairs, and economic productivity. A scientifically literate person has a substantial understanding of scientific concepts and inquiry skills, which enable one to continue to learn and think logically. This person understands and appreciates the limits of science and technology. North Carolina students can achieve scientific literacy through an instructional program based on the science component of the *SCS*. The intent of the science program is to merge unifying concepts of science, strands, content goals, and objectives.

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### Elementary Education

The elementary science section of the *SCS* integrates the unifying concepts of science to provide continuity in science instruction across grade levels and between science disciplines. These unifying concepts are:

- Systems, Order and Organization.
- Evidence, Models, and Explanation.
- Constancy, Change, and Measurement.
- Evolution and Equilibrium.
- Form and Function.

The elementary science section of the *SCS* has four strands that provide the context for teaching the goals and objectives. The strands include:

- Nature of Science.
- Science as Inquiry.
- Science and Technology.
- Science in Social and Personal Perspectives.

By the end of fifth grade, all students should have developed an understanding of the following:

- Characteristics of organisms.
  - Similarities and differences in organisms.
  - Life cycles of organisms.
  - Organisms and environments.
  - Ecosystems.
  - Properties of earth materials.
  - Weather concepts.
  - Objects in the sky.
  - Changes in earth and sky.
  - Properties of objects and materials.
  - Position and motion of objects.
  - Electricity, magnetism and sound.
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## **Middle School Education**

The middle school science section of the *SCS* continues to integrate the unifying concepts of science to provide continuity in science instruction across grade levels and between science disciplines. These unifying concepts are:

- Systems, Order and Organization.
- Evidence, Models, and Explanation.
- Constancy, Change, and Measurement.
- Evolution and Equilibrium.
- Form and Function.

The middle school section of the *SCS* includes four strands that provide the context for teaching the goals and objectives. The strands encompass:

- Nature of Science.
- Science as Inquiry.
- Science and Technology.
- Science in Social and Personal Perspectives.

By the end of eighth grade, all students should have constructed understanding of the following concepts, theories, and universal laws:

- Human body systems.
- Basic heredity and genetics.
- Population dynamics.
- Diversity and adaptations of organisms.
- Change over time of life and landforms.
- Structure of the earth system.
- Earth in the universe.
- Transfer of energy.
- Motion and forces.
- General and interacting properties of matter.
- Basic cellular biology.

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## **High School Education**

The high school science section of the *SCS* continues to integrate the unifying concepts of science to provide continuity in science instruction across grade levels and between science disciplines. These unifying concepts are:

- Systems, Order and Organization.
- Evidence, Models, and Explanation.
- Constancy, Change, and Measurement.
- Evolution and Equilibrium.
- Form and Function.

The high school science section of the *SCS* includes four strands that provide the context for teaching the goals and objectives. They are:

- Nature of Science.
- Science as Inquiry.
- Science and Technology.
- Science in Social and Personal Perspectives.

By the end of twelfth grade, all students should have constructed an understanding of the following concepts, theories, and universal laws. This understanding should result from required courses including biology, an earth/environmental science, and a physical science.

- The cell.
- Molecular basis of heredity.
- Biological evolution.
- Interdependence of organisms.
- Energy in earth systems.
- Geological cycles.
- Origin and evolution of the earth system.
- Origin and evolution of the universe.
- Structure of atoms.
- Structure and properties of matter.
- Chemical reactions.
- Motions and forces.
- Conservation of energy and increase in disorder.
- Interaction of energy and matter.

The science graduation requirements may be satisfied in a variety of ways.

Satisfaction of the biology requirement may be designed locally to encourage the study of local biological topics. Specific examples of courses that may satisfy this requirement include Standard Course of Study Biology, Advanced Placement (AP<sup>®</sup>) Biology, or IB Biology. Any locally designed course that satisfies this requirement must include all of the competency goals designated in the Biology Course in the Science Standard Course of Study. To meet the biology requirement, students must take the End-of-Course test in Biology.

Satisfaction of the earth/environmental science requirement may be designed locally to encourage the study of local earth/environmental issues. Specific examples of courses that may satisfy this requirement include: Standard Course of Study Earth/Environmental Science, AP<sup>®</sup> Environmental Science, or IB Environmental Systems. Any course that satisfies this requirement must include all of the competency goals designated in the Earth/Environmental Science course in the Science Standard Course of Study.

Satisfaction of the physical science requirement may be locally designed to encourage the study of topics of local interest in the physical sciences. Specific examples of courses that may satisfy this requirement include Standard Course of Study Physical Science, Chemistry or Physics, AP<sup>®</sup> Chemistry or Physics, and IB Chemistry or Physics. Any locally designed course that satisfies this requirement must include all of the competency goals designated in one of the following Standard Courses of Study: Physical Science, Chemistry, or Physics. Students taking a locally designed class must take one of the corresponding End-of-Course tests to meet the physical science requirement, with the exception of Principles of Technology I and Principles of Technology II.

In addition, Principles of Technology I or Principles of Technology II can count as the physical science credit required for graduation under these conditions:

- When PT I is taken to meet the physical science requirement, students must take the PT I postassessment. When PT I is counted as the Physical Science course, students are subject to the End-of-Course test for physical science.
- When PT II is taken to meet the physical science requirement, students must take the PT II postassessment. PT II (with PT I as a prerequisite) may count as the course Physics. When PT I and II are counted as the course, Physics, students in this course are subject to the End-of-Course Test in physics.

PT I and PT II may count as the physical science credit required for admission to the University of North Carolina System Institutions when the student has taken the career technical postassessment.

For students in the occupational course of study, two years of Life Skills Science satisfy the science graduation requirement. These courses of study are available through the Exceptional Children's Division at the North Carolina Department of Public Instruction.