

Course Syllabus

Science, TN: Grade 4

Jefferson County Schools Curriculum, Final
Jefferson County Schools

The Terra Nova Multiple Assessments Battery for Science "measures knowledge of key concepts and facility with science process skills. By applying scientific concepts to objects and situations that are familiar to them, students draw connections between what they learn in the classroom and what they find in their own lives. Engaging graphics, photographs, and page designs typify science instructional materials and invite students to participate fully in the test.

The test covers the traditional core areas of science - inquiry, physical science, life science, Earth and space sciences - and adds science and technology, science in personal and social perspectives, and the history and nature of science, as suggested in the National Science Education Standards. Implicit in many questions is the measurement of higher-order thinking skills - the student's ability to analyze, infer, synthesize, and evaluate."

The Tennessee Science Curriculum Standards provide standards, performance indicators, and accomplishments for students in science.

The Terra Nova Multiple Assessments assess students in fourth grade (Level 14).

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Earth and Space Science

The Earth and Space Science unit addresses the composition, structure, exploration, and history of the earth and space. Topics include plate tectonics, the atmosphere, geological cycles and processes, weather, climate, the solar system, and the universe.

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- The learner will be able to (ESSENTIAL) comprehend the atmosphere.
- The learner will be able to (ESSENTIAL) recognize and utilize suitable tools to measure atmospheric conditions (Learning Accomplishment includes "(i.e. barometer, thermometer, anemometer, rain gauge)").
- The learner will be able to (IMPORTANT) understand that objects in space have recognizable characteristics (e.g., appearance, location, apparent motion).
- The learner will be able to (IMPORTANT) explore the patterns and motion of objects in space.
- The learner will be able to (ESSENTIAL) recognize specific geological features.
- The learner will be able to (ESSENTIAL) recognize the layers of the Earth.
- The learner will be able to (ESSENTIAL) group earth materials according to their use.
- The learner will be able to (IMPORTANT) show how the earth rotates and revolves.
- The learner will be able to (ESSENTIAL) survey how wind and water alter the earth's features.
- The learner will be able to (IMPORTANT) identify that gravity is a force that pulls objects toward the center of the Earth and explain how gravity works in nature.
- The learner will be able to (ESSENTIAL) identify the different shapes that the moon appears to assume.
- The learner will be able to (ESSENTIAL) understand natural resources.
- The learner will be able to (ESSENTIAL) recognize the difference between renewable and nonrenewable natural resources.
- The learner will be able to (ESSENTIAL) select the illustration that depicts how oceans affect weather and climate.

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- The learner will be able to (ESSENTIAL) recognize the position of the planet based on their distance from the sun.
- The learner will be able to (ESSENTIAL) understand rock dynamics.
- The learner will be able to (ESSENTIAL) recognize the various components and properties of soil.
- The learner will be able to (ESSENTIAL) comprehend the solar system.
- The learner will be able to (ESSENTIAL) comprehend the nature of climate.
- The learner will be able to (IMPORTANT) identify that landforms and bodies of water influence weather and climate.
- The learner will be able to (ESSENTIAL) identify cloud types associated with specific weather conditions.
- The learner will be able to (ESSENTIAL) understand water dynamics.
- The learner will be able to (ESSENTIAL) understand weather.
- The learner will be able to (ESSENTIAL) compare how various animals obtain and use food.
- The learner will be able to (ESSENTIAL) select the illustration that depicts the life cycle of an organism.
- The learner will be able to (ESSENTIAL) match an animal with its means of obtaining oxygen (e.g., gills, lungs).
- The learner will be able to (IMPORTANT) recognize food as an energy source for animals.
- The learner will be able to (IMPORTANT) classify animals by type according to their characteristics.
- The learner will be able to (ESSENTIAL) comprehend that all living things are composed of one or more cells.
- The learner will be able to (ESSENTIAL) recognize the basic structure of plant and animal cells.
- The learner will be able to (ESSENTIAL) identify animal/plant cell structure and function.
- The learner will be able to (ESSENTIAL) compare/contrast groups of organisms according to their characteristics.

Life Science

The Life Science unit addresses the characteristics and cycles of and relationships between living things and their environments. Topics include cellular organization, classification, ecosystems, genetics, and human health issues.

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- The learner will be able to (ESSENTIAL) select plants and animals found in a specific environment.
- The learner will be able to (ESSENTIAL) give evidence and/or provide examples of environmental alterations caused by organisms.
- The learner will be able to (ESSENTIAL) comprehend environments.
- The learner will be able to (ESSENTIAL) match a plant/animal to a particular environmental condition.
- The learner will be able to (ESSENTIAL) comprehend ecology.
- The learner will be able to (ESSENTIAL) match the form and structure found in living things to their function.

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- The learner will be able to (ESSENTIAL) recognize that fossils show links between organisms of today and those that lived in the past.
- The learner will be able to (ESSENTIAL) distinguish offspring from their parent.
- The learner will be able to (IMPORTANT) recognize that certain traits are passed from parents to offspring and compare the traits of offspring with their parents.
- The learner will be able to (ESSENTIAL) understand human health issues.
- The learner will be able to (ESSENTIAL) comprehend the life cycles of living things.
- The learner will be able to (ESSENTIAL) recognize the relationship between reproduction and the survival of the organism.
- The learner will be able to (ESSENTIAL) recognize specific plant and animal populations as thriving, threatened, endangered, or extinct (e.g., elephant, sea turtle, dodo bird, dinosaur).
- The learner will be able to (ESSENTIAL) understand that various living things live in various habitats.
- The learner will be able to (ESSENTIAL) understand behavioral and/or structural adaptations.
- The learner will be able to (ESSENTIAL) utilize various classification systems for living things.
- The learner will be able to (ESSENTIAL) analyze how plants and animals interact with one another and their environment.
- The learner will be able to (ESSENTIAL) match edible parts of plants with plant structures.
- The learner will be able to (IMPORTANT) recognize that plants use food for energy.
- The learner will be able to (ESSENTIAL) identify that extinction has happened in the past and continues today and infer possible causes of extinction.

Physical Science

The Physical Science unit includes concepts related to matter, forces, motion, and energy, as well as their interactions. Topics include chemical and physical changes, electricity, magnetism, heat, light, sound, machines, work and power.

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- The learner will be able to (ESSENTIAL) recognize that various materials conduct heat.
- The learner will be able to (ESSENTIAL) understand the properties of energy.
- The learner will be able to (IMPORTANT) identify and comprehend that energy exists in many forms(e.g., mechanical, heat).
- The learner will be able to (ESSENTIAL) identify and differentiate among the different types of energy.
- The learner will be able to (IMPORTANT) construct and describe a simple electrical circuit.
- The learner will be able to (IMPORTANT) identify the basic concept of electricity.
- The learner will be able to (IMPORTANT) categorize materials as insulators or conductors.
- The learner will be able to (IMPORTANT) identify the properties of light and sound energy.
- The learner will be able to (ESSENTIAL) select the factors which have the greatest influence on the motion of an object.

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- The learner will be able to) identify that an object's motion is affected by friction and identify factors affecting the amount of friction.
- The learner will be able to (ESSENTIAL) recognize the effects of gravity.
- The learner will be able to (IMPORTANT) explain how light behaves when it strikes various surfaces.
- The learner will be able to (ESSENTIAL) recognize simple machines (i.e., inclined plane, lever, pulley).
- The learner will be able to (ESSENTIAL) recognize factors associated with a physical change.
- The learner will be able to (ESSENTIAL) explain matter by its observable physical properties.
- The learner will be able to (IMPORTANT) identify that matter has predictable properties and is composed of particles too small to be seen with the naked eye.
- The learner will be able to (ESSENTIAL) understand the properties and structure of matter.
- The learner will be able to (ESSENTIAL) identify the characteristics of different types of mixtures.
- The learner will be able to (ESSENTIAL) determine methods for separating mixtures.
- The learner will be able to (IMPORTANT) compare and explain observations of objects made with the eye, magnifying glass, and microscope.
- The learner will be able to (ESSENTIAL) identify that the position and length of a shadow is associated with the position of the sun.
- The learner will be able to (ESSENTIAL) differentiate between volume and pitch.
- The learner will be able to (IMPORTANT) describe how speed affects the distance traveled.
- The learner will be able to (ESSENTIAL) determine why various types of matter change state.

- The learner will be able to (ESSENTIAL) identify states of matter.

Research and Inquiry

The Research and Inquiry unit focuses on the knowledge, processes, and real world issues associated with science and technology. Topics include experimentation, data analysis, science related careers, and technological advances.

- The learner will be able to interpret scientific data.
- The learner will be able to (ESSENTIAL) understand methods of scientific inquiry.
- The learner will be able to (ESSENTIAL) comprehend the design of an experiment.
- The learner will be able to comprehend technological design.
- The learner will be able to (ESSENTIAL) utilize available and suitable technology.