Course Syllabus
Science, TN: Grade 5

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 fifth grade (Level 15).

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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) predict weather conditions based on an analysis of atmospheric data (Learning Accomplishment includes air pressure, temperature, wind speed, precipitation).
- The learner will be able to (IDENTIFY) identify that atmospheric conditions change and are measurable.
- The learner will be able to (IMPORTANT) understand that objects in space have recognizable characteristics (e.g., appearance, location, and 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) identify forces that cause geological change.
- The learner will be able to (ESSENTIAL) recognize that the age of earth materials can be determined by their position in rock layers.
- The learner will be able to (IMPORTANT) identify that earth's geological features alter.
- The learner will be able to (IMPORTANT) create a model showing the major layers of the earth.
- The learner will be able to (ESSENTIAL) identify characteristics of the Earth's layers.
- The learner will be able to (IMPORTANT) understand that the earth has layers.
- The learner will be able to (IMPORTANT) identify that the earth's materials have various practical uses and select the appropriate use for an earth material (e.g., fuel, monument, house foundation).
- The learner will be able to (IMPORTANT) explain the differences between rotation and revolution in the solar system.

- The learner will be able to (ESSENTIAL) distinguish between the rotation and revolution of the earth.
- The learner will be able to (IMPORTANT) describe how particular forces alter the earth's features (i.e., wind, water, plate features).
- The learner will be able to (ESSENTIAL) identify that gravity is a force that pulls objects toward the center of the Earth.
- The learner will be able to (ESSENTIAL) identify that objects on or near the earth are pulled toward it by the earth's gravity.
- The learner will be able to (IMPORTANT) show how the phases of the moon occur.
- The learner will be able to (IMPORTANT) explain why the moon appears to change shape.
- The learner will be able to (ESSENTIAL) identify and arrange the phases of the moon in the correct sequence.
- The learner will be able to (ESSENTIAL) understand natural resources.
- The learner will be able to (IMPORTANT) recognize the differences between renewable and non-renewable resources.
- The learner will be able to (ESSENTIAL) select a diagram that illustrates the most appropriate use of an earth material.
- The learner will be able to (ESSENTIAL) distinguish among the planets according to specific characteristics.
- The learner will be able to (ESSENTIAL) understand rock dynamics.
- The learner will be able to (IMPORTANT) understand the properties of soil.
- The learner will be able to (ESSENTIAL) recognize society's dependence on non-renewable resources.
- The learner will be able to (IMPORTANT) describe soil formation.
- The learner will be able to (ESSENTIAL) select the soil characteristics that best support plant growth.
- The learner will be able to (ESSENTIAL) comprehend the solar system.
- The learner will be able to (IMPORTANT) examine how temperature influences evaporation, condensation, and precipitation.
- The learner will be able to identify the basic features of the water cycle.
- The learner will be able to (IMPORTANT) show the parts and processes of the water cycle.
- The learner will be able to (ESSENTIAL) distinguish between weather and climate.
- The learner will be able to (ESSENTIAL) comprehend the nature of climate.
- The learner will be able to identify how landforms influence weather and climate.
- The learner will be able to (IMPORTANT) describe how landforms influence weather and climate.
- The learner will be able to (ESSENTIAL) understand weather.
- The learner will be able to (ESSENTIAL) understand water dynamics.

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 (IMPORTANT) identify the function of particular structures in organisms that allow them to obtain and use energy.
- The learner will be able to recognize that animals and plants can be grouped by the similarities and differences in their traits.
- The learner will be able to (ESSENTIAL) recognize the properties of plants and animals that enables them to live in a specific environment.
- The learner will be able to (ESSENTIAL) analyze plants and animals that can be found in a certain environment.
- The learner will be able to (ESSENTIAL) categorize specific types of relationships between plants and animals in an ecosystem.
- The learner will be able to (ESSENTIAL) identify and compare and contrast basic structures and functions of plant and animal cells (Learning Accomplishment includes (i.e., cell membrane, cytoplasm, and nucleus).
- The learner will be able to (ESSENTIAL) distinguish between single and multi-cell organisms.
- The learner will be able to (IMPORTANT) draw and label the fundamental structures of animal and plant cells (i.e., cell wall, cell membrane, cytoplasm, nucleus, chloroplasts).
- The learner will be able to (ESSENTIAL) compare how organisms adapt to different environments.
- The learner will be able to (ESSENTIAL) comprehend ecology.
- The learner will be able to (IMPORTANT) predict the consequences of a human action on the environment.
- The learner will be able to (ESSENTIAL) compare the causes that led to the extinction of various organisms.
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- The learner will be able to (ESSENTIAL) describe how fossils provide information about the types of organisms that lived in the past.
- The learner will be able to (ESSENTIAL) match form with the functions of structures found in living things.
- The learner will be able to (ESSENTIAL) compare traits of parents and offspring.
- 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 (IMPORTANT) investigate the life cycles of living things.
- The learner will be able to (ESSENTIAL) understand that various living things live in various habitats.
- The learner will be able to (ESSENTIAL) recognize the difference between complete and incomplete metabolism.
- 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 (IMPORTANT) identify that organisms can alter their environment.
- The learner will be able to (ESSENTIAL) identify environmental changes caused by living things.
- The learner will be able to (IMPORTANT) determine how adaptations of living things help them survive in their environment.
- The learner will be able to (IMPORTANT) describe how various plant structures are associated with food production (i.e., stems, leaves, stomata).

- The learner will be able to (ESSENTIAL) identify materials that plants use to manufacture food (Learning Accomplishment includes "explain how plants make their own food).
- The learner will be able to (IMPORTANT) recognize that plants and animals use food for energy.
- The learner will be able to (IMPORTANT) group plants based on their characteristics.
- The learner will be able to (IMPORTANT) explain the life cycle of a fast growing plant.
- The learner will be able to (ESSENTIAL) match the parts of plants and their functions.
- The learner will be able to (IMPORTANT) describe the function of the flower in plant reproduction.
- The learner will be able to (ESSENTIAL) identify photosynthesis as the food manufacturing process in plants.
- The learner will be able to (IMPORTANT) compare the way in which plants are adapted to various environments (e.g., palm tree, fir tree, cactus).
- The learner will be able to (IMPORTANT) identify that new generations of organisms arise from reproduction.
- The learner will be able to (IMPORTANT) find similarities and differences in how various plants reproduce (i.e., flowers, spores).
- The learner will be able to (IMPORTANT) describe that the continuation of a species is dependent upon the reproduction of its members.
- The learner will be able to (ESSENTIAL) identify that reproduction is required for species survival.
- The learner will be able to (IMPORTANT) describe how plants grow and produce seeds by observing specific plants (i.e., sunflowers, beans).
- The learner will be able to (IMPORTANT) distinguish between cells, tissues, organs and systems.
- The learner will be able to predict the effects of human actions and/or natural disasters on the environment.

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) identify a substance as an acid or base.
- The learner will be able to (ESSENTIAL) differentiate between chemical and physical properties of matter.
- The learner will be able to (ESSENTIAL) distinguish between a physical and chemical change.
- The learner will be able to (IMPORTANT) construct and describe a parallel circuit.
- The learner will be able to (IMPORTANT) describe the use of a particular type of electrical circuit.
- The learner will be able to (IMPORTANT) identify the basic concept of electricity.
- The learner will be able to (ESSENTIAL) understand the properties of energy.
- The learner will be able to (IMPORTANT) demonstrate and explain how energy converts from one form to another.

- The learner will be able to (ESSENTIAL) identify ways in which energy is transferred.
- The learner will be able to (ESSENTIAL) distinguish between kinetic and potential energy.
- The learner will be able to (IMPORTANT) identify the properties of light and sound energy.
- The learner will be able to (IMPORTANT) comprehend that energy exists in many forms.
- The learner will be able to (IMPORTANT) force, and distance traveled.
- The learner will be able to (IMPORTANT) identify the relationship between force and motion.
- The learner will be able to (IMPORTANT) describe how slope influences the amount of force.
- The learner will be able to (IMPORTANT) identify that an object's motion is affected by friction.
- The learner will be able to (IMPORTANT) explain how alterations in temperature result in evaporation and condensation.
- The learner will be able to (ESSENTIAL) identify how different materials conduct heat.
- The learner will be able to (ESSENTIAL) select the illustration that explains how lenses refract a beam of light.
- The learner will be able to (IMPORTANT) observe and describe how lenses affect a beam of light.
- The learner will be able to (ESSENTIAL) compare the effects of chemical and physical changes in matter.
- The learner will be able to (ESSENTIAL) select the type of mixture based on its characteristics.
- The learner will be able to (IMPORTANT) identify conditions associated with a chemical change.
- The learner will be able to (IMPORTANT) describe the law of the conservation of matter.
- The learner will be able to (ESSENTIAL) recognize the law of conservation of matter.
- The learner will be able to (IMPORTANT) explore the interactions of matter.
- The learner will be able to (IMPORTANT) describe why various types of matter freeze, melt, and/or evaporate at different rates.
- The learner will be able to (IMPORTANT) identify that matter has predictable properties and is composed of particles to small too be seen with the naked eye.
- The learner will be able to (IMPORTANT) determine the measurable properties of matter using appropriate metric units.
- The learner will be able to (ESSENTIAL) understand the properties and structure of matter.
- The learner will be able to (ESSENTIAL) recognize how an object's speed is influenced by the height of an incline.
- The learner will be able to (ESSENTIAL) identify the poles of a magnet.
- The learner will be able to (ESSENTIAL) identify the description of a magnetic field (Learning Accomplishment includes "demonstrate and describe a magnetic field").
- The learner will be able to (IMPORTANT) identify the uses and properties of magnets.
- The learner will be able to (IMPORTANT) explain and describe the uses of magnets.
- The learner will be able to (ESSENTIAL) select a material according to a description of its physical properties.
- The learner will be able to (IMPORTANT) explore and explain the effect of friction on an object in motion.
- The learner will be able to (ESSENTIAL) find the similarities and differences between series and parallel circuits.

- The learner will be able to (ESSENTIAL) match simple machines with their uses.
- The learner will be able to (IMPORTANT) identify conditions that are related to the different states of matter.
- The learner will be able to (ESSENTIAL) identify how temperature is related to changes in 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.

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- The learner will be able to (ESSENTIAL) interpret scientific data.
- The learner will be able to (ESSENTIAL) understand that science and technology can cause alterations that affect society.
- 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 (ESSENTIAL) understand and use the processes and skills of science and technology.
- The learner will be able to (ESSENTIAL) comprehend technological design.
- The learner will be able to (ESSENTIAL) utilize available and suitable technology.