SCIENCE 21 CURRICULUM MAP

Grade Level: Second

Essential Question for Grade Level:

How do we measure the properties of our natural world?

How do we choose the best tool to measure?

Unit/Timeframe	Unit Essential Questions	Unit Objectives	Concepts/Major Understandings	NYS Performance Indicators
Unit 1: Tools to Measure Our World Sept.-Dec.	• What tools do we use in our daily lives and how do they make life easier for us? • Why is it important to know which measurement tool is good for which job? • How do scientists organize and carry out an investigation?	**Students will be able to use tools to measure changes in our world. (Unit 1)** 1. Be able to describe suitable behavior and rules for working safely when carrying out science activities. 2. Be able to identify tools that they use in their daily lives. 3. Be able to define a tool as an implement that makes work easier. 4. Be able to identify the properties that a tool will measure (length, volume, weight and temperature). 5. Be able to choose and use an appropriate tool for measuring size (linear, volume), weight and temperature. 6. Be able to use thermometers, measuring cups, scales and rulers to record changes that occur throughout their experiments.	• It is important to work carefully and safely when conducting scientific investigations. • Standard units of measure produce more consistent results than nonstandard units. • Scientists use tools (simple scientific instruments) that permit the measurement of quantities, such as length, mass, volume, and temperature. • Simple instruments such as thermometers, rulers, measuring cups and balances provide more information than scientists can obtain by using only their senses.	PS 3.2C PS 3.1D PS 3.1C PS 3.1C,3.1F PS 3.1C PS 3.1F

SCIENCE 21 CURRICULUM MAP

Grade Level: Two

Essential Question for Grade Level: How do we measure changes in our world?

Unit/Timeframe	Unit Essential Questions	Content/ Concepts	Process Objectives	Content Objectives	NYS Performance Indicators
Unit II: Observing and Measuring Changes in Energy November-December	• What are the different forms of energy in our daily lives and how do the changes in the forms of energy help us? • How can we use our knowledge about energy to design an invention related to energy?	• We use a variety of forms of energy in our daily lives. • Energy changes from one form to another. • Energy is used to do work. • Scientists work cooperatively. • Scientists record and communicate results to one another. • We can design and build an invention to do work.	**1. Develop abilities in science.** A. Think clearly and solve problems about science (classify, decide, estimate, solve, compare). B. Talk and write clearly about science (present, persuade, collaborate, explain, recommend). C. Make careful plans and use them (brainstorm, envision, research, plan, organize, persist). D. Use the quality process (plan, draft, analyze, and revise when producing products). **2. Be able to apply science knowledge and skills to a variety of purposes.** A. Be able to solve problems using the scientific method (research, hypothesis, experimentation, findings, conclusion). B. Be able to conduct research (field research, library research and experimentation). C. Be able to use scientific equipment appropriately (safety, effectively, efficiently, accurately). D Know how to preserve the earth (reuse, reduce, recycle, refuse). E Possess technical skills: - Listen/read/write/present: instructions, chart, report, proposal, letter of request, summary - Technology: word processing, Internet, AV production	**Students will be able to observe and sometimes measure changes in energy.** 1. Be able to explore, observe and identify different forms of energy. 2. Be able to describe a variety of forms of energy (sound, chemical, light, magnetic, heat, solar, electrical, wind, etc.). 3. Be able to explore, observe and explain how energy affects their lives/environment. 4. Be able to identify sources of light in the environment. 5. Be able to construct their own musical instruments at home and at school. 6. Be able to observe, demonstrate and select objects that are attracted by magnets. 7. Be able to design, build and discuss an invention related to energy.	**MA 2** **SI 1** **SI 1** **SI 1** **SI 2** **SI 2** **MA 1** **MA 2** **ED 1** **PS 3.1b** **PS 3.1f** **PS 3.2c** **PS 4.1a** **PS 3.1e** **PS 4.1d** **PS 5.1d**

SCIENCE 21 CURRICULUM MAP

Grade Level: Second
Essential Question for Grade Level:
How can we observe and measure changes in living things?

Unit/Timeframe	Unit Essential Questions	Unit Objectives	Concepts/Major Understandings	NYS Performance Indicators
Unit 3: Observing and Measuring changes in Living things. April-May	• How do we show respect for the animals in our class and take good care of them? • What do living things need to grow and thrive? • How do living things use their body parts to get the things they need to live and grow? • How do we measure changes in living things over time? • How are the animals that we study alike and different from humans?	**Students will be able to observe and measure changes in living things. (Unit 3)** 1. Be able to observe the studied plants and animals accurately, describing their properties. 2. Be able to state the requirements of plants and animals to grow, stay healthy and thrive. 3. Be able to compare and describe a bulb and a seed. 4. Be able to measure and record the changes in sunflowers, radishes and bulbs that take place as they germinate and grow from seeds, to seedlings, and to mature plant. 5. Be able to describe the function of a bulb. 6. Be able to define life span and life cycle. 7. Be able to describe the life span and life cycle of Triops or Crayfish. 8. Be able to set up a habitat for Triops or Crayfish. 9. Be able to measure and record changes of animal growth for Triops or Crayfish. 10. Be able to identify the main features (properties and structures) of the Triops or Crayfish. 11. Be able to compare and contrast the animal of study to humans. 12. Be able to identify phases of the life cycle of a tick that are responsible for Lyme Disease transmission.	• Many plants have a life cycle that begins with the germination of a seed. Seeds need water, air, and warmth to germinate. Roots grow first and then the stem; the seedlings need light to grow and thrive. • Different kinds of plants have different life spans - the time from development to death of the plant. An animal's life span, the time from birth to death of the animal, is also different for different kinds of animals. • Some plants can be propagated using bulbs. Bulbs contain stored food for the plant. • Animals need food, water and air to grow, stay healthy and thrive. They can only survive in an environment in which these needs are met. • All animals require a suitable habitat to grow and thrive. Habitat requirements may include salt/fresh water, temperature, appropriate food, light, humidity. • Animals sense their environment and respond to stimuli, such as light/dark, warm/cold, touch, or noise.	LE 3.1A LE 3.1 A LE 3.1A,3.1B LE 3.1C,3.2C LE 4.1B LE 5.2A LE 3.1B LE 4.1F,4.1G LE 4.1A LE 5.2F LE 5.3E,5.2D LE 4.1A,4.1E

SCIENCE 21 CURRICULUM MAP

Grade Level: Two

Essential Question for Grade Level: How can we measure seasonal changes in environmental conditions?

Unit/Timeframe	Unit Essential Questions	Unit Objectives	Concepts/Major Understandings	NYS Performance Indicators
Unit: 4 Observing and Measuring Changes In the Environment	• How do we observe and measure daily, monthly, and yearly changes in the environment? • How do animals and plants make adaptations to changing conditions caused by the seasons? • How do the sun and the moon cause changes in the Earth and how do living things adapt to those changes?	**Students will be able to observe and measure changes in the environment. (Unit 4)** 1. Be able to measure and collect data for each of the seasons of the year. 2. Be able to observe, recognize and record seasonal changes and adaptations. 3. Be able to recognize animal and human adaptations to changing conditions through the seasons. 4. Be able to build a tool to measure shadows. 5. Be able to make and use a sundial. 6. Be able to describe the appearance of the moon changing as it moves around the earth to complete a single cycle. 7. Be able to compare insulation and relate it to animal characteristics and behavior. 8. Be able to compare waterproof properties of fabrics. 9. Be able to construct a tool to collect heat energy from the sun. 10. Be able to observe the changes in trees and clothing through the seasons.	• The length of daylight and average daily temperatures vary with the seasons. This affects the decisions people make, such as what clothing they will wear. • The appearance of the Moon changes as it moves around the earth; the phases of the moon repeat in a cyclic pattern each month. • Animals have behaviors and physical adaptations that enable them to survive through the seasonal changes in their environment. • As the sun moves through the sky each day, the length and position of shadows change. A sundial can be used to determine the approximate time of day by the position of the shadow cast by the triangular shaped gnomon. • Light energy from the sun is converted into heat energy in a solar heater.	PS1.1A PS1.1C LE1.2A PS1.1A PS1.1B PS 1.1A LE1.2A,5.2A PS3.1F PS 3.1F, 3.1 LE 5.2E, 5.2F