

*City School District
Of Albany*

**Elementary Science
K-4
Curriculum Pacing
Maps: A Parent
Guide**

Dear Parent/Guardian:

The following pages map out the Elementary Science (K-4) curriculum for the City School District of Albany. They are presented in a monthly format by grade level, and align with the New York State Elementary Science Core Curriculum Guide from the State Education Department. Each year students are instructed in the 4 main branches of science: Life Science, Earth Science, Chemistry, and Physics. The program consists of a reading/writing component using the Harcourt Science text, and a hands-on lab component using science kits.

The maps are designed to ensure that all students are instructed in the required curriculum to best prepare them for the NYS Grade 4 Elementary Level Science Test. They are reviewed annually and subject to change.

As parents, I encourage you to use these maps to keep informed of the science topics your son/daughter will be learning each year. This also affords an opportunity to participate in and enhance their learning at home. Should you have any questions please call the Office of Math and Science at 462-7224.

Sincerely,

Daniel Stilson
Instructional Supervisor
For Science, K-12

KINDERGARTEN		
Month/Topic	Vocabulary	NYS Performance Indicators
September Topic: The Senses	See, color, bright, dull, shape, size, hear, vibration, high, low, loud, soft, taste, sweet, sour, bitter, salty, tongue, smell, touch, rough, hard, texture	LE-5.2c Senses can provide essential information to animals about their environment.
October – Mid November Topic: Plants	Plants, trees, shrubs, grasses, flowers, large, small, roots, stem, leaves, leaf, seeds, fruit, water, air, light, soil, seed, sprout, seedling, food, clothing	LE-1.1b Plants require air, water, nutrients, and light to live. LE-3.1b Plants have parts that serve functions in growth and reproduction.
Mid-November- Mid-January Topic: Animals	Living, nonliving, animal, mammal, bird, reptile, amphibian, fish, insect, feathers, fur, scales, skin, food, water air, endanger, fly, hop, run, swim, nest, hive, lodge, cave, burrow, life cycle, caterpillar, egg, pupa, butterfly	LE-3.1b,c Animals and plants have different structures in order to survive in their environments LE-4.1a Plants and animals have life cycles.
Mid-January-Early March Topics: Earth’s Land, Air, and Water	Earth, space, planet, ocean, land, mountain, valley, plain, volcano, flood, drought, soil, rocks, stream, river, lake, ocean, natural resource, recycle, reuse, conserve, habitat	PS-2.1e Extreme natural events may have positive or negative impacts on living things.
Mid-March-End April Topics: Weather and Seasons	Rainy, snowy, windy, sunny, cloudy, rain gauge, thermometer, wind gauge, seasons, spring, summer, fall, winter, predict	PS-2.1b Weather can be described and measured. PS-1.1a Natural cycles and patterns include weather changing from day to day and through the seasons.
May Topic: Objects Around Us	Object, material, size, weight, over, under, in, out, above, below, left, right, cut, tear, bend, fold, light, shadow, push, pull, gravity, roll, fast, slow, magnets	PS-3.1c Objects have properties that can be observed and described. PS-5.1c Gravity pulls objects to the Earth PS-5.1e Magnetism is a force that may attract or repel certain objects.
June Topic: Investigating Water	Water, surface, tension Sink, float, dissolve, Liquid, solid, gas, change, evaporate	PS-3.2a Matter exists in three states. PS-3.1e Material an object is made up of will determine some properties of the object.

Grade 1		
Month/Topic	Vocabulary	NYS Performance Indicators
<p>September-Mid-October</p> <p>Topics: Plants and Animals, Living Things and Living Together</p>	<p>Senses, living, nonliving, Roots, stem, leaves, flowers, seed, Seed coat, sunlight, gills, mammal, reptile, amphibian, insect, hatch, larva, pupa, tadpoles</p>	<p>LE-3.1a/b Each organism has different structures that serve different functions in growth, survival, and reproduction. LE-4.1a Plants and animals have life cycles.</p>
<p>Mid-October- End November</p> <p>Topic: Living Together</p>	<p>Shelter, enrich, pollen product, Forest, desert, rain forest, Ocean, algae</p>	<p>LE-7.1a Humans depend on their natural and constructed environments.</p>
<p>December- Mid-January</p> <p>Topic: About Our Earth</p>	<p>Rocks, sand, Fossils, extinct, Natural Resource Minerals, oils Fresh water, stream, river, Lake, Reduce, reuse, recycle</p>	<p>PS-4.1a-g Energy exists in various forms and can be transferred to matter such as electricity, heat, sound, and light (recycling). PS-4.2a,b Everyday events involve one form of energy being changed to another (the rock cycle, water cycle,).</p>
<p>Mid-January-End February</p> <p>Topics : Weather, The Sky and Seasons</p>	<p>Weather, temperature, Thermometer, wind, Water cycle, evaporate, water vapor, condense Stars, sun, moon, rotates, Seasons, spring, summer, fall, winter</p>	<p>PS-2.1c Water is recycled by natural processes on Earth. PS-2.1b Weather can be described and measured. PS-1.1a The Earth has natural cycles and patterns.</p>
<p>March-April</p> <p>Topics : Matter and Energy</p>	<p>Matter, solid, liquid, gas Float, sink, dissolve Change, sound, vibrate, pitch Musical instrument</p>	<p>PS-3.1b,e The material an object is made up of can determine some of its properties that can be observed through the senses. PS-3.2a Matter exists in 3 states</p>
<p>May-June</p> <p>Topics: Forces (pushes and pulls) Magnets</p>	<p>Force, push, pull, curve, motion, speed, surface, friction, wheel, Magnet, attract, strength, repel, poles, Magnetic, force, magnetize</p>	<p>PS-5.1d The motion of an object is affected by friction. PS-5.1e Magnetism is a force that may attract or repel objects</p>

Grade 2		
Month/Topic	Vocabulary	NYS Performance Indicators
<p>September-Mid-October</p> <p>Topics: Life Science, Plant & Animal Growth, People Grow and Change</p>	<p>Living, nonliving, nutrients, seed coat, Germinate, seedling, cactus, Mammal, reptile, amphibian, insect, Life cycle, permanent teeth, skeleton, muscles, heart, lungs, heart rate, digest, saliva, esophagus, stomach</p>	<p>LE 4.1a Plants and animals have life cycles.</p> <p>LE 4.1b-g Each kind of organism goes through its' own stages of development during that organism's life span.</p>
<p>Mid-October – End November</p> <p>Topic: Habitats for Plants & Animals</p>	<p>Environment, habitat, desert, rain forest, tundra, pond, adaptation, camouflage, migrate, hibernate, estimate, food chain, drought, pollution, litter, endangered, reuse, recycle</p>	<p>LE3.1c In order to survive in their environment, plants and animals must adapt to that environment</p> <p>LE-5.2d Some animals move from place to place to meet their needs.</p>
<p>December-Mid-January</p> <p>Topics: Earth's Resources, Earth Long Ago</p>	<p>Rock, soil, resource, natural resource, medicine, transportation, fossil, Paleontologist, reconstruct, extinct, dinosaur, Triceratops</p>	<p>PS-4.1a-g Energy exists in various forms such as electricity, heat, sound and light and can be transferred to matter.</p>
<p>Mid-January-February</p> <p>Topics: The Solar System, Earth's Weather</p>	<p>Star, constellation, sun, planet, solar system, energy, solar energy, rotation, orbit, season, moon, moonlight, crater, weather, water cycle, evaporate, Water vapor, thermometer, temperature, stratus, cirrus, cumulus, thunderstorm, tornado, hurricane, blizzard</p>	<p>PS-4.2a Everyday events involve one form of energy being changed to another.</p> <p>PS-2.1c Water is recycled by natural processes on Earth.</p> <p>PS-2.1e Extreme natural events may have positive or negative impacts on living things.</p>
<p>March-April</p> <p>Topics: Observing and measuring, Changes in Matter</p>	<p>Matter, property, mass, solid, centimeter, liquid, milliliter, gas, mixture</p>	<p>PS-3.1c,d Objects have properties that can be observed, described, and/or measured with standard metric units and nonstandard units.</p>
<p>May-June</p> <p>Topics Forces & Motion, Hearing, Sound</p>	<p>Force, wind, gravity, magnet, motion, sound, vibrate, loudness, pitch, sonar, music</p>	<p>PS-4.1a Energy exists is various forms</p> <p>PS-5.1c,e Magnetism and gravity are forces on Earth that affect objects.</p>

Grade 3		
Month/Topic	Vocabulary	NYS Performance Indicators
September-October Topics: Earth's Land: Minerals, rocks, and fossils, Forces That Shape the Land	Mineral, rock, crust, mantle, core, igneous rock, sedimentary rock, metamorphic rock, rock cycle, fossil, land form, mountains, valley, plain, plateau, Barrier Island, weathering, erosion, glacier, earthquake, volcano, flood	PS-2.1d Erosion and deposition result from the interaction among air, water, and land. PS-2.1e Extreme natural events may have positive or negative impacts on living things.
October-November Topics: Earth's Soils, Earth's Resources	Soil, humus, topsoil, bedrock, clay, loam, resource, conservation, strip, cropping, contour plowing, resource, renewable resource, reusable resource, nonrenewable, recycle	PS-4.1a-g Energy exists in various forms and can be transferred to various forms of matter. PS-4.2a,b Everyday events involve on form of energy being changed into another.
November-December Cycles on Earth & in Space (Water Cycle), Weather, Earth in the Solar System	Ground water, estuary, evaporation, condensation, precipitation, water cycle, atmosphere, weather map, solar system, orbit, planet, asteroid, comet, rotation, axis, revolution, phases, lunar eclipse, solar eclipse	PS-2.1c Water is recycled by natural processes on Earth. PS1.1a,c Natural cycles and patterns occur in the Solar System both daily and seasonally.
January Topic: Investigating Matter	Matter, physical properties, solid, liquid, gas, atom, evaporation, volume, mass Physical change, mixture, solution, chemical change	PS-3.2a-c Matter exists in three states: solid, liquid, gas. These states can be affected by temperature and these changes can be observed or measured.
End January- February Topic; Exploring Energy and Forces (Energy, Heat)	Energy, potential energy, kinetic energy, electricity, fossil fuel, vibrate, circuit, thermal energy, heat, friction, conduction, insulator, convection, radiation, thermometer	PS-4.1a-f Energy exists in various forms and can be transferred, interacted with, or released.
February-Early March Topic: Forces and Motion (Work and Simple Machines)	Force, motion, speed, gravity, weight, work, simple machines, inclined plane, lever	PS-5.1c The force of gravity pulls objects to the center of the Earth. PS-5.1f Mechanical energy may cause a change in motion with the use of force and simple machines
March- Early April Topics: Types of Plants and Animals	Root, stem, leaf, cell, simple plant, seed, germinate, seedling, photosynthesis, chlorophyll, inherit, trait, mammal, bird, amphibian, gills, fish, scale, reptile, instinct, hibernate, migrate, camouflage, mimicry, extinct, species, endangered, threatened, fossil	LS-3.1c In order to survive, plants and animals must adapt to their environment. LS-5.2b Animals respond to changes in their environment.

<p style="text-align: center;">Mid-April-June</p> <p>Topic: Plants and Animal Interact</p>	<p>Environment, ecosystem, population, community, habitat, forest,, tropical rain forest, desert, grassland, salt water, fresh water, interact, producer, consumer, herbivore, carnivore, omnivore, decomposer, food chain, energy pyramid, food web, predator, prey</p>	<p>LE-5.2e-g Animal characteristics and behaviors, growth and development are affected by environmental conditions. LE-6.1a-d All animals depend on green plants as they are producers and the start of all food chains. Animals eat plants and may become food for other animals as part of a food chain. Decomposers are living things that recycle nutrients back into the soil.</p>
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Grade 4

Month/Topic	Vocabulary	NYS Performance Indicators
<p style="text-align: center;">September- Mid-October</p> <p>Topics: Scientific Method, Living Things(cells, animals, plants, fungi) Animal Growth & Adaptations Plant Growth & Adaptations</p>	<p>Prediction, hypothesis, material list, procedure, observation, conclusion Cell, cell membrane, cytoplasm, nucleus, cell wall, chloroplast, microorganism, vertebrate, invertebrate, arthropod, embryo, flower, fruit, hyphae, spore, mold, environment, climate, oxygen, shelter, metamorphosis, adaptation, camouflage, mimicry, instinct, migration, hibernation, carbon dioxide, nutrient, photosynthesis, dormancy, transpiration, germinate, stamen, pistil, pollination, spore, tuber</p>	<p>LE 3.1a,b Each organism has different structures that serve different functions in growth, survival and reproduction. LE3.1c Plants and animals must adapt to their environments to survive.</p>
<p style="text-align: center;">Mid-October-Mid-November</p> <p>Topic: Ecosystems</p>	<p>System, stability, ecosystem, population, community, habitat, niche, producer, consumer, decomposer, energy pyramid, food web, climate, diversity, salinity, succession, reclamation, conservation, redesign, preservation</p>	<p>LE- 6.1a-f All animals depend on green plants as they are producers and the start of every food chain. Animals eat plants and may get eaten by other animals as part of a food chain. Decomposers are living things that recycle nutrients back into the soil.</p>
<p style="text-align: center;">Mid/end November- Mid/end December</p> <p>Topics: Weather and Space</p>	<p>Atmosphere, air pressure, humidity, water cycle, evaporation, condensation, precipitation, revolution, rotation</p>	<p>PS-2.1b Weather can be described and measured. PS-2.c Water is recycled by natural processes on Earth. PS-1.1a Natural cycles occur on Earth and in space (revolution, rotation)</p>
<p style="text-align: center;">Beginning January- Beginning February</p> <p>Topics: Forces and Motion (electricity, magnetism, motion, simple machines)</p>	<p>Charge, static electricity, electric field, circuit, electric current, electric cell, conductor, insulator, resistor, series circuit, magnet, magnetic pole, magnetic field, electromagnet, motion, speed, force, acceleration, wheel and axle, pulley, effort force, work, gravity, weight, friction, simple machine, lever, fulcrum, inclined plane, efficiency, screw, wedge</p>	<p>PS-4.1a-f Energy exists in various forms and can be transferred, interacted with, or released. PS-5.1a-f The position of an object can be changed by using force. Friction can affect the motion of an object. Magnetism and gravity are forces that affect objects on Earth. Mechanical energy may cause change in motion with the use of simple machines.</p>

Grade 4		
Month/Topic	Vocabulary	NYS Performance Indicators
<p>Beginning February- Mid-March</p> <p>Topics: Matter, Heat & Energy, Sound, Light</p>	<p>Matter, mass, solid, liquid, gas, volume, density, solution, dissolve, solubility, buoyancy, physical change, chemical change, chemical reaction, energy, kinetic energy, thermal energy, temperature, heat, fuel, solar energy, compression, sound wave, amplitude, wavelength, loudness, pitch, speed of sound, echo, reflection, refraction, absorption, transparent</p>	<p>PS-4.1a-g Energy exists in various forms and can be transferred, interacted with, or released. PS-3.2a Matter exists in three states: solid, liquid,, gas. PS-3.1c-g Objects have properties that can be measured, described, or observed. The material an object is made of may determine some of its specific properties.</p>
<p>Mid-March- Mid-June</p> <p><i>NYS Gr. 4 ELS TEST REVIEW</i></p>	<p>Test Review Vocabulary: attract, repel, inherit, learned behavior, trait, increase, decrease, producer, consumer, decomposer, life span, life cycle, food web, food chain, precipitation, evaporation, ground water, runoff, water cycle, rotation, revolution, simple machine, pulley, lever, inclined plane, wheel and axle, friction, predator, prey, observation, migration, hibernation, camouflage, pupa, larva, magnetism, electricity, circuit, electric cell, electric current, energy pyramid</p>	<p>Suggested Resources: 1) Measuring Up to the New York State Learning Standards – Level D 2) Review, Practice, & Mastery of New York Science Learning Standards – Grade 4 (Perfection Learning) 3) Parallel tasks as provided the science department to practice for the NYS Performance Test.</p>