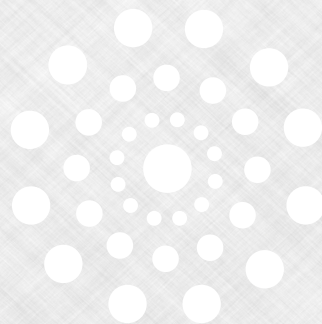




NYSSLS PROGRESSIONS





NYSSL PROGRESSIONS

PHYSICAL SCIENCES

DCI	Grades K-2	Grades 3-5	NYS Investigations
PS1.A Structure of Matter (includes PS1.C Nuclear Processes)	Different kinds of matter exist and many of them can be either solid or liquid, depending on temperature. Matter can be described and classified by its observable properties.	Matter of any type can be subdivided into particles that are too small to see, but even then the matter still exists and can be detected by other means. A model showing that gasses are made from matter particles that are too small to see and are moving freely around in space can explain many observations, including the inflation and shape of a balloon and the effects of air on larger particles or objects. The total amount of matter is conserved when it changes form, even in transitions in which it seems to vanish. Measurements of a variety of properties can be used to identify materials.	What's In The Bag? (3-5) All Mixed Up (6-8) The Fast and the Fragrant (PS-Chemistry) Just a Drop (PS-Chemistry) Bend and Stretch (PS-Chemistry)
	SKK.2 WEATHER AND CLIMATE SK2.1 THE NATURE OF MATTER	SK5.1 CHEMISTRY IN OUR WORLD	
PS1.B Chemical Reactions	Heating or cooling a substance may cause changes that can be observed. Sometimes these changes are reversible, and sometimes they are not.	When two or more different substances are mixed, a new substance with different properties may be formed. No matter what reaction or change in properties occurs, the total weight of the substances does not change.	What's In The Bag? (3-5) Just a Drop (PS-Chemistry)
	SK2.1 THE NATURE OF MATTER	SK5.1 CHEMISTRY IN OUR WORLD	
PS2.A Forces and Motion	Pushes and pulls can have different strengths and directions. Pushing or pulling an object can change the speed or direction of its motion and can start or stop it.	Each force acts on one particular object and has both strength and a direction. An object at rest typically has multiple forces acting on it, but they add to give zero net force on the object. Forces that do not sum to zero can cause changes in the object's speed or direction of motion.	
	SKK.1 OBJECTS IN MOTION	SK3.1 FORCES IN PHYSICS	
PS2.B Types of Interactions	When objects touch or collide, they push on one another and can change motion.	The gravitational force of Earth acting on an object near Earth's surface pulls that object toward the planet's center.	All Mixed Up (6-8) Just a Drop (PS-Chemistry) Bend and Stretch (PS-Chemistry) Induction Junction (PS-Physics)
	SKK.1 OBJECTS IN MOTION	SK3.1 FORCES IN PHYSICS SK5.3 SPACE SYSTEMS	
PS3.A Definitions of energy	N/A	A given object possesses more energy of motion when it is moving faster. Energy can be transferred by moving objects or by sound, light, heat, or electric currents.	Cool It! (6-8) Wheels to Watts (PS-Physics) Thermal Tales (PS-Physics) Induction Junction (PS-Physics)
		SK4.1 UNDERSTANDING ENERGY SK4.2 WAVES	
PS3.B Conservation of Energy and Energy Transfer	Sunlight warms Earth's surface	Energy is present whenever there are moving objects, sound, light, or heat. When objects collide, energy can be transferred from one object to another, thereby changing their motion. In such collisions, some energy is typically also transferred to the surrounding air; as a result, the air gets heated and sound is produced. Light also transfers energy from place to place. Energy can also be transferred by electric currents, which can then be used locally to produce motion, sound, heat, or light. The currents may have been produced to begin with by transforming the energy of motion into electrical energy.	Light It Up! (3-5) Cool It! (6-8) Wheels to Watts (PS-Physics) Thermal Tales (PS-Physics) Induction Junction (PS-Physics)
	SKK.2 WEATHER AND CLIMATE	SK4.1 UNDERSTANDING ENERGY SK4.2 WAVES	

PHYSICAL SCIENCES

DCI	Grades K-2	Grades 3-5	NYS Investigations
PS3.C Relationship Between Energy and Forces	A push or a pull may cause stationary objects to move, and a stronger push or pull in the same or opposite direction makes an object in motion speed up or slow down more quickly.	When objects collide, the contact forces transfer energy so as to change the objects' motions.	The Fast and the FrAGRant (PS-Chemistry) Induction Junction (PS-Physics)
	SKK.1 OBJECTS IN MOTION	SK4.1 UNDERSTANDING ENERGY	
PS3.D Energy in Chemical Processes and Everyday Life	N/A	The expression "produce energy" typically refers to the conversion of stored energy into a desired form for practical use.	Circle Of Life (3-5) Light It Up (3-5)
		The energy released [from] food was once energy from the sun that was captured by plants in the chemical process that forms plant matter (from air and water). SK4.1 UNDERSTANDING ENERGY SK5.4 THE ENERGY OF LIFE	
PS4.A Wave Properties	Sound can make matter vibrate, and vibrating matter can make sound.	Waves, which are regular patterns of motion, can be made in water by disturbing the surface. When waves move across the surface of deep water, the water goes up and down in place; there is no net motion in the direction of the wave except when the water meets a beach. Waves of the same type can differ in amplitude (height of the wave) and wavelength (spacing between wave peaks).	Induction Junction (PS-Physics)
	SK1.1 LIGHT, SOUND, AND COMMUNICATION	SK4.2 WAVES	
PS4.B Electromagnetic Radiation	Objects can be seen if light is available to illuminate them or if they give off their own light. Some materials allow light to pass through and others block all the light and create a dark shadow on any surface beyond them, where the light cannot reach. Mirrors can be used to redirect a light beam. (Boundary: The idea that light travels from place to place is developed through experiences with light sources, mirrors, and shadows, but no attempt is made to discuss the speed of light.)	An object can be seen when light reflected from its surface enters the eyes.	
	SK1.1 LIGHT, SOUND, AND COMMUNICATION	SK4.2 WAVES SK4.4 STRUCTURES AND FUNCTIONS OF LIFE	
PS4.C Information Technologies and Instrumentation	People use a variety of devices to communicate (send and receive information) over long distances.	Digitized information can be transmitted over long distances without significant degradation. High-tech devices, such as computers or cell phones, can receive and decode information—convert it from digitized form to voice—and vice versa.	
	SK1.1 LIGHT, SOUND, AND COMMUNICATION	SK4.2 WAVES	

EARTH AND SPACE SCIENCE

DCI	Grades K-2	Grades 3-5	NYS Investigations
ESS1.A The Universe and its Stars	Patterns of motion of the sun, moon, and stars in the sky can be observed, described, and predicted.	The sun is a star that appears larger and brighter than other stars because it is closer. Stars range greatly in their distance from Earth.	
	SK1.2 OUR SUN AND NIGHT SKY	SK5.3 SPACE SYSTEMS	
ESS1.B Earth and the Solar System	Seasonal patterns of sunrise and sunset can be observed, described, and predicted.	The orbits of Earth around the sun and of the moon around Earth, together with the rotation of Earth about an axis between its North and South poles, cause observable patterns. These include day and night; daily changes in the length and direction of shadows; and different positions of the sun, moon, and stars at different times of day, month, and year.	Unearthing Mars (Ess) The Sky Is The Limit (Ess)
	SK1.2 OUR SUN AND NIGHT SKY	SK5.3 SPACE SYSTEMS	
ESS1.C The History of Planet Earth	Some events happen very quickly; others occur very slowly, over a time much longer than one can observe.	Local, regional, and global patterns of rock formations reveal changes over time due to earth forces, such as earthquakes. The presence and location of certain fossil types indicate the order in which rock layers were formed.	
	SK2.2 THE DYNAMIC EARTH	SK4.3 SHAPING THE EARTH	

EARTH AND SPACE SCIENCE

DCI	Grades K-2	Grades 3-5	NYS Investigations
ESS2.A Earth Materials and Systems	Wind and water can change the shape of the land.	Rainfall helps to shape the land and affects the types of living things found in a region. Water, ice, wind, living organisms, and gravity break rocks, soils, and sediments into smaller particles and move them around. Earth's major systems are the geosphere (solid and molten rock, soil, and sediments), the hydrosphere (water and ice), the atmosphere (air), and the biosphere (living things, including humans). These systems interact in multiple ways to affect Earth's surface materials and processes. The ocean supports a variety of ecosystems and organisms, shapes landforms, and influences climate. Winds and clouds in the atmosphere interact with the landforms to determine patterns of weather.	The Ripple Effect (Ess)
	SK2.2 THE DYNAMIC EARTH	SK4.3 SHAPING THE EARTH SK5.2 EARTH'S SYSTEMS	
ESS2.B Plate Tectonics and Large-Scale System Interactions	Maps show where things are located. One can map the shapes and kinds of land and water in any area.	The locations of mountain ranges, deep ocean trenches, ocean floor structures, earthquakes, and volcanoes occur in patterns. Most earthquakes and volcanoes occur in bands that are often along the boundaries between continents and oceans. Major mountain chains form inside continents or near their edges. Maps can help locate the different land and water features areas of Earth.	The Ripple Effect (Ess)
ESS2.C The Roles of Water in Earth's Surface Processes	Water is found in the ocean, rivers, lakes, and ponds. Water exists as solid ice and in liquid form.	Nearly all of Earth's available water is in the ocean. Most freshwater is in glaciers or underground; only a tiny fraction is in streams, lakes, wetlands, and the atmosphere.	How's The Weather Up There? (6-8) The Ripple Effect (Ess) The Sky Is The Limit (Ess)
ESS2.D Weather and Climate	Weather is the combination of sunlight, wind, snow or rain, and temperature in a particular region at a particular time. People measure these conditions to describe and record the weather and to notice patterns over time.	Scientists record patterns of the weather across different times and areas so that they can make predictions about what kind of weather might happen next. Climate describes a range of an area's typical weather conditions and the extent to which those conditions vary over years. Earth's processes continuously cycle water, contributing to weather and climate.	Cloud In A Bottle (3-5) How's The Weather Up There? (6-8) The Sky Is The Limit (Ess)
ESS2.E Biogeology	Plants and animals can change their environment.	Living things can affect the physical characteristics of their regions.	
ESS3.A Natural Resources	Living things need water, air, and resources from the land, and they live in places that have the things they need. Humans use natural resources for everything they do.	Energy and fuels that humans use are derived from natural sources, and their use affects the environment in multiple ways. Some resources are renewable over time, and others are not.	
ESS3.B Natural Hazards	Some kinds of severe weather are more likely than others in a given region. Weather scientists forecast severe weather so that communities can prepare and respond to these events.	A variety of natural hazards result from natural processes. Humans cannot eliminate hazards but can take steps to reduce their impacts.	
ESS3.C Human Impacts on Earth Systems	Things that people do to live comfortably can affect the world around them. But they can make choices that reduce their impacts on the land, water, air, and other living things.	Human activities in agriculture, industry, and everyday life have had major effects on the land, vegetation, streams, ocean, air, and even outer space. But individuals and communities are doing things to help protect Earth's resources and environments.	
ESS3.D Global Climate Change	N/A	N/A SK3.2 GLOBAL CLIMATE	

LIFE SCIENCE

DCI	Grades K-2	Grades 3-5	NYS Investigations
LS1.A Structure and Function	<p>All organisms have external parts. Different animals use their body parts in different ways to see, hear, grasp objects, protect themselves, move from place to place, and seek, find, and take in food, water and air. Plants also have different parts (roots, stems, leaves, flowers, fruits) that help them survive and grow.</p> <p>SKK.4 THE FIVE SENSES</p> <p>SK1.1 LIGHT, SOUND AND COMMUNICATION</p> <p>SK1.3 ANIMALS AND SURVIVAL</p> <p>SK1.4 THE HUMAN BODY</p> <p>SK2.4 PLANT STRUCTURE AND FUNCTION</p>	<p>Plants and animals have both internal and external structures that serve various functions in growth, survival, behavior, and reproduction.</p> <p>SK4.4 STRUCTURES AND FUNCTIONS OF LIFE</p>	It's Alive (6-8) Balancing Act (LS) Lactose Tolerance (LS)
LS1.B Growth and Development of Organisms	<p>Adult plants and animals can have young. In many kinds of animals, parents and the offspring themselves engage in behaviors that help the offspring to survive.</p> <p>SK1.3 ANIMALS AND SURVIVAL</p>	<p>Reproduction is essential to the continued existence of every kind of organism. Plants and animals have unique and diverse life cycles.</p> <p>SK3.3 LIFE CYCLES IN NATURE</p>	Circle Of Life (3-5) Lactose Tolerance (LS)
LS1.C Organization for Matter and Energy Flow in Organisms	<p>All animals need food, air, and water in order to live, grow, and thrive. Animals obtain food from plants or from other animals. Plants need water, air, and light to live, grow, and thrive.</p> <p>SKK.3 RELATIONSHIPS IN AN ECOSYSTEM</p> <p>SK1.4 THE HUMAN BODY</p> <p>SK2.4 PLANT STRUCTURE AND FUNCTION</p>	<p>Food provides animals with the materials they need for body repair and growth and the energy they need to maintain body warmth and for motion. Plants acquire their material for growth chiefly from air and water.</p> <p>SK5.4 THE ENERGY OF LIFE</p>	Circle Of Life (3-5) Balancing Act (LS)
LS1.D Information Processing	<p>Animals have body parts that capture and convey different kinds of information needed for growth and survival. Animals respond to these inputs with behaviors that help them survive. Plants also respond to some external inputs.</p> <p>SKK.4 THE FIVE SENSES</p> <p>SK1.1 LIGHT, SOUND, AND COMMUNICATION</p> <p>SK1.3 ANIMALS AND SURVIVAL</p> <p>SK1.4 THE HUMAN BODY</p>	<p>Different sense receptors are specialized for particular kinds of information, which may be then processed by the animal's brain. Animals are able to use their perceptions and memories to guide their actions.</p> <p>SK4.2 WAVES</p> <p>SK4.4 STRUCTURES AND FUNCTIONS OF LIFE</p>	
LS2.A Interdependent Relationships in Ecosystems	<p>Animals depend on plants or other animals for food. Plants depend on water, light and air to grow. Some plants depend on animals for pollination and for dispersal of seeds from one location to another.</p> <p>SKK.3 RELATIONSHIPS IN AN ECOSYSTEM</p> <p>SK2.3 THE DIVERSITY OF LIFE</p> <p>SK2.4 PLANT STRUCTURE AND FUNCTION</p>	<p>The food of almost any kind of animal can be traced back to plants. Organisms are related in food webs in which some animals eat plants for food and other animals eat the animals that eat plants. Some organisms, such as fungi and bacteria, break down dead organisms (both plants or plants' parts and animals) and therefore operate as "decomposers." Decomposition eventually restores (recycles) some materials back to the soil. Organisms can survive only in environments in which their particular needs are met. A healthy ecosystem is one in which multiple species of different types are each able to meet their needs in a relatively stable web of life. Newly introduced species can damage the balance of an ecosystem.</p> <p>SK3.4 ADAPTATIONS AND SURVIVAL</p> <p>SK5.4 THE ENERGY OF LIFE</p>	

LIFE SCIENCE

DCI	Grades K-2	Grades 3-5	NYS Investigations
LS2.B Cycles of Matter and Energy Transfer in Ecosystems	N/A	<p>The food of almost any kind of animal can be traced back to plants. Organisms are related in food webs in which some animals eat plants for food and other animals eat the animals that eat plants. Some organisms, such as fungi and bacteria, break down dead organisms (both plants or plants' parts and animals) and therefore operate as "decomposers." Decomposition eventually restores (recycles) some materials back to the soil. Organisms can survive only in environments in which their particular needs are met. A healthy ecosystem is one in which multiple species of different types are each able to meet their needs in a relatively stable web of life. Newly introduced species can damage the balance of an ecosystem.</p> <p>SK5.4 THE ENERGY OF LIFE</p>	
LS2.C Ecosystem Dynamics, Functioning, and Resilience	N/A	<p>When the environment changes in ways that affect a place's physical characteristics, temperature, or availability of resources, some organisms survive and reproduce, others move to new locations, yet others move into the transformed environment, and some die.</p> <p>SK3.4 ADAPTATIONS AND SURVIVAL</p>	For The Birds (LS)
LS2.D Social interactions and Group Behavior	N/A	<p>Being part of a group helps some animals obtain food, defend themselves, and survive. Groups may serve different functions and vary dramatically in size.</p> <p>SK3.4 ADAPTATIONS AND SURVIVAL</p>	
LS3.A Inheritance of Traits	<p>Some young animals are similar to, but not exactly, like their parents. Some young plants are also similar to, but not exactly like their parents.</p> <p>SK1.3 ANIMALS AND SURVIVAL</p>	<p>Many characteristics of organisms are inherited from their parents. Other characteristics result from individuals' interactions with the environment, which can range from diet to learning. Some characteristics result from the interactions of both inheritance and the effect of the environment.</p> <p>SK3.3 LIFE CYCLES IN NATURE</p>	Lactose Tolerance (LS)
LS3.B Variation of Traits	<p>Individuals of the same kind of plant or animal are recognizable as similar but can also vary in many ways.</p> <p>SK1.3 ANIMALS AND SURVIVAL</p>	<p>Different organisms vary in how they look and function because they have different inherited information; the environment also affects the traits that an organism develops.</p> <p>SK3.3 LIFE CYCLES IN NATURE</p>	Lactose Tolerance (LS)
LS4.A Evidence of Common Ancestry and Diversity	N/A	<p>Some kinds of plants and animals that once lived on Earth are no longer found anywhere. Fossils provide evidence about the types of organisms that lived long ago and also about the nature of their environments.</p> <p>SK3.4 ADAPTATIONS AND SURVIVAL</p>	
LS4.B Natural Selection	N/A	<p>Sometimes the differences in characteristics between individuals of the same species provide advantages in surviving, finding mates, and reproducing.</p> <p>SK3.3 LIFE CYCLES IN NATURE</p> <p>SK3.4 ADAPTATIONS AND SURVIVAL</p>	Lactose Tolerance (LS)
LS4.C Adaptation	N/A	<p>For any particular environment, some kinds of organisms survive well, some survive less well, and some cannot survive at all.</p> <p>SK3.3 LIFE CYCLES IN NATURE</p> <p>SK3.4 ADAPTATIONS AND SURVIVAL</p>	Circle Of Life (3-5) For The Birds (LS) Lactose Tolerance (LS)
LS4.D Biodiversity and Humans	<p>There are many different kinds of living things in any area, and they exist in different places on land and in water.</p> <p>SK2.3 THE DIVERSITY OF LIFE</p>	<p>Populations live in a variety of habitats, and change in those habitats affects the organisms living there.</p> <p>SK3.4 ADAPTATIONS AND SURVIVAL</p>	For The Birds (LS)

ENGINEERING DESIGN

DCI	Grades K-2	Grades 3-5	NYS Investigations
ETS1.A Defining (and Delimiting) an Engineering Problem	<p>A situation that people want to change or create can be approached as a problem to be solved through engineering. Such problems may have many acceptable solutions. Asking questions, making observations, and gathering information are helpful in thinking about problems. Before beginning to design a solution, it is important to clearly understand the problem.</p> <p>SKK.1 OBJECTS IN MOTION</p> <p>SKK.2 WEATHER AND CLIMATE</p> <p>SKK.3 RELATIONSHIPS IN AN ECOSYSTEM</p> <p>SK1.1 LIGHT, SOUND, AND COMMUNICATION</p> <p>SK1.3 ANIMALS AND SURVIVAL</p> <p>SK2.1 THE NATURE OF MATTER</p> <p>SK2.2 THE DYNAMIC EARTH</p>	<p>Possible solutions to a problem are limited by available materials and resources (constraints). The success of a designed solution is determined by considering the desired features of a solution (criteria). Different proposals for solutions can be compared on the basis of how well each one meets the specified criteria for success or how well each takes the constraints into account.</p> <p>SK3.1 FORCES IN PHYSICS</p> <p>SK3.2 GLOBAL CLIMATE</p> <p>SK3.3 LIFE CYCLES IN NATURE</p> <p>SK3.4 ADAPTATIONS AND SURVIVAL</p> <p>SK4.1 UNDERSTANDING ENERGY</p> <p>SK4.2 WAVES</p> <p>SK4.3 SHAPING THE EARTH</p> <p>SK5.2 EARTH'S SYSTEMS</p>	Light It Up (3-5)
ETS1.B Developing Possible Solutions (K-2) ETS1.B Designing Solutions to Engineering Problems (3-5)	<p>Designs can be conveyed through sketches, drawings, or physical models. These representations are useful in communicating ideas for a problem's solutions to other people.</p> <p>SKK.1 OBJECTS IN MOTION</p> <p>SKK.2 WEATHER AND CLIMATE</p> <p>SKK.3 RELATIONSHIPS IN AN ECOSYSTEM</p> <p>SK1.1 LIGHT, SOUND, AND COMMUNICATION</p> <p>SK1.3 ANIMALS AND SURVIVAL</p> <p>SK2.1 THE NATURE OF MATTER</p> <p>SK2.2 THE DYNAMIC EARTH</p> <p>SK2.3 THE DIVERSITY OF LIFE</p>	<p>Research on a problem should be carried out before beginning to design a solution. Testing a solution involves investigating how well it performs under a range of likely conditions. At whatever stage, communicating with peers about proposed solutions is an important part of the design process, and shared ideas can lead to improved designs. Tests are often designed to identify failure points or difficulties, which suggest the elements of the design that need to be improved.</p> <p>SK3.1 FORCES IN PHYSICS</p> <p>SK3.2 GLOBAL CLIMATE</p> <p>SK3.3 LIFE CYCLES IN NATURE</p> <p>SK3.4 ADAPTATIONS AND SURVIVAL</p> <p>SK4.2 WAVES</p> <p>SK4.3 SHAPING THE EARTH</p> <p>SK5.2 EARTH'S SYSTEMS</p>	Unearthing Mars (ESS) For The Birds (LS) Bend and Stretch (PS-Chemistry)
ETS1.C Optimizing the Design Solution	<p>Because there is always more than one possible solution to a problem, it is useful to compare and test designs.</p> <p>SKK.1 OBJECTS IN MOTION</p> <p>SKK.2 WEATHER AND CLIMATE</p> <p>SKK.3 RELATIONSHIPS IN AN ECOSYSTEM</p> <p>SK1.1 LIGHT, SOUND, AND COMMUNICATION</p> <p>SK1.3 ANIMALS AND SURVIVAL</p> <p>SK2.1 THE NATURE OF MATTER</p> <p>SK2.2 THE DYNAMIC EARTH</p>	<p>Different solutions need to be tested in order to determine which of them best solves the problem, given the criteria and the constraints.</p> <p>SK3.1 FORCES IN PHYSICS</p> <p>SK3.2 GLOBAL CLIMATE</p> <p>SK3.3 LIFE CYCLES IN NATURE</p> <p>SK3.4 ADAPTATIONS AND SURVIVAL</p> <p>SK4.2 WAVES</p> <p>SK4.3 SHAPING THE EARTH</p> <p>SK5.2 EARTH'S SYSTEMS</p>	

