

Grades 9-12 Science Curriculum

RATIONALE

All students, regardless of different abilities, needs and interests, must to be able to use science in their everyday lives. We need science to understand and evaluate our personal health, the environment, and resource management. Students are naturally curious and should have enhanced opportunities to develop science skills through engagement in actively constructing ideas and forming explanations. Science assists students to fulfill personal ambitions and career goals in an ever-changing world.

DESCRIPTION/PURPOSE

The science curriculum requires participation in learning and is connected to other curriculum areas. Science helps students learn to use technology and generalize it into the community. Through science students will have a better understanding of the world around them and the impact they have on that world.

Students with severe disabilities are able to build on the following outcomes through the science curriculum:

- Use direct observation or personal experience to solve problems or complete tasks
- Use tools in daily living, vocational and leisure environments
- Practice safety measures during all weather conditions
- Care for themselves and their environment
- Recognize dangers in the environment and demonstrate safety skills
- Understand time concepts in relation to a daily routine
- Use information about living things to take care of plants, pets, and to maintain a healthy lifestyle
- Learn how to conserve resources in all environments
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Content Description by Grade Level Span

Grade levels are divided into four segments; kindergarten-second grade; third-fifth grade; sixth-eighth grades; and, ninth-twelfth grades. Grade twelve can last up to four years. The curriculum is cumulative in that skills learned during the elementary years are expanded during the middle school grades and so forth. The goals and benchmarks for the student must be selected from the student's curricular grade span. We recognize that each student will accomplish the graduate goals by different means (goals mastered).

Science Grades 9-12

Graduate Goal 1 Graduates will communicate.
Graduate Goal 2 Graduates will make choices.
Graduate Goal 4 Graduates will solve problems or complete tasks.
GLE: Not Available
STRAND: Not Available

Show-Me Standard SC-1
 Properties and principles in matter and energy.
Alternate Framework Standard AltSC-1
 Using the senses to detect physical properties: sorting, observing, and responding to changes; observing and using properties and effects of heat and light.
Alternate Process Standard: (What All Students Should Do)
 Goal 3 Alt-6, Goal 3 Alt-8, Goal 4 Alt-7

Authentic Life Skills (What All Students Should Know)	IEP Code	API Code	Authentic Learning Activities
Explore physical properties of objects using one or more of the five senses.	7810002		Matching tactile/tangible symbol with activity, matching grocery list with actual objects, responding to auditory cues to anticipate activity.
Sort objects into groups based upon one or more physical properties.	7810083		Grouping items according to what is needed for bathing, washing dishes and clothing. Differentiating between liquids and solids.
Sort clothing for washing.	6197004		
Fold laundry.	7200092		

PHYSICAL PROPERTIES

Assessment of Student Performance: Performance tasks, student performance data, authentic assessment.

Science Grades 9-12

Graduate Goal 6	Graduates will participate in cause and effect activities.
Graduate Goal 8	Graduates will use an efficient method to access environments.
Graduate Goal 10	Graduates will interact within the community.
GLE:	Not Available
STRAND:	Not Available

Show-Me Standard SC-2 Properties and principles of force and motion.
Alternate Framework Standard AltSC-2 Observing and responding to the position, motion, and speed of objects in the environment, applying principles of force and motion through using simple tools.
Alternate Process Standard: (What All Students Should Do) Goal 1 Alt-6, Goal 4 Alt-2, Goal 4 Alt-7

Authentic Life Skills (What All Students Should Know)	IEP Code	API Code	Authentic Learning Activities
Identify the relationship between force and motion.	7810003		Pushing clothes off wheelchair tray to sort whites/darks, activating a switch, opening various types of jars, cutting apples for birds.
Push switch to interact with computer software.	7200081		
Use keyboard to control program.	7200041		
Activate adaptive hardware to interact with the software programs.	7200106		Using a variety of switches to roll dice, placing/drawing cards from a game on a switch dial for student to pick via a switch.
Turn computer on and off according to directions.	7200016		
Throw away item upon request.	7700089		Using wheelchair tray or table to push off item.
Identify the position of an object relative to another object.	7810004		Identifying who is first in line, etc., which piece is bigger, which is next to, or on top.
Cut with scissors.	5029013		Variety of cutting tools might include cutting with electric scissors or using a coupon cutter. Cutting coupons for shopping, opening sealed pouches, cutting ribbon for art project, cutting paper to wrap package, cutting string to bundle papers.

FORCE AND MOTION

Assessment of Student Performance: Performance tasks, student performance data, authentic assessment.

Science Grades 9-12

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Alternate Process Standard: (What All Students Should Do) Goal 1 Alt-6, Goal 4 Alt-2, Goal 4 Alt-7

Authentic Life Skills (What All Students Should Know)	IEP Code	API Code	Authentic Learning Activities
Put objects in a container.	5029003		
Take objects out of a container.	5029001		
Place leftover food in the proper place.	6332016		
Store foods in designated area.	6509011		Putting groceries/food away, food into containers, collecting food recipes.
Store foods in refrigerated area.	6509010		
Spread food.	6263008		Spreading peanut butter on apple and rolling it in bird seed, making toast and spreading it with a variety of toppings (butter, jelly, cream cheese), using bagels for more substantial breads.
Open condiment packages.	5417005		
Propel a wheelchair.	5171011		

FORCE AND MOTION

Assessment of Student Performance: Performance tasks, student performance data, authentic assessment.

Science Grades 9-12

Graduate Goal 1 Graduates will communicate.

Graduate Goal 3 Graduates will express personal feelings and self-advocate for needs.

GLE: Not Available

STRAND: Not Available

Show-Me Standard SC-3
 Characteristics and interactions of living organisms.

Alternate Framework Standard AltSC-3
 Observing and responding to needs and characteristics of living organisms, including skills related to the care of one’s self, plants and animals.

Alternate Process Standard: (What All Students Should Do)
 Goal 4 Alt-7

Authentic Life Skills (What All Students Should Know)	IEP Code	API Code	Authentic Learning Activities
Communicate observations and or events using words/symbols/pictures/objects/actions.	7810005	SI5.1	Use of tactile symbols, choice making with eye gaze, identify what is next, identify who prefers to sit next or first in line, who came into the room and for what reason (speech, etc.) exercise activity—(switch activated by student) students exercise to music until switch is released/turned off.
Express need for various types and levels of comfort.	7810006		Match temperatures to facial expressions/photos (popsicles, hot soup, ice cubes in a glass, air popper, blow dryer); labeling why changing positions (mats to pillows to tumble form); signaling switch to gain adult attention.
Ask questions about objects/people.	7810007	SI1.1b	Problem-solving for missing elements — student asks for help, or asks if you have the item. Teach social conversational skills—what did you do last night? How are you today? Are we having PE today? Why is the aide not here today?

LIVING ORGANISMS

Assessment of Student Performance: Performance tasks, student performance data, authentic assessment.

Science Grades 9-12

Graduate Goal 1	Graduates will communicate.
Graduate Goal 4	Graduates will solve problems or complete tasks.
Graduate Goal 6	Graduates will participate in cause and effect activities.
GLE:	Not Available
STRAND:	Not Available

Show-Me Standard SC-4	Changes in ecosystems and interactions of organisms with their environment.
Alternate Framework Standard AltSC-4	Observing and responding to interactions between self, other living things, and the environment; cares for the environment.
Alternate Process Standard:	(What All Students Should Do) Goal 1 Alt-3, Goal 4 Alt-3

Authentic Life Skills (What All Students Should Know)	IEP Code	API Code	Authentic Learning Activities
Recognize cause and effect.	7810008		Use of vending machine, lights on and off, pushing handicapped door, music on CD player, conversations, termination of activity activating a switch—causing blender to start through a control unit—milk shakes, paper Mache, home made paper.
Maintain both arms straight down by side.	7500425		Position while walking in line to lunch or to the bus, and walking in a grocery store.
Use the mouse to answer/maneuver through software programs.	7200026		
Activate computer command to print.	7200080		Create art design using the computer and have the student print own work and being responsible for printing all student art work which would provide multiple teaching opportunities.
Make explanations using prior knowledge.	7810065	SI4.1	Read student social story or student interest story and ask comprehension questions; ask student while in a store how does the student know which line to stand in; ask student questions about what is needed to eat certain foods (fork, spoon, knife).
Explore how the seasons effect the behavior of plants and animals.	7810001		Water plants using (sponges, water guns, plastic cups), feed fish, gardening with seasonal vegetables.

INTERACTIONS WITH ENVIRONMENT

Assessment of Student Performance: Performance tasks, student performance data, authentic assessment.

Science Grades 9-12

Graduate Goal 4	Graduates will solve problems or complete tasks.
Graduate Goal 5	Graduates will follow routines.
GLE:	Not Available
STRAND:	Not Available

Show-Me Standard SC-5
Processes (such as plate movement, water cycle, air flow) and interactions of earth's biosphere, atmosphere, lithosphere, and hydrosphere.
Alternate Framework Standard AltSC-5
Identifying natural resources and their uses.
Alternate Process Standard: (What All Students Should Do)
Goal 1 Alt-3

Authentic Life Skills (What All Students Should Know)	IEP Code	API Code	Authentic Learning Activities
Care for indoor and outdoor plants.	7810009		Poking holes in a plastic water bag, squeezing sponge filled with water, water wand, spray mister, water gun, switch with tilting measuring cup, plant soaking up water in sink. Visual schedule when to water, what to water, etc.
Throw trash in waste receptacle.	7700057		
Identify materials that can be recycled.	7810010		Sorting material by glass, can, paper.
Pick up yard waste and place in recycled bags.	7810080		
Investigate the source of energy that causes an increase in temperature of an object.	7810066		Regulating water to fill a container, touching items in the sun and in the shade, using hot water bottle to fill with cold water and then hot water, placing hand lotion at room temperature on arm, and on the other arm placing warmed lotion warmed in warm water.
Prepare pouch meals.	6263050		Using pouch rice for cooking; making seal-a-meal snacks; making and eating instant pudding in a bag; microwaving macaroni and cheese.

NATURAL RESOURCES

Assessment of Student Performance: Performance tasks, student performance data, authentic assessment.

Science Grades 9-12

Graduate Goal 1 Graduates will communicate.

Graduate Goal 4 Graduates will solve problems or complete tasks.

GLE: Not Available

STRAND: Not Available

Show-Me Standard SC-6
Composition and structure of the universe and the motions of the object within it.

Alternate Framework Standard AltSC-6
Identifying objects in the universe and results of the earth's motion.

Alternate Process Standard: (What All Students Should Do)
Goal 1 Alt-3, Goal 3 Alt-5

Authentic Life Skills (What All Students Should Know)	IEP Code	API Code	Authentic Learning Activities
Match the season with the associated activities.	7810013		
Identify morning, afternoon and evening activities.	7810014		
Ask questions about events in the environment.	7810068		Program an AAC device so the student can ask who is here today? Have the student ask the questions in the morning activity usually asked by the teacher (student specific AAC method).

COMPOSITION AND STRUCTURE

Assessment of Student Performance: Performance tasks, student performance data, authentic assessment.

Science Grades 9-12

Graduate Goal 2 Graduates will make choices.

Graduate Goal 4 Graduates will solve problems or complete tasks.

GLE: Not Available

STRAND: Not Available

Show-Me Standard SC-7
Processes of scientific inquiry (such as formulating and testing hypothesis).

Alternate Framework Standard AltSC-7
Using observations and measurement to answer questions.

Alternate Process Standard: (What All Students Should Do)
Goal 1 Alt-1, Goal 3 Alt-8

Authentic Life Skills (What All Students Should Know)	IEP Code	API Code	Authentic Learning Activities
Locate the object needed to complete named snack.	7200100		
Fill a container.	7810079		Filling water bottle for refrigerator (by classmates), placing clothes in laundry basket, placing items in Ziploc bag for safe keeping, using pencil/pen holder, filling paper towel holder, filling drawer with dish towels.
Observe how mixtures are made by combining solids.	7810015		Mixing Trail mix, granola mix, potting soil and vermiculite for plantings, mixing different colors of polymer clay.
Prepare cereals.	6263024		Making hot and cold cereals.
Prepare a simple nutritional snack.	6263029		
Load a dishwasher.	6332022		
Place disposable liners in trash receptacles.	6326013		
Measure ingredients using a color-marked measuring cup.	6263006		
Measure ingredients using a measuring cup.	6263004		
Read recipes for simple snacks.	5786019		
Read recipes for heated food items.	5786020		
Use hot pads to remove hot foods from cooking appliance.	7200038		
Recognize water as a liquid that dissolves some materials.	7810084		Making beverages, sweetening tea, making Jell-O.
Pour without spilling.	5417004		Constructing a wood project and wood stain, making milk paint, pouring detergent in dishwasher, filling bird feeders.
Use data as support for a reasonable explanation.	7810082		Using visual cues to know what line to stand in, standing outside to show need to put on a coat, having student explain how he/she knows it is time for PE, presenting picture of activity for student to obtain.

OBSERVATION AND MEASUREMENT

Assessment of Student Performance: Performance tasks, student performance data, authentic assessment.

Science Grades 9-12

Graduate Goal 2 Graduates will make choices.

Graduate Goal 4 Graduates will solve problems or complete tasks.

Graduate Goal 5 Graduates will follow routines.

GLE: Not Available

STRAND: Not Available

Show-Me Standard SC-8
Impact of science, technology, and human activity on resources and the environment.

Alternate Framework Standard AltSC-8
Using technology and natural resources responsibly; cares for the environment.

Alternate Process Standard: (What All Students Should Do)
Goal 1 Alt-4, Goal 1 Alt-8, Goal 4 Alt-7

Authentic Life Skills (What All Students Should Know)	IEP Code	API Code	Authentic Learning Activities
Wear a corrective device.	5171002		
Remove a corrective device.	5171006		
Clean assistive device.	5171008		
Walk with a walker on all surfaces	7500084		
Walk on uneven surfaces with assistive devices.	7500388		
Use long handled adaptive equipment to reach for objects.	5171038		
Wear hearing aids.	6434001		
Put on/take off hearing aids.	6434002		
Put on/take off glasses.	6428002		
Wear glasses.	6428001		
Clean glasses.	6428004		Using glass spray cleaner and cloth, rinsing under water and drying.
Propel a wheelchair up a ramp.	7500306		
Propel a wheelchair on rough and varied terrain.	5171045		

TECHNOLOGY

Assessment of Student Performance: Performance tasks, student performance data, authentic assessment.