

Science and Technology Curriculum Grade 1-8

Science and Technology Curriculum	1
Grade 1	6
Strand A: STEM Skills and Connections	6
Overall Expectation:	6
Specific Expectations:	6
Strand B: Life Systems – Needs and Characteristics of Living Things	7
Overall Expectation:	7
Specific Expectations:	7
Strand C: Matter and Energy – Energy in Our Lives	8
Overall Expectation:	8
Specific Expectations:	8
Strand D: Structures and Mechanisms – Everyday Objects and Materials	9
Overall Expectation:	9
Specific Expectations:	9
Strand E: Earth and Space Systems – Daily and Seasonal Changes	10
Overall Expectation:	10
Specific Expectations:	10
Grade 2	11
Strand A: STEM Skills and Connections	11
Overall Expectation: Students will strengthen their abilities to observe, ask questions, and exploscientific ideas. They will apply safe practices during investigations and	ore
connect their learning to daily life and other subjects.	11
Specific Expectations:	11
Strand B: Life Systems – Growth and Changes in Animals	12
Overall Expectation:	

(Adapted and Reworded from the Ontario Curriculum)



Students will examine how animals grow, change, and adapt to their	
environments, and consider how human activity affects animals and their	4.0
habitats.	12
Specific Expectations:	12
Strand C: Matter and Energy – Properties of Liquids and Solids	13
Overall Expectation: Students will explore how solids and liquids behave, describe their physica properties, and examine how people use and manage these substances responsibly.	ıl 13
Specific Expectations:	13
Strand D: Structures and Mechanisms – Simple Machines and	
Movement	14
Overall Expectation: Students will investigate movement and the use of simple machines, and explore how these tools affect our daily lives and surroundings.	14
Specific Expectations:	14
Strand E: Earth and Space Systems – Air and Water in the Environment	15
Overall Expectation: Students will study the presence and movement of air and water in the environment, and evaluate their importance and the need for conservation.	15
Specific Expectations:	15
Grade 3	16
Strand A: STEM Skills and Connections	16
Overall Expectation: Students will expand their abilities in scientific investigation and problem- solving. They will apply safe practices, analyze results, and connect science and technology to other subjects and the world around them.	e 16
Specific Expectations:	16
Strand B: Life Systems – Growth and Changes in Plants	17
Overall Expectation:	
Students will study the structure, life cycle, and needs of plants, and consider the significance of plants to humans and the environment.	der 17



Specific Expectations:	17
Strand C: Matter and Energy – Forces and Movement	18
Overall Expectation:	
Students will investigate various types of forces and how they affect the motion of objects in everyday situations.	18
Specific Expectations:	18
Strand D: Structures and Mechanisms – Strong and Stable Structures	19
Overall Expectation:	
Students will explore the features of strong and stable structures and how materials and design choices influence their performance.	19
Specific Expectations:	19
Strand E: Earth and Space Systems – Soils in the Environment	20
Overall Expectation:	
Students will examine the composition, types, and uses of soil, and understand its role in ecosystems and environmental sustainability.	20
Specific Expectations:	20
Grade 4	21
Strand A: STEM Skills and Connections	21
Overall Expectation: Students will continue to build skills in scientific inquiry and technological problem-solving. They will conduct investigations, apply scientific reasoning, and connect science to broader social and environmentically.	
issues.	21
Specific Expectations:	21 22
Strand B: Life Systems – Habitats and Communities	22
Overall Expectation: Students will investigate the components and interactions within habitats as communities, and evaluate the impact of environmental changes on living	nd
organisms.	22
Specific Expectations:	22
Strand C: Matter and Energy – Light and Sound	23
Overall Expectation:	
Students will explore the properties and behaviors of light and sound, and understand how they are used in everyday applications.	23



Specific Expectations:	23
Strand D: Structures and Mechanisms – Pulleys and Gears	24
Overall Expectation:	
Students will investigate the function and design of pulleys and gears, and	
how these systems are used to transfer force and motion.	24
Specific Expectations:	24
Strand E: Earth and Space Systems – Rocks, Minerals, and Geologica	
Processes	25
Overall Expectation:	
Students will study the characteristics of rocks and minerals, and investigated natural processes that shape the Earth's surface.	te 25
Specific Expectations:	25
Grade 5	26
Strand A: STEM Skills and Connections	26
Overall Expectation:	
Students will expand their scientific thinking by posing questions, testing ideas, and applying evidence to solve problems. They will make connection between STEM subjects and consider real-world and environmental	IS
applications.	26
Specific Expectations:	26
Strand B: Life Systems – Human Organ Systems	27
Overall Expectation:	
Students will investigate how the major systems of the human body functio and interact to keep us alive and healthy. They will also learn about the	n
effects of healthy living on these systems.	27
Specific Expectations:	27
Strand C: Matter and Energy – Forces Acting on Structures and	
Mechanisms	28
Overall Expectation:	
Students will explore the forces that act on structures and mechanical systems, and how these forces affect stability, strength, and efficiency.	28
Specific Expectations:	28
Strand D: Structures and Mechanisms – Properties of and Changes in	



Matter	29
Overall Expectation: Students will examine physical and chemical properties of matter, and observe how materials change under different conditions.	29
Specific Expectations:	29
Strand E: Earth and Space Systems – Conservation of Energy and Resources	30
Overall Expectation: Students will explore renewable and non-renewable energy sources and evaluate how energy is used, conserved, and managed in their daily lives at the environment.	30
Specific Expectations:	30
Grade 6	31
Strand A: STEM Skills and Connections	31
Overall Expectation: Students will continue to build their scientific inquiry and problem-solving skills by asking meaningful questions, conducting fair investigations, and applying their findings to real-world situations. Specific Expectations:	31 31
Strand B: Life Systems – Biodiversity	32
Overall Expectation: Students will explore the diversity of living things, how they are classified, a why maintaining biodiversity is essential for ecosystems and human life. Specific Expectations:	and 32 32
Strand C: Matter and Energy – Electricity	33
Overall Expectation: Students will investigate electrical energy, how it is generated, transmitted, and used, and evaluate its impact on people and the environment. Specific Expectations:	33 33
Strand D: Structures and Mechanisms – Flight	34
Overall Expectation: Students will explore the principles of flight and how they are applied in nature and in human-made flying devices.	34



Specific Expectations:	34
Strand E: Earth and Space Systems – Space	35
Overall Expectation:	
Students will examine components of the solar system and the interactions between celestial bodies, and reflect on the role of space exploration in advancing knowledge and technology.	35
Specific Expectations:	35
Grade 7	36
Strand A: STEM Skills and Connections	36
Overall Expectation: Students will refine their ability to ask critical questions, analyze information and apply scientific reasoning to design solutions. They'll connect science a technology concepts with real-world challenges and ethical considerations.	and
Specific Expectations:	36
Strand B: Life Systems – Interactions in the Environment	37
Overall Expectation: Students will investigate ecosystems and the relationships among organism and assess how human actions affect environmental balance. Specific Expectations:	ns, 37
·	38
Strand C: Matter and Energy – Pure Substances and Mixtures	30
Overall Expectation: Students will explore the properties of pure substances and mixtures, and learn about methods for separating and using them safely and responsibly. Specific Expectations:	38 38
Strand D: Structures and Mechanisms – Form and Function	39
Overall Expectation: Students will analyze how structural design is influenced by function and environmental factors, and design and test models that reflect these principles.	39
Specific Expectations:	39
Strand E: Earth and Space Systems – Heat in the Environment	40
Overall Expectation: Students will study how heat is produced, transferred, and used, and	



	examine how it affects the natural environment and human activity.	40
	Specific Expectations:	40
Gı	rade 8	41
St.	rand A: STEM Skills and Connections	41
	Overall Expectation: Students will apply scientific inquiry and critical thinking to solve real-world problems. They'll use evidence, technology, and ethical considerations to explore complex issues in science and society.	41
	Specific Expectations:	41
	Strand B: Life Systems – Cells and Systems	42
	Overall Expectation:	-
	Students will examine the structure and function of cells, tissues, and organ systems in living things and explore how they work together to sustain life. Specific Expectations:	n 42 42
	Strand C: Matter and Energy – Fluids	43
	Overall Expectation:	
	Students will explore the properties and behavior of fluids (liquids and gase	,
	and how these principles apply to natural and designed systems.	43
	Specific Expectations:	43
	Strand D: Structures and Mechanisms – Systems in Action	44
	Overall Expectation: Students will study mechanical systems and how forces and energy affect efficiency and performance in machines.	44
	Specific Expectations:	44
	Strand E: Earth and Space Systems – Water Systems	45
	Overall Expectation:	43
	Students will explore Earth's water systems, including the water cycle,	
	freshwater and saltwater systems, and how human activities influence water	r
	quality and availability.	45
	Specific Expectations:	45



Grade 1

Strand A: STEM Skills and Connections

Overall Expectation:

Students will develop foundational skills in scientific inquiry, problem-solving, and technology use. They will explore how science and technology relate to daily life, other subject areas, and their local community.

Specific Expectations:

- Ask meaningful questions and make predictions based on prior knowledge.
- Make detailed observations using the senses and record findings clearly.
- Use scientific tools and materials safely during investigations.
- Follow simple steps to conduct experiments and explore solutions.
- Communicate results using drawings, charts, or oral explanations.
- Recognize how science connects with math, language, and everyday activities.
- Identify ways in which science and technology impact their own lives.



Strand B: Life Systems – Needs and Characteristics of Living Things Overall Expectation:

Students will explore the basic needs, characteristics, and behaviors of living things, and how humans and other living things interact with their environment.

Specific Expectations:

- Describe the basic needs of humans and other animals (e.g., food, water, shelter).
- Identify characteristics that help plants and animals meet their needs.
- Observe similarities and differences among various living things.
- Explain the importance of a clean and healthy environment for all life forms.
- Recognize ways people can care for the environment and living things.
- Identify seasonal changes in plants and animals.



Strand C: Matter and Energy – Energy in Our Lives

Overall Expectation:

Students will examine different forms and sources of energy, how energy is used in everyday life, and the importance of conserving energy.

Specific Expectations:

- Identify common uses of energy at home and school (e.g., heating, lighting).
- Describe the impact of losing access to electrical energy on daily life.
- Explain that energy is the ability to move or change something.
- Recognize that the Sun is the main source of energy for Earth.
- Understand that food provides energy for people and animals.
- Explore renewable and non-renewable sources of energy.
- Describe how energy use varies with the seasons (e.g., heating in winter).



Strand D: Structures and Mechanisms – Everyday Objects and Materials

Overall Expectation:

Students will investigate materials, objects, and simple structures in their environment, and consider how properties of materials relate to their function.

Specific Expectations:

- Identify materials used in common objects and describe their observable features.
- Distinguish between natural and human-made materials.
- Identify the function and purpose of everyday objects.
- Describe the properties of materials (e.g., flexibility, strength, texture).
- Identify simple structures (e.g., walls, bridges) and their purposes.
- Compare fasteners (e.g., glue, tape, nails) and their uses.
- Explain how to reduce waste by reusing and recycling materials.



Strand E: Earth and Space Systems – Daily and Seasonal Changes

Overall Expectation:

Students will examine patterns in weather and daylight, and how living things, including humans, respond to these daily and seasonal changes.

Specific Expectations:

- Describe changes in light, temperature, and weather during different times of day and seasons.
- Identify how people prepare for seasonal changes (e.g., clothing, activities).
- Recognize the effects of seasonal changes on plants and animals (e.g., migration, hibernation).
- Describe weather conditions using appropriate vocabulary (e.g., sunny, windy, snowy).
- Understand that the Sun's position causes changes in light and temperature.
- Explain how seasonal changes affect daily routines and traditions.



Grade 2

Strand A: STEM Skills and Connections

Overall Expectation:

Students will strengthen their abilities to observe, ask questions, and explore scientific ideas. They will apply safe practices during investigations and connect their learning to daily life and other subjects.

Specific Expectations:

- Pose questions and make simple predictions based on personal experience or observations.
- Safely use tools and materials during hands-on investigations.
- Record findings using drawings, tables, or labels.
- Follow logical steps to test solutions and conduct experiments.
- Share what they have learned using speech, writing, or visuals.
- Connect scientific ideas to math, language, and real-world examples.
- Identify ways in which science and technology influence daily life at home and school.

(Adapted and Reworded from the Ontario Curriculum)



Strand B: Life Systems – Growth and Changes in Animals

Overall Expectation:

Students will examine how animals grow, change, and adapt to their environments, and consider how human activity affects animals and their habitats.

Specific Expectations:

- Compare physical characteristics of animals and note which features change over time.
- Describe ways animals move and how these relate to their environments.
- Identify and explain the life cycles of different types of animals (e.g., insects, birds, mammals).
- Recognize behaviors and features that help animals survive.
- Investigate how animals interact with their surroundings and with humans.
- Assess how human actions impact animals and suggest ways to reduce harm.



Strand C: Matter and Energy – Properties of Liquids and Solids

Overall Expectation:

Students will explore how solids and liquids behave, describe their physical properties, and examine how people use and manage these substances responsibly.

Specific Expectations:

- Identify solids and liquids in natural and built environments.
- Describe key physical features (e.g., hardness, color, texture).
- Investigate how water changes between solid and liquid forms.
- Understand the effect of temperature on solids and liquids.
- Combine solids and liquids to observe mixtures.
- Classify substances by their ability to absorb water or float.
- Recognize safety symbols on containers.
- Suggest safe and eco-friendly practices for storing, using, and disposing of materials.

(Adapted and Reworded from the Ontario Curriculum)



Strand D: Structures and Mechanisms – Simple Machines and Movement

Overall Expectation:

Students will investigate movement and the use of simple machines, and explore how these tools affect our daily lives and surroundings.

Specific Expectations:

- Describe how objects can move in different ways (e.g., sliding, spinning).
- Show how movement can be changed using force.
- Identify the six basic types of simple machines: lever, pulley, wheel and axle, inclined plane, wedge, and screw.
- Describe how each machine makes a task easier.
- Compare how much effort is needed to move an object with and without a simple machine.
- Reflect on how simple machines affect the environment.
- Identify tools that include simple machines and explain their purpose.



Strand E: Earth and Space Systems – Air and Water in the Environment

Overall Expectation:

Students will study the presence and movement of air and water in the environment, and evaluate their importance and the need for conservation.

Specific Expectations:

- Describe where air and water can be found in nature.
- Observe how air and water move and change form (e.g., wind, evaporation).
- Identify sources of air and water pollution.
- Explain why clean air and water are important for all living things.
- Suggest ways to reduce pollution and conserve resources.
- Identify and describe the main parts of the water cycle.
- Discuss how human actions can protect or damage air and water quality.



Grade 3

Strand A: STEM Skills and Connections

Overall Expectation:

Students will expand their abilities in scientific investigation and problem-solving. They will apply safe practices, analyze results, and connect science and technology to other subjects and the world around them.

Specific Expectations:

- Formulate testable questions and make reasonable predictions.
- Safely use appropriate tools and materials to investigate ideas.
- Record and organize observations using tables, drawings, or charts.
- Design and test solutions using a clear, step-by-step process.
- Communicate findings in a structured way, including using visuals or written summaries.
- Link scientific and technological knowledge to language, math, and daily experiences.
- Recognize how science and technology contribute to improvements in society.

(Adapted and Reworded from the Ontario Curriculum)



Strand B: Life Systems - Growth and Changes in Plants

Overall Expectation:

Students will study the structure, life cycle, and needs of plants, and consider the significance of plants to humans and the environment.

Specific Expectations:

- Identify the main parts of a plant (e.g., roots, stems, leaves, flowers) and describe their functions.
- Describe the stages in the life cycle of a plant.
- Observe and record how seeds and bulbs grow under different conditions.
- Identify what plants need to grow (e.g., light, water, nutrients).
- Compare different types of plants and their characteristics.
- Explain how plants support life by providing oxygen, food, and shelter.
- Discuss how human actions can help or harm plant life.
- Suggest ways to protect and conserve plant resources.



Strand C: Matter and Energy – Forces and Movement

Overall Expectation:

Students will investigate various types of forces and how they affect the motion of objects in everyday situations.

Specific Expectations:

- Identify and describe different kinds of forces (e.g., push, pull, gravity, magnetism).
- Explain how forces can start, stop, or change the direction of movement.
- Explore how surface type, weight, and shape affect how objects move.
- Observe how magnets attract and repel, and identify magnetic materials.
- Investigate how tools and devices use forces to perform tasks.
- Design and build simple models to demonstrate movement.
- Connect their understanding of forces to safe practices and real-world examples.



Strand D: Structures and Mechanisms – Strong and Stable Structures

Overall Expectation:

Students will explore the features of strong and stable structures and how materials and design choices influence their performance.

Specific Expectations:

- Identify characteristics of structures that make them strong and stable.
- Investigate how different materials contribute to structural strength.
- Explore how shape and arrangement affect balance and durability.
- Build models of structures using various materials and tools.
- Compare human-made structures with those found in nature.
- Evaluate structures based on safety, function, and stability.
- Apply techniques to improve the strength or usefulness of a structure.

(Adapted and Reworded from the Ontario Curriculum)



Strand E: Earth and Space Systems - Soils in the Environment

Overall Expectation:

Students will examine the composition, types, and uses of soil, and understand its role in ecosystems and environmental sustainability.

Specific Expectations:

- Describe and compare different types of soil (e.g., clay, sand, loam).
- Test soils for texture, color, and water retention.
- Identify organisms found in soil and explain their role in the ecosystem.
- Explain how soil supports plant life and filters water.
- Explore how natural forces like erosion affect soil.
- Investigate the human impact on soil quality (e.g., farming, construction).
- Suggest ways to care for and preserve soil as a natural resource.



Grade 4

Strand A: STEM Skills and Connections

Overall Expectation:Students will continue to build skills in scientific inquiry and technological problem-solving. They will conduct investigations, apply scientific reasoning, and connect science to broader social and environmental issues.

Specific Expectations:

- Generate testable questions and make informed predictions.
- Use scientific tools and materials responsibly and accurately.
- Gather, record, and organize data using diagrams, charts, and written descriptions.
- Apply logical steps when testing hypotheses or solving design challenges.
- Present ideas and conclusions through writing, models, or oral presentations.
- Relate scientific learning to real-world topics and other subject areas.
- Explore how science and technology can address community or global needs.

(Adapted and Reworded from the Ontario Curriculum)



Strand B: Life Systems – Habitats and Communities

Overall Expectation:

Students will investigate the components and interactions within habitats and communities, and evaluate the impact of environmental changes on living organisms.

Specific Expectations:

- Describe how different species interact within a food chain or food web.
- Explain how changes in an environment affect the survival of living things.
- Identify roles of producers, consumers, and decomposers in a habitat.
- Compare the characteristics of various habitats and the organisms that live in them.
- Explore how humans affect habitats and propose ways to reduce harm.
- Recognize the importance of biodiversity in maintaining healthy ecosystems.
- Identify natural and human-caused changes to habitats over time.



Strand C: Matter and Energy – Light and Sound

Overall Expectation:

Students will explore the properties and behaviors of light and sound, and understand how they are used in everyday applications.

Specific Expectations:

- Identify sources of light and sound in natural and human-made environments.
- Describe how light travels, reflects, and refracts.
- Explain how sound is produced and travels through different materials.
- Investigate how materials affect the transmission or absorption of light and sound.
- Examine how people use light and sound in communication and safety.
- Compare the characteristics of various light and sound sources.
- Explore ways to reduce noise and light pollution in the environment.



Strand D: Structures and Mechanisms - Pulleys and Gears

Overall Expectation:

Students will investigate the function and design of pulleys and gears, and how these systems are used to transfer force and motion.

Specific Expectations:

- Identify examples of pulleys and gears in daily life.
- Describe how pulleys and gears change the direction or strength of a force.
- Build and test simple systems using pulleys or gears.
- Analyze the effectiveness of different pulley and gear setups.
- Explain how simple machines help reduce effort in completing tasks.
- Apply knowledge of pulleys and gears to design and improve mechanical systems.
- Explore the environmental impacts of mechanical systems that use these components.



Strand E: Earth and Space Systems – Rocks, Minerals, and Geological Processes

Overall Expectation:

Students will study the characteristics of rocks and minerals, and investigate natural processes that shape the Earth's surface.

Specific Expectations:

- Identify and describe properties of common rocks and minerals.
- Use tools to test features such as hardness, luster, and color.
- Explain how rocks are formed and changed over time.
- Investigate natural processes such as erosion, weathering, and volcanic activity.
- Describe the impact of these processes on the environment and human life.
- Examine how humans extract and use natural resources from the Earth.
- Suggest responsible practices for conserving geological resources.



Grade 5

Strand A: STEM Skills and Connections

Overall Expectation:

Students will expand their scientific thinking by posing questions, testing ideas, and applying evidence to solve problems. They will make connections between STEM subjects and consider real-world and environmental applications.

Specific Expectations:

- Ask testable questions and make predictions using prior knowledge and observations.
- Design and carry out fair investigations with appropriate safety procedures.
- Collect, record, and interpret data using charts, graphs, or models.
- Communicate conclusions clearly using oral, written, or visual forms.
- Apply mathematics and technology to solve science-related problems.
- Make connections between science and environmental responsibility.
- Recognize how science and technology influence daily life, both locally and globally.

(Adapted and Reworded from the Ontario Curriculum)



Strand B: Life Systems – Human Organ Systems

Overall Expectation:

Students will investigate how the major systems of the human body function and interact to keep us alive and healthy. They will also learn about the effects of healthy living on these systems.

Specific Expectations:

- Identify and describe the functions of key body systems (e.g., respiratory, circulatory, digestive).
- Explain how body systems work together to perform vital functions.
- Explore how lifestyle choices (e.g., nutrition, exercise) affect body systems.
- Describe how medical technologies help diagnose or treat health issues.
- Investigate how to maintain a healthy body through good habits.
- Identify how environmental factors can impact human health.



Strand C: Matter and Energy – Forces Acting on Structures and Mechanisms

Overall Expectation:

Students will explore the forces that act on structures and mechanical systems, and how these forces affect stability, strength, and efficiency.

Specific Expectations:

- Identify various forces (e.g., gravity, tension, compression) and how they act on objects.
- Explain the concepts of load, stress, and stability in structures.
- Investigate how shape and materials influence a structure's strength.
- Design and build a model that can withstand specific forces or loads.
- Evaluate the impact of external forces on natural and human-made structures (e.g., bridges, dams, trees).
- Explore examples of structures and systems used in real-world engineering.



Strand D: Structures and Mechanisms – Properties of and Changes in Matter

Overall Expectation:

Students will examine physical and chemical properties of matter, and observe how materials change under different conditions.

Specific Expectations:

- Classify substances based on physical properties (e.g., color, state, texture).
- Investigate how materials change states (solid, liquid, gas) and whether the changes are reversible or irreversible.
- Explore mixtures and solutions and how they can be separated.
- Observe signs of chemical changes (e.g., temperature change, gas production).
- Examine how heating and cooling affect materials in everyday life.
- Identify ways to use and dispose of substances responsibly.



Strand E: Earth and Space Systems – Conservation of Energy and Resources

Overall Expectation:

Students will explore renewable and non-renewable energy sources and evaluate how energy is used, conserved, and managed in their daily lives and the environment.

Specific Expectations:

- Identify different sources of energy (e.g., solar, wind, fossil fuels) and describe their uses.
- Compare the environmental impact of various energy sources.
- Investigate how energy is transferred and transformed in everyday devices.
- Analyze how people can reduce energy consumption at home and in the community.
- Evaluate the benefits of conservation and alternative energy solutions.
- Design a simple energy-saving solution or device.



Grade 6

Strand A: STEM Skills and Connections

Overall Expectation:

Students will continue to build their scientific inquiry and problem-solving skills by asking meaningful questions, conducting fair investigations, and applying their findings to real-world situations.

Specific Expectations:

- Form questions that can be tested through experiments and research.
- Plan and perform investigations using safe and ethical practices.
- Collect and analyze data using tools like charts, graphs, and digital technologies.
- Communicate observations and conclusions using appropriate formats.
- Use STEM knowledge to design solutions for everyday challenges.
- Reflect on the impact of scientific discoveries on people, society, and the environment.
- Make connections between science, other subjects, and global issues.

(Adapted and Reworded from the Ontario Curriculum)



Strand B: Life Systems - Biodiversity

Overall Expectation:

Students will explore the diversity of living things, how they are classified, and why maintaining biodiversity is essential for ecosystems and human life.

Specific Expectations:

- Identify and classify organisms based on physical characteristics and behavior.
- Explain the importance of biodiversity in sustaining life.
- Describe how different species interact within ecosystems.
- Investigate the effects of human activities on biodiversity.
- Identify endangered species and explain conservation efforts.
- Understand how natural and human-made changes can impact ecosystems.
- Propose ways individuals and communities can help protect biodiversity.



Strand C: Matter and Energy – Electricity

Overall Expectation:

Students will investigate electrical energy, how it is generated, transmitted, and used, and evaluate its impact on people and the environment.

Specific Expectations:

- Identify sources of electricity (renewable and non-renewable).
- Describe how electrical energy is transformed into other forms of energy (e.g., light, heat, motion).
- Build and test simple circuits (series and parallel) using batteries, wires, and bulbs.
- Investigate conductors and insulators.
- Analyze how electrical energy is used in households and communities.
- Explore the environmental effects of electricity production and use.
- Suggest ways to reduce energy consumption and promote sustainable energy use.



Strand D: Structures and Mechanisms - Flight

Overall Expectation:

Students will explore the principles of flight and how they are applied in nature and in human-made flying devices.

Specific Expectations:

- Identify forces that affect flight: lift, weight, thrust, and drag.
- Describe how birds and insects are adapted for flight.
- Investigate how flying devices (e.g., airplanes, rockets) use flight principles.
- Design and test a model that demonstrates basic principles of flight.
- Compare flying objects in nature and technology.
- Explain how flight has evolved and impacted travel, industry, and communication.



Strand E: Earth and Space Systems - Space

Overall Expectation:

Students will examine components of the solar system and the interactions between celestial bodies, and reflect on the role of space exploration in advancing knowledge and technology.

Specific Expectations:

- Identify planets, moons, stars, and other celestial objects in the solar system.
- Describe the movement of Earth and how it affects seasons and day/night cycles.
- Explain gravitational force and its effects in space.
- Investigate technologies used in space exploration (e.g., telescopes, satellites).
- Assess the benefits and challenges of space missions.
- Discuss how space research contributes to science and everyday technologies.
- Reflect on the environmental and ethical considerations of space exploration.



Grade 7

Strand A: STEM Skills and Connections

Overall Expectation:

Students will refine their ability to ask critical questions, analyze information, and apply scientific reasoning to design solutions. They'll connect science and technology concepts with real-world challenges and ethical considerations.

Specific Expectations:

- Pose complex questions and design fair tests or research plans.
- Use appropriate scientific tools and safety procedures during investigations.
- Organize and interpret data using graphs, tables, and digital tools.
- Communicate findings using scientific language and multiple formats.
- Apply math and technology to model and solve scientific problems.
- Consider social, environmental, and economic impacts of science and technology.
- Explore careers and innovations in science-related fields.

(Adapted and Reworded from the Ontario Curriculum)



Strand B: Life Systems – Interactions in the Environment

Overall Expectation:

Students will investigate ecosystems and the relationships among organisms, and assess how human actions affect environmental balance.

Specific Expectations:

- Describe the components of ecosystems and their roles (e.g., producers, consumers).
- Analyze how energy flows through food chains and food webs.
- Investigate how organisms interact with each other and their environment.
- Explore the impact of natural events and human activities (e.g., deforestation, pollution) on ecosystems.
- Examine the importance of sustainability and environmental stewardship.
- Propose ways to reduce human impact and support ecological balance.



Strand C: Matter and Energy - Pure Substances and Mixtures

Overall Expectation:

Students will explore the properties of pure substances and mixtures, and learn about methods for separating and using them safely and responsibly.

Specific Expectations:

- Distinguish between pure substances and mixtures.
- Identify solutions, mechanical mixtures, and suspensions.
- Describe the physical properties of substances (e.g., solubility, density, conductivity).
- Investigate how mixtures can be separated (e.g., filtration, evaporation).
- Examine the use of pure substances and mixtures in daily life and industry.
- Interpret safety labels and symbols related to materials.
- Propose responsible practices for storing and disposing of chemicals.



Strand D: Structures and Mechanisms – Form and Function

Overall Expectation:

Students will analyze how structural design is influenced by function and environmental factors, and design and test models that reflect these principles.

Specific Expectations:

- Identify internal and external forces acting on structures.
- Explain how forces affect strength, stability, and design.
- Investigate the properties of materials used in structures.
- Compare different types of structures and their uses.
- Design, build, and test a model structure to meet specific criteria.
- Analyze the environmental and economic implications of design choices.

(Adapted and Reworded from the Ontario Curriculum)



Strand E: Earth and Space Systems – Heat in the Environment

Overall Expectation:

Students will study how heat is produced, transferred, and used, and examine how it affects the natural environment and human activity.

Specific Expectations:

- Describe various sources of heat and how it is transferred (conduction, convection, radiation).
- Explore how insulation and conduction affect heat retention and loss.
- Investigate the role of heat in natural systems (e.g., weather, climate).
- Analyze technologies that control or use heat energy.
- Assess the impact of heat-related processes on the environment.
- Suggest ways to use thermal energy efficiently and sustainably.



Grade 8

Strand A: STEM Skills and Connections

Overall Expectation:

Students will apply scientific inquiry and critical thinking to solve real-world problems. They'll use evidence, technology, and ethical considerations to explore complex issues in science and society.

Specific Expectations:

- Ask meaningful, testable questions and design detailed investigations.
- Conduct safe and ethical experiments using scientific tools and technology.
- Gather and analyze data using charts, graphs, and digital applications.
- Communicate conclusions clearly using scientific language and appropriate media.
- Use math, logic, and creativity to solve science and technology problems.
- Evaluate the influence of science and tech on societal and environmental decisions.
- Explore innovations, careers, and global challenges related to science and technology.

(Adapted and Reworded from the Ontario Curriculum)



Strand B: Life Systems – Cells and Systems

Overall Expectation:

Students will examine the structure and function of cells, tissues, and organ systems in living things and explore how they work together to sustain life.

Specific Expectations:

- Identify the basic parts and functions of plant and animal cells.
- Use microscopes to observe and compare cells.
- Explain how cells form tissues, organs, and systems.
- Investigate how organ systems interact (e.g., digestive and circulatory).
- Explore how diseases or lifestyle choices affect body systems.
- Examine technologies used in cell biology and medical diagnostics.
- Reflect on the ethical use of technology in biological research.

(Adapted and Reworded from the Ontario Curriculum)



Strand C: Matter and Energy - Fluids

Overall Expectation:

Students will explore the properties and behavior of fluids (liquids and gases) and how these principles apply to natural and designed systems.

Specific Expectations:

- Describe the characteristics of fluids and how they flow.
- Investigate how pressure, temperature, and volume affect fluid behavior.
- Explain the concept of buoyancy and how it relates to density.
- Study fluid dynamics in nature (e.g., blood circulation, air flow) and in human-made systems (e.g., hydraulics).
- Design and test systems involving fluids.
- Analyze the use and conservation of fluids in industry and daily life.



Strand D: Structures and Mechanisms – Systems in Action

Overall Expectation:

Students will study mechanical systems and how forces and energy affect efficiency and performance in machines.

Specific Expectations:

- Identify components of mechanical systems and describe how they function together.
- Measure force, work, and mechanical advantage.
- Compare simple and compound machines in terms of efficiency.
- Investigate how systems convert energy (e.g., bicycle, engine).
- Analyze energy loss due to friction and how it can be reduced.
- Evaluate real-world systems for their effectiveness and environmental impact.
- Design, build, and test a mechanical system that performs a specific task.

(Adapted and Reworded from the Ontario Curriculum)



Strand E: Earth and Space Systems – Water Systems

Overall Expectation:

Students will explore Earth's water systems, including the water cycle, freshwater and saltwater systems, and how human activities influence water quality and availability.

Specific Expectations:

- Identify and describe major water bodies and their characteristics.
- Understand how water cycles through the environment.
- Investigate how water shapes land through erosion and deposition.
- Explore the impact of human activity on water quality and ecosystems.
- Assess technologies for water purification and conservation.
- Propose solutions to water-related challenges (e.g., pollution, scarcity).
- Discuss global access to clean water and the importance of water stewardship.