

Science 7

General Curriculum Outcomes

STSE

1. Students will develop an understanding of the nature of science and technology, of the relationships between science and technology, and of the social and environmental contexts of science and technology.

SKILLS

2. Students will develop the skills required for scientific and technological inquiry, for solving problems, for communicating scientific ideas and results, for working collaboratively, and for making informed decisions.

KNOWLEDGE

3. Students will construct knowledge and understandings of concepts in life science, physical science, and Earth and space science, and apply these understandings to interpret, integrate, and extend their knowledge.

ATTITUDES

4. Students will be encouraged to develop attitudes that support the responsible acquisition and application of scientific and technological knowledge to the mutual benefit of self, society, and the environment.

Specific Curriculum Outcomes

Students will be expected to

Earth and Space Science: Earth's Crust (25%)

GEOLOGICAL PLATE TECTONICS AND TIME SCALE

- analyze and compare data to determine patterns and trends on some catastrophic events that occur on or near Earth's surface (210-6, 311-1, 311-4, 311-5)
- describe theories from the past to present plate tectonics, including Canadian examples (110-1, 110-4, 112-12)
- organize and develop a chronological model or geological time scale of major events in Earth's history (209-4, 311-6)

ROCKS AND MINERALS

- classify minerals and rocks on the basis of their characteristics and method of formation, and compare with classification keys (210-1, 310-2)
- collaboratively plan and construct a geological land mass profile using simulated core sampling (211-3, 211-4, 210-12)
- explore and describe the composition of Earth's crust, using common samples, scientific studies, and society's needs (109-7, 111-2, 310-1)

WEATHERING, SOIL, AND THE ROCK CYCLE

- investigate and explain various ways in which rocks can be weathered and explain the rock cycle (311-2, 208-2)
- relate various meteorological, geological, and biological processes to the formation of soils (311-3)
- investigate and discuss procedures and expenditures for enriching soils, providing science and technology examples (112-7, 113-7)

Physical Science: Mixtures and Solutions (25%)**MIXTURES**

- examine and separate the components of a variety of mixtures, safely using materials in a laboratory (209-6, 307-2)

SOLUTIONS

- distinguish between pure substances and mixtures, using the particle theory of matter (307-1)
- apply criteria for evaluating evidence and describe, in a laboratory, the characteristics of solutions, using the particle model of matter (208-10, 307-3)
- demonstrate a knowledge of WHMIS standards by using proper techniques for handling and disposing of materials (209-7)

CONCENTRATION OF SOLUTIONS

- describe qualitatively and quantitatively the concentrations of solutions (307-4)
- perform and solve testable questions about solutions' concentrations (208-1, 210-9)
- design and carry out procedures to study the effect of temperature on solubility and explain the results (208-6, 209-1, 210-7)
- predict the solubility of a solute by interpolating or extrapolating from graphical data (210-4)
- identify questions and use a technology for collecting data (210-16-109-4)

MIXTURES, SOLUTIONS, AND THE ENVIRONMENT

- identify and explain examples of mixtures and solutions that have an impact on development in science, technology, and environment (112-7, 113-1)
- describe the science underlying particular technologies designed to explore natural phenomena, extend human capabilities, or solve practical problems (111-5)

Physical Science: Heat (25%)

TEMPERATURE AND MATTER

- construct, test, and produce data using an air thermometer (208-8, 210-13, 210-2)
- compare and demonstrate how to use and read various instruments used to measure temperature from the past to present technologies (308-1, 209-3, 110-7)
- explain how each state of matter, including changes of state, react to changes in temperature, using the particle model of matter (308-3, 308-4)
- explain temperature, using the concept of kinetic energy and the particle model of matter (308-2)

HEAT TRANSFER

- compare transmission of heat by conduction, convection, and radiation (308-5)
- differentiate between science and technology applications of how heat affects lives (111-5, 113-4)
- demonstrate and compare qualitatively, the heat capacities and heat absorption of common materials by investigating and evaluating how the surfaces absorb heat and what potential variables produce errors (308-7, 210-11, 210-12)
- investigate in a laboratory and describe in various formats how surfaces absorb radiant heat (308-6, 211-2)

TECHNOLOGY, TEMPERATURE, AND HEAT

- identify examples of science- and technology-based careers that use heat and temperature (112-9)
- describe, with examples, our heat needs and insulating technologies from the past to present (112-1, 109-4)

Life Science: Interactions Within Ecosystems (25%)

COMPONENTS OF AN ECOSYSTEM

- identify the roles of producers, consumers, and decomposers in a local ecosystem and describe both their diversity and their interactions (304-2)
- identify questions, investigate, and record collected data on the ecosystem's components using materials effectively (208-2, 208-3, 210-1)
- describe interactions between biotic and abiotic factors in an ecosystem (306-3)
- distinguish and explain how biological classification reflects the diversity of life on Earth, using specific terms and characteristics (304-1, 109-1, 109-12)

FOOD CHAINS, FOOD WEBS, AND DECOMPOSERS

- describe how matter is recycled in an ecosystem and evaluate potential applications of energy transformations (306-2, 210-2)
- describe how energy is supplied to, and how it flows through, the structures and interactions in a natural system, using charts, diagrams, and terminology (306-1, 111-6, 210-3)
- describe essential conditions to the growth and reproduction of plants and microorganisms in an ecosystem, providing examples related to aspects of the human food supply (304-3, 111-1)

ECOLOGICAL SUCCESSION

- identify signs of ecological succession in a local ecosystem and predict its future based on characteristics and succession (306-4, 208-5)

ACTION

- defend a proposal to protect a habitat and provide examples of various issues that can be addressed in multiple ways (113-11, 211-5, 113-10)
- research individuals/groups in Canada that focus on the environment, using various print and electronic sources (112-4, 112-8, 209-5)