This document has been adapted from the Science 9 Learning Outcomes Framework from the Nova Scotia Department of Education, pages 102-104.

Science 9
General Curriculum Outcomes

STSE (Science, technology, society, environment)

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.

- What do the words “science” and “technology” mean?
- How are science and technology related?
- How do science and technology fit in with society and the environment?

Skills

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.

- What do I know about this topic?
- What would I like to know about the topic?
- How can I test my ideas or find a solution to a problem? Do I need any specific skills or tools?
- Who can I work with to solve a problem?
- How will I share what I have learned so that other people understand it?
- How can I use what I have learned to make good decisions about my future or things that influence my life and others around me both locally and globally?

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Science 9
General Curriculum Outcomes

Knowledge

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.

- Life Science:
  - What are cells? How are they related to living things? How do living things reproduce? What can I learn about my body and health from studying cells?
- Physical Science:
  - What is chemistry? What are atoms and how are they linked to chemicals? How does chemistry relate to my life?
- Earth and Space Science:
  - Where does the solar system fit in the universe? How are the planets different from each other? What are the different parts of the universe? What can we learn from studying space?

Attitudes

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.

- As I mature and learn more I will have to make more complicated decisions. I will be responsible for those decisions and therefore it is important for me to learn how my actions will affect society, the environment and me.

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Specific Curriculum Outcomes:
Atoms and Elements (25%)

Students will be expected to…

Physical and Chemical Changes

- perform experiments, collect results, report findings, and work safely in the laboratory (209-7, 111-6, 210-11)
- describe the physical properties of a variety of materials (307-12)
- describe changes in the properties of materials by conducting and observing some common chemical reactions (307-13)

Atomic Theory

- use models to describe the parts of atoms and molecules and explain the difference between them (307-14, 208-7)

Periodic Table

- identify examples of common elements, and compare their characteristics and atomic structure (307-15)
- understand how the elements are organized in the periodic table and be able to use it to find out information about specific elements (210-1, 210-2)
- identify the elements and number of atoms in a chemical formula (307-16)
- provide examples of how scientific knowledge has lead to the development of new technology (111-1)
- provide examples of technology that has helped with or made scientific research possible (111-4)
- explain and provide examples of how chemistry and chemistry research meets the needs of society as well as its affect on the environment (112-3, 112-8)

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Specific Curriculum Outcomes:
Characteristics of Electricity (25%)

Students will be expected to…

Electric Current

- describe the movement or flow of electric charge in a circuit and explain the factors that affect it (109-14, 308-16)
- investigate and explain the difference between static electricity and electric current (210-7, 308-15)

Series and Parallel Circuits

- describe series and parallel circuits and how they are affected by changes in resistance, voltage, and current (308-17)
- develop ways to test and solve practical problems involving electricity (208-1)
- use instruments properly to accurately collect data (209-3)
- identify data that does not make sense (i.e. by how much is the measurement off?) and try to explain where things might have gone wrong in an experiment (sources of error) (210-7, 210-10)

Electricity, Energy, and the Environment

- relate electrical energy to the cost of household power usage (308-18)
- calculate the efficiency of electrical appliances that convert electrical energy into heat energy (308-19)
- describe how electricity is created and transferred from a generating station to the home (308-20)
- use information learned in this unit to make responsible decisions and propose a plan to address human and environmental needs for electricity and energy (113-9, 113-13)

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Specific Curriculum Outcomes:
Space Exploration (25%)

Students will be expected to…

The Beginnings

- describe theories on the formation of the solar system (312-1)
- explain why we need new evidence to test existing theories about where our solar system and galaxies came from and what they are made of (110-6, 210-3)
- describe theories on how the universe began and how it has changed over time (312-3)

The Universe

- describe and classify the major parts of the universe (312-2)
- describe and explain why objects in space appear to move across the sky (312-4)
- provide and describe examples of how science and technology support Canadian research projects and careers(112-6, 112-11)

The Solar System

- describe the composition and characteristics of the parts of the solar system (312-5)
- explain why or how new evidence allows us to test existing theories and identify new questions that arise (210-16)
- describe the effects of the Sun (solar phenomena) on Earth (312-6)
- develop a plan and, in a report, defend your group's ideas on alternative solutions for living in space, (208-4, 209-4, 211-1, 211-3, 211-5)

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Specific Curriculum Outcomes:
Reproduction (25%)

Students will be expected to:

Cellular Processes

- illustrate and describe the basic processes of mitosis and meiosis (304-11)
- identify major changes in scientific world views (110-3)
- gather and record data, and make predictions by doing activities on cell populations (210-6, 210-4)

Reproduction

- identify questions, investigate, and present results on the reproduction of plants (208-2, 211-2)
- distinguish between sexual and asexual reproduction in a variety of organisms (305-2)
- compare sexual and asexual reproduction in terms of their advantages and disadvantages (305-3)

Genetics

- provide examples from home, industrial settings, or in the environment that cannot be solved using scientific and technological knowledge (113-10)
- discuss factors that may lead to changes in a cell's genetic information (305-5)
- select and use a variety of reliable and appropriate sources of information to research and report on a topic in genetics (209-5, 210-8)
- provide Canadian and international examples of science and technology that have helped develop our understanding of genetics (111-1, 112-12)