**Student:** **Date:**

| **Outcomes** | **R** | **D** | **C** | **A** | **Changed Outcomes** |
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| **Unit i- Integrated Skills** | | | | | |
| **GCO 2 (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. | | | | | |
| 1.0 identify questions to investigate that arise from practical problems and issues |  |  |  |  |  |
| 2.0 design an experiment identifying and controlling major variables |  |  |  |  |  |
| 3.0 state a prediction and a hypothesis based on available evidence and background information |  |  |  |  |  |
| 4.0 design an experiment and identify specific variables |  |  |  |  |  |
| 5.0 formulate operational definitions of major variables |  |  |  |  |  |
| 6.0 evaluate and select appropriate instruments for collecting evidence and appropriate processes for problem solving, inquiring, and decision making |  |  |  |  |  |
| 7.0 develop appropriate sampling procedures |  |  |  |  |  |
| 8.0 carry out procedures controlling the major variables and adapting or extending procedures where required |  |  |  |  |  |
| 9.0 use instruments effectively and accurately for collecting data |  |  |  |  |  |
| 10.0 estimate quantities |  |  |  |  |  |
| 11.0 compile and organize data, using appropriate formats and data treatments to facilitate interpretation of the data |  |  |  |  |  |
| 12.0 use library and electronic research tools to collect information on a given topic |  |  |  |  |  |
| 13.0 select and integrate information from various print and electronic sources or from several parts of the same source |  |  |  |  |  |
| 14.0 select and use apparatus and materials safely |  |  |  |  |  |
| 15.0 demonstrate a knowledge of WHMIS standards by selecting and applying proper techniques for handling and disposing of lab materials |  |  |  |  |  |
| 16.0 describe and apply classification systems and nomenclatures used in the sciences |  |  |  |  |  |
| 17.0 compile and display evidence and information, by hand or computer, in a variety of formats, including diagrams, flow charts, tables, graphs, and scatter plots |  |  |  |  |  |
| 18.0 interpret patterns and trends in data, and infer or calculate linear and nonlinear relationships among variables |  |  |  |  |  |
| 19.0 compare theoretical and empirical values and account for discrepancies |  |  |  |  |  |
| 20.0 evaluate the relevance, reliability, and adequacy of data and data collection methods |  |  |  |  |  |
| 21.0 identify and explain sources of error and uncertainty in measurement and express results in a form that acknowledges the degree of uncertainty |  |  |  |  |  |
| 22.0 provide a statement that addresses the problem or answers the question investigated in light of the link between data a and the conclusion |  |  |  |  |  |
| 23.0 propose alternative solutions to a given practical problem, identify the potential strengths and weaknesses of each, and select one as the basis for a plan |  |  |  |  |  |
| 24.0 identify new questions or problems that arise from what was learned |  |  |  |  |  |
| 25.0 communicate questions, ideas, and intentions, and receive, interpret, understand, support, and respond to the ideas of others |  |  |  |  |  |
| 26.0 select and use appropriate numeric, symbolic, graphical, and linguistic modes of representation to communicate ideas, plans, and results |  |  |  |  |  |
| 27.0 identify multiple perspectives that influence a science-related decision or issue |  |  |  |  |  |
| 28.0 develop, present, and defend a position or course of action, based on findings |  |  |  |  |  |
| 29.0 work cooperatively with team members to develop and carry out a plan, and troubleshoot problems as they arise |  |  |  |  |  |
| **Unit 1- Weather Dynamics** | | | | | |
| **GCO 1 (STSE)**  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. | | | | | |
| 34.0 illustrate how science attempts to explain natural phenomena |  |  |  |  |  |
| 36.0 analyze why scientific and technological activities take place in a variety of individual and group settings |  |  |  |  |  |
| 37.0 identify examples where scientific understanding was enhanced or revised as a result of the invention of a technology |  |  |  |  |  |
| 38.0 describe examples of Canadian contributions to science and technology |  |  |  |  |  |
| 39.0 explain how scientific knowledge evolves as new evidence comes to light |  |  |  |  |  |
| 40.0 relate personal activities and various scientific and technological endeavours to specific science disciplines and interdisciplinary studies |  |  |  |  |  |
| **GCO 3 (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. | | | | | |
| 30.0 describe how the hydrosphere and atmosphere act as heat sinks |  |  |  |  |  |
| 31.0 describe and explain heat transfer within the water cycle |  |  |  |  |  |
| 32.0 describe and explain heat transfer in the hydrosphere and atmosphere and its effects on air and water currents |  |  |  |  |  |
| 33.0 describe and explain the effects of heat transfer within the hydrosphere and atmosphere on the development, severity, and movement of weather systems |  |  |  |  |  |
| 35.0 analyze meteorological data for a given time span and predict future weather conditions, using appropriate methodologies and technologies |  |  |  |  |  |
| **Unit 2 - Chemical Reactions** | | | | | |
| **GCO 1 (STSE)**  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. | | | | | |
| 41.0 provide examples of how science and technology are an integral part of their lives and their community |  |  |  |  |  |
| 43.0 describe the usefulness of scientific nomenclature systems |  |  |  |  |  |
| 48.0 describe the functioning of domestic and industrial technologies, using scientific principles |  |  |  |  |  |
| 49.0 identify examples where technologies were developed based on scientific understanding |  |  |  |  |  |
| 50.0 compare examples of how society supports and influences science and technology |  |  |  |  |  |
| 51.0 defend a decision or judgment and demonstrate that relevant arguments can arise from different perspectives |  |  |  |  |  |
| 53.0 identify and describe science and technology-based careers related to the science they are |  |  |  |  |  |
| **GCO 3 (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. | | | | | |
| 42.0 name and write formulas for some common ionic and molecular compounds, using the periodic table and a list of ions |  |  |  |  |  |
| 44.0 represent chemical reactions and the conservation of mass using molecular models and balanced symbolic equations |  |  |  |  |  |
| 45.0 classify chemical reactions based on type |  |  |  |  |  |
| 46.0 classify substances as acids, bases, or salts, based on their characteristics, name, and formula |  |  |  |  |  |
| 47.0 describe how neutralization involves tempering the effects of an acid with a base or vice versa |  |  |  |  |  |
| 52.0 illustrate how factors such as heat, concentration,  light, and surface area can affect chemical reactions |  |  |  |  |  |
| **Unit 3 - Motion** | | | | | |
| **GCO 1 (STSE)**  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. | | | | | |
| 38.0 describe examples of Canadian contributions to science and technology |  |  |  |  |  |
| 40.0 relate personal activities and various scientific and technological endeavours to specific science disciplines and interdisciplinary studies |  |  |  |  |  |
| 54.0 identify possible areas of further study related to science and technology |  |  |  |  |  |
| 55.0 distinguish between scientific questions and technological problems |  |  |  |  |  |
| 62.0 describe the historical development of a technology |  |  |  |  |  |
| 63.0 evaluate the role of continued testing in the development and improvement of technologies |  |  |  |  |  |
| 64.0 analyze natural and technological systems to interpret and explain their structure and dynamics |  |  |  |  |  |
| 65.0 evaluate the design of a technology and the way it functions on the basis of identified criteria such as safety, cost, availability, and impact on everyday life and the environment |  |  |  |  |  |
| **GCO 3 (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. | | | | | |
| 56.0 describe quantitatively the relationship among motion variables |  |  |  |  |  |
| 57.0 analyze mathematically the relationship among displacement, velocity, and time |  |  |  |  |  |
| 58.0 analyze graphically the relationship among displacement, velocity, and time for uniform motion |  |  |  |  |  |
| 59.0 distinguish between instantaneous and average velocity |  |  |  |  |  |
| 60.0 analyze graphically the relationship among displacement, velocity, and time for non-uniform motion |  |  |  |  |  |
| 61.0 describe quantitatively the relationship among velocity, time, and acceleration |  |  |  |  |  |
| **Unit 4 - Sustainability of Ecosystems** | | | | | |
| **GCO 1 (STSE)**  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. | | | | | |
| 37.0 identify examples where scientific understanding was enhanced or revised as a result of the invention of a technology |  |  |  |  |  |
| 51.0 defend a decision or judgment and demonstrate that relevant arguments can arise from different perspectives |  |  |  |  |  |
| 72.0 propose a course of action on social issues related to science and technology, taking into account human and environmental needs |  |  |  |  |  |
| 75.0 explain how a paradigm shift can change scientific world views |  |  |  |  |  |
| 76.0 describe how Canadian research projects in science and technology are funded |  |  |  |  |  |
| 77.0 describe the importance of peer review in the development of scientific knowledge |  |  |  |  |  |
| 78.0 compare the risks and benefits to society and the environment of applying scientific knowledge or introducing a technology |  |  |  |  |  |
| **GCO 3 (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. | | | | | |
| 66.0 explain why ecosystems with similar characteristics can exist in different geographical locations |  |  |  |  |  |
| 67.0 explain various ways in which natural populations are kept in equilibrium and relate this equilibrium to the resource limits of an ecosystem |  |  |  |  |  |
| 68.0 illustrate and explain the cycling of matter through biotic and abiotic components of an ecosystem by tracking carbon, nitrogen, and oxygen |  |  |  |  |  |
| 69.0 describe how soil composition and fertility can be altered and how these changes could affect an ecosystem |  |  |  |  |  |
| 70.0 describe the mechanisms of bioaccumulation, and explain its potential impact on the viability of and diversity of consumers at all trophic levels |  |  |  |  |  |
| 71.0 analyze the impact of external factors on an ecosystem |  |  |  |  |  |
| 73.0 explain how the biodiversity of an ecosystem contributes to its sustainability |  |  |  |  |  |
| 74.0 explain why different ecosystems respond differently to short-term stresses and long-term changes |  |  |  |  |  |