**Student:**

**Date:**

| **Outcomes** | **R** | **D** | **C** | **A** | **Changed Outcomes** |
| --- | --- | --- | --- | --- | --- |
| **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 define and delimit problems to facilitate investigation |  |  |  |  |  |
| 2.0 identify questions to investigate that arise from practical problems and issues |  |  |  |  |  |
| 3.0 design an experiment identifying and controlling major variables |  |  |  |  |  |
| 4.0 formulate operational definitions of major variables |  |  |  |  |  |
| 5.0 develop and implement appropriate sampling procedures |  |  |  |  |  |
| 6.0 carry out procedures controlling the major variables and adapting or extending procedures where required |  |  |  |  |  |
| 7.0 estimate quantities |  |  |  |  |  |
| 8.0 compile and organize data, using appropriate formats and data treatments to facilitate interpretation of the data |  |  |  |  |  |
| 9.0 use library and electronic research tools to collect information on a given topic |  |  |  |  |  |
| 10.0 select and use apparatus and materials safely |  |  |  |  |  |
| 11.0 demonstrate a knowledge of WHMIS standards by selecting and applying proper techniques for handling and disposing of lab materials |  |  |  |  |  |
| 12.0 describe and apply classification systems and nomenclatures used in the sciences on the line of best fit  relationships among variables |  |  |  |  |  |
| 13.0 compile and display evidence and information, by hand computer, in a variety of formats, including diagrams, flow charts, tables, graphs, and scatter plots |  |  |  |  |  |
| 14.0 identify a line of best fit on a scatter plot and interpolate or extrapolate based |  |  |  |  |  |
| 15.0 interpret patterns and trends in data, and infer or calculate linear and nonlinear |  |  |  |  |  |
| 16.0 compare theoretical and empirical values and account for discrepancies |  |  |  |  |  |
| 17.0 evaluate the relevance, reliability, and adequacy of data and data collection methods |  |  |  |  |  |
| 18.0 identify and explain sources of error and uncertainty in measurement and express results in a form that acknowledges the degree of uncertainty |  |  |  |  |  |
| 19.0 provide a statement that addresses the problem or answers the question investigated in light of the link between data and the conclusion |  |  |  |  |  |
| 20.0 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 |  |  |  |  |  |
| 21.0 select and use appropriate numeric, symbolic, graphical, and linguistic modes of representation to communicate ideas, plans, and results |  |  |  |  |  |
| 22.0 synthesize information from multiple sources or from complex and lengthy texts and make inferences based on this information |  |  |  |  |  |
| 23.0 identify multiple perspectives that influence a science-related decision or issue |  |  |  |  |  |
| 24.0 work cooperatively with team members to develop and carry out a plan, and troubleshoot problems as they arise |  |  |  |  |  |
| 25.0 evaluate individual and group processes used in planning, problem solving and decision making, and completing a task |  |  |  |  |  |
| **Unit 1 – Ecosystem Interactions and Population 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. | | | | | |
| 26.0 identify and describe science- and technology-based careers related to this science |  |  |  |  |  |
| 27.0 analyze natural systems to interpret and explain their structure and dynamics |  |  |  |  |  |
| 32.0 analyze from a variety of perspectives the risks and benefits to society and the environment of applying scientific knowledge or introducing a particular technology |  |  |  |  |  |
| 34.0 provide examples of how science and technology are an integral part of their lives and their community |  |  |  |  |  |
| 35.0 distinguish between scientific questions and technological problems |  |  |  |  |  |
| 36.0 propose courses of action on social issues related to science and technology, taking into account an array of perspectives, including that of sustainability |  |  |  |  |  |
| **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. | | | | | |
| 28.0 analyze interactions within and between populations |  |  |  |  |  |
| 29.0 use the concept of the energy pyramid to explain the production, distribution, and use of food resources |  |  |  |  |  |
| 30.0 compare Canadian biomes in terms of climate, vegetation, physical geography, and location |  |  |  |  |  |
| 31.0 describe population growth and explain factors that influence population growth |  |  |  |  |  |
| 33.0 evaluate Earth’s carrying capacity, considering human population growth and its demands on natural resources |  |  |  |  |  |
| **Unit 2 – Processes that Sustain Life** | | | | | |
| **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. | | | | | |
| 26.0 identify and describe science- and technology-based careers related to this science endeavour, using appropriate language and conventions |  |  |  |  |  |
| 37.0 explain the roles of evidence, theories, and paradigms in the development of scientific knowledge |  |  |  |  |  |
| 38.0 explain the importance of communicating the results of a scientific or technological |  |  |  |  |  |
| 39.0 analyze and describe examples where scientific understanding was enhanced or revised as a result of the invention of a technology |  |  |  |  |  |
| 41.0 analyze why and how a particular technology was developed and improved over time |  |  |  |  |  |
| 42.0 identify various constraints that result in tradeoffs during the development and improvement of technologies |  |  |  |  |  |
| **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. | | | | | |
| 40.0 explain the cell theory |  |  |  |  |  |
| 43.0 compare and contrast prokaryotic and eukaryotic cells, and plant cells and animal cells |  |  |  |  |  |
| 44.0 describe cell structures visible with the light and electron microscopes |  |  |  |  |  |
| 45.0 identify chemical elements and compounds commonly found in living systems |  |  |  |  |  |
| 46.0 identify the role of some compounds, such as water, glucose, and ATP |  |  |  |  |  |
| 47.0 identify and describe the components and function of important biochemical compounds, including carbohydrates, lipids, and proteins |  |  |  |  |  |
| 48.0 describe how organelles manage various cell processes, including passive transport, active transport, and membrane-assisted transport |  |  |  |  |  |
| 49.0 compare and contrast matter and energy transformations associated with the processes aerobic respiration and photosynthesis |  |  |  |  |  |
| **Unit 3 – Maintaining Homeostasis** | | | | | |
| **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. | | | | | |
| 27.0 analyze natural systems to interpret and explain their structure and dynamics |  |  |  |  |  |
| 32.0 analyze from a variety of perspectives the risks and benefits to society and the environment of applying scientific knowledge or introducing a particular technology |  |  |  |  |  |
| 36.0 propose courses of action on social issues related to science and technology, taking into account an array of perspectives, including that of sustainability |  |  |  |  |  |
| 41.0 analyze why and how a particular technology was developed and improved over time |  |  |  |  |  |
| 55.0 distinguish between questions that can be answered by science and those that cannot, and between problems that can be solved by technology and those that cannot |  |  |  |  |  |
| 57.0 analyze society’s influence on scientific and technological endeavours |  |  |  |  |  |
| 61.0 debate the merits of funding specific scientific or technological endeavours |  |  |  |  |  |
| 62.0 construct arguments to support a decision or judgement, using examples and evidence and recognizing various perspectives |  |  |  |  |  |
| **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. | | | | | |
| 50.0 explain how systems help maintain homeostasis |  |  |  |  |  |
| 51.0 analyze homeostatic phenomena to identify the feedback mechanisms involved |  |  |  |  |  |
| 52.0 explain how tropisms help to maintain homeostasis |  |  |  |  |  |
| 53.0 analyze the impact of factors on the homeostasis of the nervous system |  |  |  |  |  |
| 54.0 evaluate the impact of disorders and diseases on homeostasis |  |  |  |  |  |
| 56.0 explain the importance of fitness to the maintenance of homeostasis |  |  |  |  |  |
| 58.0 describe the impact of environmental factors on homeostasis |  |  |  |  |  |
| 59.0 explain the role of enzymes in metabolism |  |  |  |  |  |
| 60.0 explain the importance of nutrition to the maintenance of homeostasis |  |  |  |  |  |