**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 design an experiment identifying and controlling major variables |  |  |  |  |  |
| 2.0 state a prediction and a hypothesis based on available evidence and background information |  |  |  |  |  |
| 3. evaluate and select appropriate instruments for collecting evidence |  |  |  |  |  |
| 4.0 develop and implement appropriate sampling procedures |  |  |  |  |  |
| 5.0 use instruments effectively and accurately for collecting data |  |  |  |  |  |
| 6.0 compile and organize data, using appropriate formats and data treatments to facilitate interpretation of the data |  |  |  |  |  |
| 7.0 use library and electronic research tools to collect information on a given topic |  |  |  |  |  |
| 8.0 select and integrate information from various print and electronic sources or from several parts of the same source |  |  |  |  |  |
| 9.0 select and use apparatus and materials safely |  |  |  |  |  |
| 10.0 demonstrate a knowledge of WHMIS standards by selecting and applying proper techniques for handling and disposing of lab materials |  |  |  |  |  |
| 11.0 describe and apply classification systems and nomenclatures used in the sciences |  |  |  |  |  |
| 12.0 identify limitations of a given classification system and identify alternative ways of classifying to accommodate anomalies |  |  |  |  |  |
| 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 on the line of best fit |  |  |  |  |  |
| 15.0 interpret patterns and trends in data, and infer or calculate linear and nonlinear relationships among variables |  |  |  |  |  |
| 16.0 evaluate the relevance, reliability, and adequacy of data and data collection methods |  |  |  |  |  |
| 17.0 identify and apply criteria, including the presence of bias, for evaluating evidence and sources of information |  |  |  |  |  |
| 18.0 explain how data support or refute the hypothesis or prediction |  |  |  |  |  |
| 19.0 identify and correct practical problems in the way a technological device or system functions |  |  |  |  |  |
| 20.0 construct and test a prototype of a device or system and troubleshoot problems as they arise |  |  |  |  |  |
| 21.0 evaluate a personally designed and constructed device on the basis of criteria they have developed themselves |  |  |  |  |  |
| 22.0 communicate questions, ideas, and intentions, and receive, interpret, understand, support, and respond to the ideas of others |  |  |  |  |  |
| 23.0 select and use appropriate numeric, symbolic, graphical, and linguistic modes of representation to communicate ideas, plans, and results |  |  |  |  |  |
| 24.0 identify multiple perspectives that influence a science-related decision or issue |  |  |  |  |  |
| 25.0 develop, present, and defend a position or course of action, based on findings |  |  |  |  |  |
| 26.0 work cooperatively with team members to develop and carry out a plan, and troubleshoot problems as they arise |  |  |  |  |  |
| 27.0 evaluate individual and group processes used in planning, problem solving and decision making, and completing a task |  |  |  |  |  |
| **Unit 1- Cell Reproduction and the Continuity of 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. | | | | | |
| 29.0 distinguish between scientific questions and technological problems |  |  |  |  |  |
| 30.0 describe and evaluate the design of technological solutions and the way they function, using scientific principles |  |  |  |  |  |
| 33.0 analyze natural systems to interpret and explain their structure and dynamics |  |  |  |  |  |
| 37.0 identify examples where technologies were developed based on scientific understanding |  |  |  |  |  |
| 39.0 construct arguments to support a decision or judgement, using examples and evidence and recognizing various perspectives |  |  |  |  |  |
| 40.0 analyze from a variety of perspectives the risks and benefits to society and the environment of applying scientific knowledge or introducing a particular technology |  |  |  |  |  |
| 41.0 debate the merits of funding specific scientific or technological endeavours and not others |  |  |  |  |  |
| 42.0 analyze society’s influence on scientific and technological endeavours |  |  |  |  |  |
| 43.0 identify and describe science- and technology-based careers related to the science they are studying |  |  |  |  |  |
| **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 examine the process of cell division and its significance |  |  |  |  |  |
| 31.0 evaluate the consequences of medical treatments |  |  |  |  |  |
| 32.0 analyze and explain reproductive strategies among living organisms |  |  |  |  |  |
| 34.0 analyze and describe the structure and function of human male and female reproductive systems |  |  |  |  |  |
| 35.0 explain the human reproductive cycle |  |  |  |  |  |
| 36.0 describe the process of human development from fertilization to birth |  |  |  |  |  |
| 38.0 evaluate and describe reproductive technologies |  |  |  |  |  |
| **Unit 2 – Genetic Basis of Heredity** | | | | | |
| **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. | | | | | |
| 39.0 construct arguments to support a decision or judgement, using examples and evidence and recognizing various perspectives |  |  |  |  |  |
| 40.0 analyze from a variety of perspectives the risks and benefits to society and the environment of applying scientific knowledge or introducing a particular technology |  |  |  |  |  |
| 43.0 identify and describe science and technology based careers related to the science they are studying |  |  |  |  |  |
| 44.0 illustrate how science attempts to explain natural phenomena |  |  |  |  |  |
| 45.0 explain the roles of evidence, theories, and paradigms in the development of scientific knowledge |  |  |  |  |  |
| 48.0 explain how scientific knowledge evolves as new evidence comes to light and as laws and theories are tested and subsequently restricted, revised, or replaced |  |  |  |  |  |
| 51.0 compare processes used in science with those used in technology |  |  |  |  |  |
| 52.0 analyze and describe examples where scientific understanding was enhanced or revised as a result of the invention of a technology |  |  |  |  |  |
| 54.0 explain how a major scientific milestone revolutionized thinking in the scientific communities |  |  |  |  |  |
| **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. | | | | | |
| 46.0 summarize the events and experiments that led to the concept of the gene |  |  |  |  |  |
| 47.0 demonstrate an understanding of Mendelian genetics and predict the outcome of various genetic crosses |  |  |  |  |  |
| 49.0 describe the role of chromosomes in the transmission of hereditary information from one cell to another |  |  |  |  |  |
| 50.0 explain circumstances that lead to genetic disorders |  |  |  |  |  |
| 53.0 compare and contrast the structures of DNA and RNA |  |  |  |  |  |
| 55.0 explain the replication of DNA |  |  |  |  |  |
| 56.0 explain the roles of DNA and RNA in protein synthesis |  |  |  |  |  |
| 57.0 predict the effects of mutations on protein synthesis, phenotypes, and heredity |  |  |  |  |  |
| 58.0 describe factors that may lead to mutations in a cell’s genetic information |  |  |  |  |  |
| 59.0 demonstrate an understanding of current genetic technologies |  |  |  |  |  |
| **Unit 3 – Evolutionary Change and Biodiversity** | | | | | |
| **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. | | | | | |
| 43.0 identify and describe science- and technology-based careers related to the science they are studying |  |  |  |  |  |
| 45.0 explain the roles of evidence, theories, and paradigms in the development of scientific knowledge |  |  |  |  |  |
| 48.0 explain how scientific knowledge evolves as new evidence comes to light and as laws and theories are tested and subsequently restricted, revised, or replaced |  |  |  |  |  |
| 52.0 analyze and describe examples where scientific understanding was enhanced or revised as a result of invention of a technology |  |  |  |  |  |
| 63.0 describe the importance of peer review in the development of scientific knowledge |  |  |  |  |  |
| 68.0 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. | | | | | |
| 60.0 analyze evolutionary mechanisms and their effects on biodiversity |  |  |  |  |  |
| 61.0 describe historical and cultural contexts that have changed evolutionary concepts |  |  |  |  |  |
| 62.0 compare different explanations for changes in populations over time |  |  |  |  |  |
| 64.0 evaluate and describe evidence to support the theory of evolution by natural selection |  |  |  |  |  |
| 65.0 describe how species evolve |  |  |  |  |  |
| 66.0 compare and contrast models describing the pace of evolution |  |  |  |  |  |
| 67.0 describe how the Hardy-Weinberg principle is used to determine whether a population is undergoing microevolution |  |  |  |  |  |
| 69.0 demonstrate an understanding of the fundamental principles of taxonomy |  |  |  |  |  |
| 70.0 examine and describe the anatomy and physiology of representative organisms, identifying and describing evolutionary milestones and trends |  |  |  |  |  |