**Area of Learning: SCIENCE — Geology Grade 12**

**BIG IDEAS**

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| **Minerals, rocks, and earth materials** form in response  to conditions within and on  the Earth’s surface and are  the foundation of many  resource-based industries. |  | **Earth’s geological and biological history** is interpreted and inferred from information stored in rock strata and  fossil evidence. |  | The **plate tectonic theory** explains the changes that occur within Earth and to Earth’s crust throughout geological time. |  | The **form, arrangement, and structure of rocks** are affected by three-dimensional forces over time. |  | **Weathering and erosion processes** continually reshape landscapes through the interaction of the geosphere with the hydrosphere  and atmosphere. |

**Learning Standards**

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| **Curricular Competencies** | **Content** |
| *Students are expected to be able to do the following:*  Questioning and predicting   * Demonstrate a sustained intellectual curiosity about a scientific topic  or problem of personal, local, or global interest * Make observations aimed at identifying their own questions, including increasingly abstract ones, about the natural world * Formulate multiple hypotheses and predict multiple outcomes   Planning and conducting   * Collaboratively and individually plan, select, and use appropriate investigation methods, including field work and lab experiments, to collect reliable data (qualitative and quantitative) * Assess risks and address ethical, cultural, and/or environmental issues associated with their proposed methods * Use appropriate SI units and appropriate equipment, including digital technologies, to systematically and accurately collect and record data * Apply the concepts of accuracy and precision to experimental procedures  and data:   + significant figures   + uncertainty   scientific notation | *Students are expected to know the following:*   * classification of **minerals**   processes of rock formation:   * + **igneous**   + **sedimentary**   **metamorphic**  B.C. **resource deposits** and others:   * + origin and formation   **economic, environmental, and First Peoples considerations**   * the geologic time scale and **major events in Earth’s history** * the local and global **fossil record**:   + **evidence of evolution**   + methods of fossil formation   First Peoples perspectives   * methods for **relative and absolute dating** of rocks, fossils, and geologic events * reconstruction of Earth’s past through correlation of fossil  data and rock strata |

**Area of Learning: SCIENCE — Geology Grade 12**

**Learning Standards (continued)**

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| **Curricular Competencies** | **Content** |
| Processing and analyzing data and information   * Experience and interpret the local environment * Apply First Peoples perspectives and knowledge, other ways of knowing, and local knowledge as sources of information * Seek and analyze patterns, trends, and connections in data, including describing relationships between variables, performing calculations, and identifying inconsistencies * Construct, analyze, and interpret graphs, models, and/or diagrams * Use knowledge of scientific concepts to draw conclusions that are consistent with evidence * Analyze cause-and-effect relationships   Evaluating   * Evaluate their methods and experimental conditions, including identifying sources of error  or uncertainty, confounding variables, and possible alternative explanations and conclusions * Describe specific ways to improve their investigation methods and the quality of their data * Evaluate the validity and limitations of a model or analogy in relation to the phenomenon modelled * Demonstrate an awareness of assumptions, question information given, and identify bias  in their own work and in primary and secondary sources * Consider the changes in knowledge over time as tools and technologies have developed * Connect scientific explorations to careers in science * Exercise a healthy, informed skepticism and use scientific knowledge and findings to form their own investigations to evaluate claims in primary and secondary sources * Consider social, ethical, and environmental implications of the findings from their own  and others’ investigations * Critically analyze the validity of information in primary and secondary sources and evaluate the approaches used to solve problems * Assess risks in the context of personal safety and social responsibility | * the formation of **volcanic and deformational features** through plate movement * **evidence** that supports a layered model of Earth * **earthquakes** and analysis of seismic waves * First Peoples knowledge of geologic events * **internal and external factors** that affect the plasticity of rock strata * **faulting and folding** * **geologic maps, cross-sections, and block diagrams** * **weathering and erosion processes** * First Peoples knowledge of landforms over time * **periods of glaciation** * **groundwater and aquifers** * causes and **controls of mass wasting** |

**Area of Learning: SCIENCE — Geology Grade 12**

**Learning Standards (continued)**

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| **Curricular Competencies** | **Content** |
| Applying and innovating   * Contribute to care for self, others, community, and world through individual  or collaborative approaches * Co-operatively design projects with local and/or global connections  and applications * Contribute to finding solutions to problems at a local and/or global level  through inquiry * Implement multiple strategies to solve problems in real-life, applied,  and conceptual situations * Consider the role of scientists in innovation   Communicating   * Formulate physical or mental theoretical models to describe a phenomenon * Communicate scientific ideas and information, and perhaps a suggested course of action, for a specific purpose and audience, constructing evidence-based arguments and using appropriate scientific language, conventions, and representations * Express and reflect on a variety of experiences, perspectives, and worldviews  through **place** |  |