BIG IDEAS

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

Curricular Competencies

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

Content

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

Learning Standards (continued)

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**

Learning Standards (continued)

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**	