BIG IDEAS

Earth materials are changed as they cycle through the geosphere and are used as resources, with economic and environmental implications.	**Plate tectonic theory** explains the consequences of tectonic plate interactions.	The transfer of energy through the **atmosphere** creates weather, and this transfer is affected by climate change.	The distribution of **water** has a major influence on weather and climate.	Astronomy seeks to explain the origin and interactions of **Earth and its solar system**.

Learning Standards

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:* • properties of earth materials: – **minerals** – **igneous rocks** – **sedimentary rocks** – **metamorphic rocks** – **geologic resources** • surface and internal **processes** of the rock cycle • **economic and environmental implications** of geologic resources within B.C. and globally • evidence that supports plate tectonic theory • factors that affect **plate motion** • First Peoples knowledge of local plate tectonic settings and geologic terrains • the **hydrologic cycle** • changes in the composition of the atmosphere due to natural and human causes • **weather** as the interaction of water, air, and energy transfer • solar radiation **interactions** and **impacts on the energy budget**

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	• **evidence of climate change** • First Peoples knowledge of climate change and interconnectedness as related to environmental systems • **water as a unique resource** • First Peoples knowledge and perspectives of water resources and processes • **properties of the ocean and the ocean floor** • local and global **ocean currents** • influences of large bodies of water on **local and global climates** • **effects of climate change** on water sources • the nebular hypothesis (explanation of the formation and properties of our solar system) • **Earth as a unique planet** within its solar system • **stars** as the centre of a solar system • impacts of the **Earth-moon-sun system** • application of space technologies to the study of changes in Earth and its systems

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**	