SCIENCE 9 - COURSE OUTLINE - 2023/24

Teacher: Ms. Bernabei (she/her) Classroom: 111

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Textbook: BC Science Probe 9 (for units 1, 2, and 3), and BC Science Connections 9 (for unit 4)

Website: Details of regular assignments, due dates, test dates, project deadlines, and all course handouts

will be posted in the Science 9 section of Ms. Bernabei's website:

https://msbernabei.weebly.com/science-9.html

Science 9 is a general course including topics from several branches of science. Students investigate the various topics in an integrated manner. Science 9 is designed to build upon the Science 8 course in terms of level of difficulty and content, and is a prerequisite for Science 10. The course is designed to support students as they develop *knowledge* of science ("know"), *skills* in science inquiry and communication ("do"), and build their *understanding* of key principles and concepts ("Big Ideas") that are applicable beyond the classroom.

<u>Core Competencies</u> to be developed in all courses and learning experiences:

- Communication/Literacy (oral, written, visual, digital, and multimedia)
- Thinking skills and strategies
- Personal and Social Competency

Science 9 Topics and Processes

Scientific Thinking, Processes, Inquiry, and Experimentation (embedded throughout the course)

- Processes of Science: What is Science? (BC Science Probe, Chapter 1, and additional resources)
 - Processes of science are practiced throughout all aspects of the course, including in class activities, readings, discussions, projects (e.g. Science Fair), take-home assignments, etc.
- > First People's Understandings and Perspectives of Interconnectedness and Sustainability:
 - Throughout the course perspectives and ways of knowing of Indigenous Peoples are explored and connected to scientific concepts (TEK: Traditional Ecological Knowledge).
- Science Literacy Reading and Analysis
 - Science Literature Study (throughout the course): Read and review scientific articles, research reports, and science themed literature.

<u>Unit 1: Chemistry</u> – The electron arrangement of atoms impacts their chemical nature (The Atom, Elements, and the Periodic Table) – (BC Science Probe 9, Chapters 5 to 8)

- The atom: What is the atom made of? What is the origin of the atom?
- Elements and the Periodic Table: Why is the table configured in the way that it is? What patterns exist within it?
- Compounds of elements Ionic compounds and covalent compounds: What determines the compounds formed by elements?

<u>Unit 2: Physics</u> – Electric current is the flow of electric charge (Current Electricity) – (BC Science Probe 9, Chapters 9 to 11)

- How and why do electric charges flow within a circuit?
- What is required to make an electric circuit?
- What is the difference between AC (alternating current) and DC (direct current)?
- > Types of circuits: Series and Parallel circuits
- Ohm's Law (relationship between voltage, current, and resistance)
- Electrical Safety (voltage and current)

<u>Unit 3: Biology</u> – Cells are derived from other cells (Reproduction) – (BC Science Probe 9, Chapters 2 to 4)

- Asexual reproduction Mitosis: fission, budding, cloning, spores, grafting
- > Sexual reproduction Meiosis: human sexual reproduction and genetic diversity

<u>Unit 4: Earth Systems</u> – The biosphere, geosphere, hydrosphere and atmosphere are interconnected as matter cycles and energy flows through them – (BC Science Connections 9, Unit 4)

- Effect of solar radiation on the cycling of matter and energy: S
- > olar radiation provides the energy required for most life on Earth; root cause of wind and ocean currents which distribute energy and nutrients around the planet, as well as the energy sources for the water cycle (interrelationship between matter and energy)
- Matter cycle within biotic and abiotic components of the ecosystems (e.g. Water cycle, Carbon cycle, Nitrogen cycle, Phosphorous cycle)
 - bioaccumulation and biomagnification
 - Interrelationships of Biotic organisms and Abiotic factors
 - o Sustainability of systems interrelationship and dynamic equilibrium of earth systems
 - o human impacts on sources and sinks (e.g. climate change, deforestation, agriculture, etc)
- Sustainability of systems: Interrelationship and dynamic equilibrium of earth systems (e.g. carbon as a key factor in climate change, greenhouse effect, water cycle, etc)

Assessment – Evidence of Understanding

Throughout the course you will demonstrate your learning and understanding in a variety of ways, including:

- Assignments, activities, project(s)
- > Tests, quizzes
- Major Projects that engage students in inquiry and analysis:
 - Science Fair [Terms 1 and 2: Due in February]
 - Science First Peoples Project focus on a plant or animal species [Terms 2 and 3: Due in June]

Note: If you are away on the day of a test or quiz you must e-mail your teacher to arrange an alternate date/time to write the test.