Course: Science 10

Teacher: Peter Bond

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Course Description:

Science 10 introduces inheritance and its relationship to DNA structure and how genetic engineering affects society. Chemical process and energy flow in systems is explored in the universe, climate, and chemical reactions. Relationships, patterns and connections are made between various perspectives in science such as climate studies, chemistry, genetics, and astronomy. Communicating about science in the form of visual presentations will be heavily stressed throughout the course.

Inquiry Questions:

- **How does energy transfer impact the environment and Earth's global systems?**
- **Do the benefits of nuclear energy justify the global consequences of nuclear by-products?**
- **How are the changes in pH chemistry due to mining and resource extraction managed?**
- **Who should have the knowledge, control, or ownership of an organism's genetic makeup?**
- **How has the structure of the Universe changed since the Big Bang?**

Summer Learning Beliefs:

Summer Learning provides an engaging learning environment where all students can challenge themselves academically and fulfill their learning goals. To ensure this, students will:

- abide by the student Code of Conduct
- adhere to the Academic Honesty policy
- adhere to the *Summer Learning* Student Engagement policy
- respect themselves and others
- attend every class and be punctual
- inquire, think, and participate to the best of their ability
- access technology in class when instructed to do so and for learning purposes only
- challenge themselves and have fun learning

All Summer Learning policies can be accessed at:
https://www.sd44.ca/school/summer/policies/Pages/default.

Learning Plan:

	Evidence of Learning (Assessment)	Learning Plan
80%	**1. Structured Inquiry into Global Energy Sources:** Students will conduct an analysis of media and biases in communication of science, sustainability, and climate change. *Learning evidence includes note-taking, quizzes, reading and analyzing articles, compilation of resources, and writing report drafts.* **2. Experimental Lab Design** and analysis of a chemistry concept, implementing the skills learned in class. *Learning evidence includes note-taking, quizzes, lab reports, model-building, brainstorming, designing, writing an Open Design Lab, and reporting conclusions.* **3. Guided Inquiry Project**: Students will inquire into topics of personal interest relating to the applications of genetics in the real world AND/OR their family history. *Learning evidence includes note-taking, quizzes, research, drafts, compilation of resources, design plan, collaboration with experts*	*What students will know:* • law of conservation of energy • potential and kinetic energy • transformation of energy • local and global impacts of energy transformations from technologies • nuclear energy and radiation • rearrangement of atoms in chemical reactions • acid-base chemistry • law of conservation of mass • energy change during chemical reactions • practical applications and implications of Chemical processes, including First Peoples knowledge • DNA structure and function • patterns of inheritance • mechanisms for the diversity of life: ○ mutation and its impact on evolution ○ natural selection and artificial selection • applied genetics and ethical considerations • formation of the universe: ○ big bang theory ○ components of the universe over time • astronomical data and collection methods *What students will do:* • questioning and predicting • planning and conducting • processing and analyzing data and information • evaluating • applying and innovating • communicating *What students will understand:* **Science 10 Big Ideas** 1. Energy is conserved, and its transformation can affect living things and the environment. 2. Energy change is required as atoms rearrange in

		chemical processes. 3. DNA is the basis for the diversity of living things. 4. The formation of the universe can be explained by the Big Bang theory.
20%	School Based Summative Assessment	***Astronomy (Free Inquiry-Final Assessment):*** Students will design and build a summative assessment that answers their inquiry question about the universe. Students will be assessed on their ability to: form open-ended inquiry questions, plan and conduct research, apply research to answer the question, and communicate findings to peers.
100%		

Grade Boundaries:

An "**A**" student will/can….
Consistently produce high-quality, frequently innovative work. Communicate scientific ideas to connect and synthesize concepts and skills learned over time. Consistently demonstrate sophisticated critical and creative thinking. Collect, present, and (correctly) transform experimental data. Interpret, analyze and critique scientific findings and experimental data. Frequently transfers knowledge and skills and use concepts to solve non-routine problems.

A "**B**" student will /can …
Sometimes produce high-quality, innovative work. Communicate scientific ideas to compare and critique concepts and skills learned over time. Consistently demonstrate a degree of critical and creative thinking. Collect and present scientific data in an appropriate manner. Assess, interpret, and revise scientific findings and experimental data. Transfer knowledge and skills and use concepts to consistently solve routine problems correctly with few mistakes.

A "**C**" student will /can …
Produce work of an acceptable quality. Communicate a basic understanding of scientific concepts and operate superficially within a scientific contextual framework. Display an emergent level of application when it comes to critical thinking skills. Collect scientific data in an appropriate manner. Be inflexible in the use of knowledge and skills, requiring support even in familiar classroom situations. Make attempts to use knowledge, skills and scientific concepts to solve routine problems, with occasional mistakes.

Celebration of Learning:

The 2018 Celebration of Learning is shaped around "Ways of Knowing".

Our class will collaborate to create one Pecha Kucha presentation. A Pecha Kucha presentation uses imagery and spoken word. Each student is responsible for preparing 3 slides of images and 30 seconds of spoken content about the ways in which we know.

Resources:

Resources
• BC Science 10 Textbook