

# Science 10 Course Outline

Panorama Ridge Secondary 2019/20

Email: randhawa\_s1@surreyschools.ca

Room C002

Welcome to Mrs. Randhawa's Science 10 class. The purpose of this course is to build on previous science courses and further explore the world in which we live in order to better understand and gain an appreciation for it.

**Science 10 is split into 4 'Big Ideas' where we will develop Inquiry and critical thinking skills within these content areas.**

## Genes are the foundation for the diversity of living things (Biology)

In this unit we will be learning about things like:

- DNA structure and function
- Genes and chromosomes
- Simple patterns of inheritance
- Mechanisms for the diversity of life
  - Mutations
  - Natural and artificial selection
- Applications of genetics and ethical considerations



## Chemical processes require energy change as atoms are rearranged (Chemistry)

In this unit, we will be learning about things like:

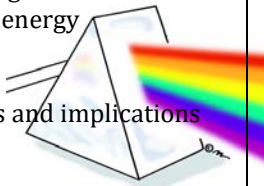
- Rearrangement of atoms in chemical reactions
- Acid-base chemistry
- Law of conservation of mass
- Energy change during chemical reactions
- Practical applications and implications of chemical processes including First Peoples perspectives.



## Energy is conserved and its transformation can affect living things and the environment (Physics)

In this unit, we will be learning about things like:

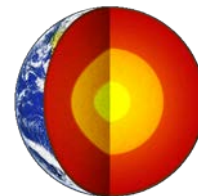
- Law of conservation of energy
- Transformation of potential and kinetic energy
- Local and global impacts of energy transformations from technologies
- First people's perspectives on energy
- Nuclear energy and radiation
  - Fission versus fusion
  - Technologies, applications and implications




## The formation of the universe can be explained by the Big Bang Theory (Earth Science)


In this unit, we will learn about things like:

- Formation of the universe
  - Big bang theory
  - Components of the universe over time
  - Astronomical data and collection methods



Through the year as we learn the content, we will be developing skills such as:

Questioning and Predicting	Planning and Conducting
<ul style="list-style-type: none"> <li>➤ Demonstrate a sustained intellectual curiosity about a scientific topic or problem of personal interest</li> <li>➤ Make observations aimed at identifying their own questions, including increasingly complex ones, about the natural world</li> <li>➤ Formulate multiple hypotheses and predict multiple outcomes</li> </ul> 	<ul style="list-style-type: none"> <li>➤ Collaboratively and individually plan, select, and use appropriate investigation methods, including field work and lab experiments, to collect reliable data (qualitative and quantitative)</li> <li>➤ Assess risks and address ethical, cultural, and/or environmental issues associated with their proposed methods and those of others</li> <li>➤ Select and use appropriate equipment, including digital technologies, to systematically and accurately collect and record data</li> <li>➤ Ensure that safety and ethical guidelines are followed in their investigations</li> </ul>
Processing and analyzing data and information	Evaluating
<ul style="list-style-type: none"> <li>➤ Experience and interpret the local environment</li> <li>➤ Apply First Peoples perspectives and knowledge, other ways of knowing, and local knowledge as sources of information</li> <li>➤ Seek and analyze patterns, trends, and connections in data, including describing relationships between variables (dependent and independent) and identifying inconsistencies</li> <li>➤ Construct, analyze, and interpret graphs (including interpolation and extrapolation), models, and/or diagrams</li> <li>➤ Use knowledge of scientific concepts to draw conclusions that are consistent with evidence</li> <li>➤ Analyze cause-and-effect relationships</li> </ul>	<ul style="list-style-type: none"> <li>➤ Evaluate their methods and experimental conditions, including identifying sources of error or uncertainty, confounding variables, and possible alternative explanations and conclusions</li> <li>➤ Describe specific ways to improve their investigation methods and the quality of the data</li> <li>➤ Evaluate the validity and limitations of a model or analogy in relation to the phenomenon modelled</li> <li>➤ Demonstrate an awareness of assumptions, question information given, and identify bias in their own work and secondary sources</li> <li>➤ Consider the changes in knowledge over time as tools and technologies have developed</li> <li>➤ Connect scientific explorations to careers in science</li> <li>➤ Exercise a healthy, informed skepticism and use scientific knowledge and findings to form their own investigations and to evaluate claims in secondary sources</li> <li>➤ Consider social, ethical, and environmental implications of the findings from their own and others' investigations</li> <li>➤ Critically analyze the validity of information in secondary sources and evaluate the approaches used to solve problems</li> </ul>

Applying and Innovating	Communicating
<ul style="list-style-type: none"> <li>➤ Contribute to care for self, others, community, and world through individual or collaborative approaches</li> <li>➤ Transfer and apply learning to new situations</li> <li>➤ Generate and introduce new or refined ideas when problem solving</li> <li>➤ Contribute to finding solutions to problems at a local and/or global level through inquiry</li> <li>➤ Consider the role of scientists in innovation</li> </ul> 	<ul style="list-style-type: none"> <li>➤ Formulate physical or mental theoretical models to describe a phenomenon</li> <li>➤ Communicate scientific ideas, claims, 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</li> <li>➤ Express and reflect on a variety of experiences, perspectives, and worldviews through place</li> </ul>

### Supplies Needed:

- **A 2 inch, 3 – ring binder with paper and dividers.** \*\*\* No other subject should be included in this binder  
 \*\*\* **How** you organize your binder is up to you (i.e. by chapter, assignment type, etc), but it **MUST** be organized in order to facilitate your success!! \*\*\*  
**I suggest the following: 5 dividers with the following sections:**

- |                    |                 |   |
|--------------------|-----------------|---|
| • Notes            | • Quizzes/tests | <b>Pencils, pens (blue and red), eraser</b> |
| • Homework/warmup  | • Scrapwork     | ➤ <i>scientific</i> calculator              |
| • Labs/assignments |                 | ➤ ruler                                     |
|                    |                 | ➤ Agenda/Thunder App                        |



**\*\*\*\*\*Please bring ALL these supplies to EVERY class. Students will NOT be allowed to return to their lockers to get supplies after the bell goes!\*\*\*\*\***

**Note - there will be no assigned textbook for this course, study materials and notes will be provided throughout the course.**

### Evaluation:

Each of the 4 units will be worth 25% of your class mark. Your percentages will be calculated based on quizzes, tests, and summative labs/projects. The labs and projects will work on developing skills as well as applying concepts learned in class.

To help students assess their own learning, they are encouraged to reflect on the following:

- **Where am I now with my learning?**
- **Where do I want to get to with my learning?**
- **What do I need to do to get better?**

**Assessment:-**Students will be assessed using three methods (the guidelines for these tools would be explained prior to starting the assignment)

	<b>ASSESSMENT TYPE</b>	<b>PURPOSE</b>	<b>TOOLS</b>
1. For learning	<b><u>FORMATIVE ASSESSMENT-</u></b> Students will receive descriptive feedback that has no letter grade or numerical value attached.	The purpose of this type of assessment is to help students identify strengths, weakness, and target areas that need work.	Written/oral feedback, Can do statements, Rubrics, Exit slips
2. As learning	<b><u>REFLECTIVE ASSESSMENT-</u></b> Students will receive feedback from their peers and teacher.	The purpose of this type of assessment is to help students reflect on their own practices as part of their learning.	Self/peer evaluations, think, pair & share, discussions, goal setting
3. Of Learning	<b><u>SUMMATIVE ASSESSMENT-</u></b> Students will receive feedback that has a letter grade/numerical value attached.	The purpose of this type of assessment is to determine a students' level of achievement in relation to learning standards.	Test/quizzes, Inquiry Projects, posters, Presentations, reports, Comic strips

<b>A</b> <b>86% +</b>	Has deep understanding of the content, exceeds expectations of learning standards, sees possibilities and is able to innovate.
<b>B</b> <b>73% - 85%</b>	Has deep understanding of the content, routinely meets acceptable learning standards, initiates, plans and can follow through to completion.
<b>C+</b> <b>67% - 72%</b>	Has a good working knowledge of the content, able to achieve most tasks using own judgment but requires assistance when problems occur.
<b>C</b> <b>60% - 66%</b>	Has a working knowledge of key aspects of the content, completes straightforward tasks to an acceptable standard, some assistance needed for complex tasks.
<b>C-</b> <b>50% - 59%</b>	Minimal understanding of the content, adherence to taught rules or framework, requires some assistance to complete most tasks.
<b>I or F</b> <b>Below 50%</b>	Not demonstrating minimal understanding of the content, cannot complete tasks even with assistance, possibly as a result of poor attendance.

**The final grade will be a combination of the class mark (worth 80% of the final mark), and a final assessment (worth 20%)**