Science 10 Course Outline

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Course Description:

Science 10 is a continuation of Science 9 and acts as a gateway to the 20-level sciences. This course is designed to address a variety of topics within the various scientific disciplines. In other words, we will explore the areas of Chemistry, Physics, and Biology & the Environment and apply the knowledge and skills we acquire to the world around us.

Evaluation & Assessment

Assessment will be formative and summative and ongoing, focusing on general and specific outcomes as specified in each unit. *Attendance in this course is invaluable.* Students who are absent from class cannot expect to do well. The final mark in this course is based on the student's achievement on quizzes, tests, assignments, and projects/ labs. There will be a final assessment in the course covering ALL science 10 curriculum.

**Weightings of assessments may vary depending on time and intensity spent on the material.

Assessment:

**PLEASE NOTE that the final exam is weighted at 30% of the student's final grade. **

Assessment	Weighting per Unit
Unit Exams	30%
Assessments & Quizzes & Labs	40%
Unit A (30%)	**Weighting**
Unit Exams	10%
Assessments & Quizzes & Labs	11%
Unit B (30%)	**Weighting**
Unit Exams	10%
Assessments & Quizzes & Labs	11%
Unit C (30%)	**Weighting**
Unit Exams	10%
Assessments & Quizzes & Labs	11%
Unit D (10%)	**Weighting**
Assessments & Quizzes & Labs	7%
Final Exam	30%
Total	100%

**Weightings of assessments may vary depending on time and intensity spent on the material.

Science 10 COURSE EXPECTATIONS:

- Come energized, alert, on time and ready to learn.
- If you have questions with any aspect of the course, please come ask me.
- Respect for everyone in this class is absolutely essential and will be strictly enforced. Have a sense of humor, but be sensitive to the feelings of others.
- Completing assigned work and checking that work to make sure it's done correctly is vital to success. Daily assigned work is expected to be completed in a timely fashion.
- Cell phones and devices are expected to be used with discretion and for class work only. Students are expected to display digital citizenship with the use of all technology.
- If you have healthy food and/or drinks (water, juice or coffee), feel free to enjoy. Understand you are responsible for cleanup.
- Everyone in here has the ability to learn. It all depends on the amount of effort you decide to apply. Best effort is all we ask. Remember, ***NOTHING WILL WORK … IF YOU DON'T.***
- **DUE TO THE NATURE OF THE COURSE, IT IS HIGHLY RECOMMENDED THAT STUDENTS BRING THEIR OWN DEVICES (NOT CELL PHONES) TO CLASS.**

REWRITE POLICY

1. It is expected that students are prepared and present for exams or assessments. Re-writes for exams will be dealt with on an individual basis and as follows:

a) A request to Rewrite form is to be completed, signed by the student, teacher and a parent/guardian.

b) It is expected that if a re-write is granted, the student will attend flex class to prove competency.

2. The rewrite mark is the mark that stands. Re-writes are expected to be completed in a timely fashion and out of course time.

3. If a student legitimately misses an exam (excused absence), the exam is written on the first day of return of the student or as decided upon in consultation with the teacher.

See Student handbook for more information

Course Breakdown:

Unit A: Energy and Matter in Chemical Change (Chemistry) (~30% of course time)

General Outcomes:

Students will:

1. Describe the basic particles that make up the underlying structure of matter, and investigate related technologies
2. Explain, using the periodic table, how elements combine to form compounds, and follow IUPAC guidelines for naming ionic compounds and simple molecular compounds
3. Identify and classify chemical changes, and write word and balanced chemical equations for significant chemical reactions, as applications of Lavoisier's law of conservation of mass

How has knowledge of the structure of matter led to other scientific advancements? How do elements combine? Can these combinations be classified and the products be predicted and quantified? Why do scientists classify chemical change, follow guidelines for nomenclature and represent chemical change with equations?

Unit B: Energy Flow in Technological Systems (Physics) (~30% of course time)

General Outcomes:

Students will:

1. Analyze and illustrate how technologies based on thermodynamic principles were developed before the laws of thermodynamics were formulated
2. Explain and apply concepts used in theoretical and practical measures of energy in mechanical systems
3. Apply the principles of energy conservation and thermodynamics to investigate, describe and predict efficiency of energy transformation in technological systems

Which came first, science or technology, and is it possible for technological development to take place without help from pure science? How did efforts to improve the efficiency of heat engines result in the formulation of the first and second laws of thermodynamics? How can the analysis of moving objects help in the understanding of changes in kinetic energy, force and work? Why are efficiency and sustainability important considerations in designing energy conversion technologies?

Unit C: Cycling of Matter in Living Systems (Biology) (~30% of course time)

General Outcomes:

Students will:

1. Explain the relationship between developments in imaging technology and the current understanding of the cell
2. Describe the function of cell organelles and structures in a cell, in terms of life processes, and use models to explain these processes and their applications
3. Analyze plants as an example of a multicellular organism with specialized structures at the cellular, tissue and system levels

How did the cell theory replace the concept of "spontaneous generation" and revolutionize the study of life sciences? How do single-celled organisms carry out life functions? How do plants use specialized cells and processes to accomplish the same functions as a single cell, but on a larger scale? How does imaging technology further our understanding of the structure and function of cells?

Unit D: Energy Flow in Global Systems (Weather & Climate) (~10% of course time)

General Outcomes:

Students will:

1. Describe how the relationships among input solar energy, output terrestrial energy and energy flow within the biosphere affect the lives of humans and other species
2. Analyze the relationships among net solar energy, global energy transfer processes—primarily radiation, convection and hydrologic cycle—and climate.
3. . Relate climate to the characteristics of the world's major biomes, and compare biomes in different regions of the world
4. Investigate and interpret the role of environmental factors on global energy transfer and climate change

Are there relationships between solar energy, global energy transfer processes, climate and biomes? What evidence suggests our climate may be changing more rapidly than living species can adapt? Is human activity causing climate change? How can we reduce our impact on the biosphere and on global climate, while still meeting human needs?