** Science 8**

**2012-2013**

**Teacher:** Mr. M Patterson

**Course Grade:** Grade 8

**Rationale:** Science is a form of knowledge that seeks to describe and explain the natural and physical world and its place in the universe. Occasionally, the fundamental theories, concepts, and structures of science change but, for the most part, the basic ideas of science – ideas such as the cellular basis of life, the laws of energy, the particle theory of matter – have proven stable.

**Aim:** In Grade 8, students will continue to develop their knowledge of systems in living things, focusing on the structure and function of cells in plants and animals and on the organization of cells into tissues, organs, and organ systems. They will learn about the properties of fluids by experimenting with and investigating the viscosity and density of different liquids and ways in which these properties affect objects placed in those liquids. Students will further explore the properties of visible light and begin to study other kinds of electromagnetic radiation as different wavelengths of light. In addition, students will come to understand the earth’s water systems, and develop an understanding of the important role that water systems play in global ecosystems.

**Skills:**

* *Knowledge and Understanding* – Knowledge of the content taught and the comprehension of its meaning and significance;
* *Thinking* – The use of critical and creative thinking skills and/or processes as follows:
  + *Planning Skills* – focusing, research, gathering information, organizing an inquiry;
  + *Processing Skills* – analyzing, evaluating, synthesizing;
  + *Critical/Creative Thinking Processes* – inquiry, problem solving, decision making, research.
* *Communication* – The conveying of meaning through various forms as follows:
  + *Oral* – story, role play, debate;
  + *Written* – reports, essays, letters;
  + *Visual* – model, map, chart, movement, video.
* *Application* – The use of knowledge and skills to make connections within and between various contexts.

**Course Overview:**

* Demonstrate an understanding of the basic structure and function of plant and animal cells, and describe the hierarchical organization of cells in plants and animals;
* Investigate the buoyant force and other properties of fluids, and design and construct pneumatic or hydraulic systems that solve a problem in a given situation;
* Demonstrate an understanding of the properties of visible light and the properties of other types of electromagnetic radiation, including infrared and ultraviolet rays, X-rays, microwaves, and radio waves;
* Design and make systems of structures and mechanisms, and investigate the efficiency of the mechanical devices within them;
* Demonstrate an understanding of how the earth’s water systems were formed, the similarities and differences among them, and how they influence the climate and weather of the region in which they are located.

**Major Themes:**

1. Unit I: Cells, Tissues, Organs, and Systems
2. Unit II: Fluids
3. Unit III: Optics
4. Unit IV: Mechanical Efficiency
5. Unit V: Water Systems

**Evaluations:**

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| --- | --- | --- | --- |
| **#** | **Assessment** | **Quantity** | **Grade** |
| 1 | Unit Tests | 5 tests based on the five major units. | 40% |
| 2 | Lab Reports | 10 lab reports for summative grade. | 40% |
| 3 | Homework | Questions from various labs. | 10% |
| 4 | Participation | Includes attendance and classroom work. | 10% |

\* Project due dates are tentative and may change further in the semester.

**Schedule:** A long-range plan has been posted on the wall in the classroom with a complete breakdown of every lesson throughout the school year. Located below is a breakdown of each theme throughout the months of the academic year.

*Sept*: Cells, Tissues, Organs, and Systems

*Oct*: Cells, Tissues, Organs, and Systems

*Nov*: Fluids

*Dec*: Fluids

*Jan*: Optics

*Feb*: Optics

*Mar*: Mechanical Efficiency

*Apr*: Mechanical Efficiency

*May*: Water Systems

*Jun*: Water Systems

**Student Attendance:**

Student attendance is vital to the success of this course. Should a student miss a class due to any circumstance, all possible efforts will be made to ensure the material covered will be available to that student.

**Class Rules and Regulations**

Every member of this class is expected to come prepared and on time. Students must bring their textbook, notebook, all other materials that have been specified, and homework to each and every class.

Classroom participation is mandatory and will be evaluated through a variety of methods including: activities, classroom discussion, and homework. Students who struggle with classroom participation may substitute work to compensate for their lack of participation. Furthermore, every opinion and discussion will be received respectfully in class, although some opinions may be challenged.

Homework will be assigned throughout the course to ensure your personal growth. Readings and homework are assigned to stimulate interest in the subject being taught.

A homework or project, which is not completed on the due date, will be accepted late, but may receive a penalty. Exceptional circumstances will be considered and a deadline extension may be granted with no penalty.

Be prepared to work hard and think hard. I look forward to learning with you.

I have read the syllabus for ***Grade 8 Science*** and am in agreement with the working methods, general philosophy, and topics that it proposes.

Student name Date

Student signature Parent signature