CARSON GRAHAM SECONDARY SCHOOL

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COURSE OUTLINE Science 8 Year 3- 2012-2013

Taught by: Mr. Blay, Mr. Bond, Mr. Chong, Ms. Johnston, Ms. Nelson, Ms Thornhill, Ms. Willis, Ms. Wood

Course Description:

Science 8 introduces students to the basics of science and the opportunity to apply and develop an understanding of the scientific method through experimentation, hands on activities and inquiry. Throughout the course students will be exploring the curriculum by examining various aspects of human ingenuity. These viewpoints will be explored to show connections between the topics of study and the 'real world'. The course begins with the Physics Unit with an emphasis on showing how man harnesses fluid dynamics in everyday applications. The relationship to fluids is expanded on in Earth Science Unit with a study of water systems as they relate to the environments. The Biology Unit examines the cell as the basic unit of life and how organisms are made up of systems working together. The biology unit will focus on the application of these topics and how they are related to community and service. Within each unit of study students will be exposed to a variety of world connections.

Course Aims and Objectives:

As an integral part of the International Baccalaureate Middle Years Program, the Aims and Objectives of the study of Science are to:

- Develop inquiring minds and curiosity about science and the natural world
- Acquire knowledge, conceptual understanding and skills to solve problems and make informed decisions in scientific and other contexts
- Develop skills of scientific inquiry to design and carry out scientific investigations and evaluate scientific evidence to draw conclusions
- Communicate scientific ideas, arguments and practical experiences accurately in a variety of ways
- Think analytically, critically and creatively to solve problems, judge arguments and make decisions in scientific and other contexts
- Appreciate the benefits and limitations of science and its application in technological developments
- Understand the international nature of science and the interdependence of science, technology and society, including the benefits, limitations and implications imposed by social, economic, political, environmental, cultural and ethical factors
- Demonstrate attitudes and develop values of honesty and respect for themselves, others, and their shared environment.

At the end of the course the student should be able to:

- Demonstrate safe lab procedures
- Perform experiments using the scientific method
- Demonstrate knowledge of living things
- Relate the main features of the properties of the cells to their functions
- Explain the relationship between cells, tissues, organs and organ systems.
- Explain the functioning of the human immune system
- Explain the concept of force
- Describe the kinetic molecular theory, with respect to solids, liqids and gases
- Explain the relationship between pressure, temperature, area and force in liquids
- Describe how water changes and shapes the land
- Explain the significance of salinity and temperature in the world's oceans

Course Content (Methodology):

LAB SAFETY UNIT

Unit Question: In what ways do your choices and actions affect your environment?

Area of Interaction: Health and Social
Learner Profile: Inquirers
Objectives:

- Collect and record data using appropriate measurements
- Draw conclusions from information and data
- Give examples of scientific applications and discuss their effect on society and the environment.
- Show respect for themselves and others, and deal responsibly with the environment

Content: Students will be shown the safety procedures of the lab and then they will investigate their home environment for labelled chemicals that are used in and around their home (inside and outside). As a final assessment task the students will complete a reflective piece of writing analyzing how actions and choices affect the environment in their home.

PHYSICS UNIT-Fluids and Dynamics

Unit Question: Can the scientific approach solve modern day concerns?

Area of Interaction: Human Ingenuity
Learner Profile: Inquirers
Objectives:

- Understand and use scientific language relevant to the unit
- Use strategies to solve problems
- Analyze and interpret data by identifying trends patterns and relationships

Content:

- Fluids and dynamics including states of matter, density, model of matter, kinetic molecular theory, forces, pressure, flow rate, surface tension, static and dynamic pressure, hydraulic and pneumatic systems, hydraulic multiplication, problems with pneumatic systems.

PHYSICS UNIT-Natural and Constructed Fluid Systems

Unit Question: How do fluid systems affect living things?
Area of Interaction: Environments
Learner Profile: Inquirers
Objectives:

- Interpreting graphical data
- Use strategies to solve problems
- Working safely and in collaboration with others

Content:

- Fluids under pressure, Constructed and Natural Fluid Systems.

EARTH SCIENCE UNIT-The Water Cycle and Water features

Unit Question: How do parts of a system interact?
Area of Interaction: Health and Social
Learner Profile: Knowledgeable
Objectives:

- Reflection
- Understand scientific concepts and ideas
- Interpret graphical and written information

Content:

- An analysis of water systems on Earth including study of the distribution of water, water cycle, salinity, composition and characteristics of ocean and fresh water, sources of fresh water, water and ice shaping landscape, drainage systems, and factors that affect productivity and species distribution in aquatic environments.

EARTH SCIENCE UNIT-Water and our World

Unit Question: Why do human activities affect water systems?
Area of Interaction: Environments
Learner Profile: Knowledgeable
Objectives:

- Give examples of scientific applications and discuss positive and negative effects on people, societies and the environment.
- Demonstrate honesty when handling data and information, acknowledging sources

Content:

- Freshwater Environment, Saltwater Environments, water quality and the effects on living things.

LIFE SCIENCE UNIT-Cells

Unit Question: **Is it alive?**
Area of Interaction: Community and Service
Learner Profile: Principled
Objectives:

- Using appropriate information and communication skills when writing lab reports
- Approach science investigation in a responsible manner
- Identify and analyze information

Content:

- Study characteristics of living things, including the main features and properties of cells and their functions.
- An examination of the relationship between cells, tissues, organs, and organ systems, identify the main components of the human organ systems (e.g., respiratory, circulatory, digestive, and excretory systems).
- An analysis of function of the immune system, and the roles of the primary, secondary, and tertiary defense systems. Further study of the relationship between health and the environment.

LIFE SCIENCE UNIT-Body

Unit Question: Can the body get too much of a good thing?
Area of Interaction: Health and Social
Learner Profile: Caring
Objectives:

- Show respect for themselves and others, and deal responsibly with the living and non-living environment
- Explain and apply scientific information to solve problems in familiar and unfamiliar situations

Content:

- An examination of the relationship between cells, tissues, organs, and organ systems, identify the main components of the human organ systems (e.g., respiratory, circulatory, digestive, and excretory systems).
- An analysis of function of the immune system, and the roles of the primary, secondary, and tertiary defense systems. Further study of the relationship between health and the environment.

Classroom Resources:

- BC Science 8 McGrawHill Ryerson (2007 edition) supplied by school

Assessment:

Classroom resources:

1. Some assignments will be assessed according to the following criteria from the IB-MYP rubrics for Science:

- Criterion A – One World
- Criterion B – Communication in Science
- Criterion C – Knowledge and Understanding of Science
- Criterion D – Scientific Inquiry
- Criterion E – Processing Data
- Criterion F – Attitudes in Science

2. Assessment is the systematic gathering of information about what students know, are able to do, and are working toward. Assessment strategies may include:

    - Teacher demonstrations
    - Homework assignments
    - Student labs and lab reports
    - Oral and group presentations
    - Tests and quizzes
    - Written assignments and projects
    - Other class work and activities

3. Marks distribution and grading

    - Labs, Quizzes, and Projects 40%
    - Unit/Chapter Tests 50 %
    - Assignments 10%

4. Term and Final Letter Grades:
   Each Term is worth 1/3 of 80% towards the final grade. The remaining 20% Will be the Final Exam.

Student Signature:_____

Parent Signature:_____