

**Course Outline – Grade 8 Science**

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*Room Number: 156*

***Brief Description of Course:***

Students will explore the main disciplines within the field of science including Biology, Chemistry and Physics. Students will engage in scientific investigations within each of these topics to test and prove a hypothesis. Students will be encouraged to ask questions and think critically about each of the subject areas throughout the semester

***Areas of Study***

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| **Content** | **Connections** |
| **Mix and Flow of Matter** |  |
| **Focusing Questions** | **General Outcomes** |
| ***1.*** What are fluids? | 1. Investigate and describe fluids used in technological devices and everyday materials |
| 2. What are they made of and how do we use them? | 2. Investigate and describe the composition of fluids, and interpret the behavior of materials in solution |
| 3. What properties of fluids are important to their use? | 3. Investigate and compare the properties of gases and liquids; and relate variations in their viscosity,  density, buoyancy and compressibility to the particle model of matter |
|  | 4. Identify, interpret and apply technologies based on properties of fluids |

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| **Content** | **Connections** |
| **Cells and Systems** |  |
| **Focusing Questions** | **General Outcomes** |
| ***1.*** How can we make sense of the vast diversity of living things? | 1. Investigate living things; and identify and apply scientific ideas used to interpret their general  structure, function and organization |
| ***2.*** What do living things have in common—from the smallest to the largest—and what variations do we find in the structure and function of living things? | 2. Investigate and describe the role of cells within living things |
|  | 3. Interpret the healthy function of human body systems, and illustrate ways the body reacts to internal  and external stimuli |
|  | 4. Describe areas of scientific investigation leading to new knowledge about body systems and to new  medical applications |

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| **Content** | **Connections** |
| **Light and Optical Systems** |  |
| **Focusing Questions** | **General Outcomes** |
| ***1.*** What do we know about the nature of light? | 1. Investigate the nature of light and vision; and describe the role of invention, explanation and inquiry  in developing our current knowledge |
| ***2.*** What technologies have been developed that use light, and what principles of light do they show? | 2. Investigate the transmission of light, and describe its behavior using a geometric ray model |
|  | 3. Investigate and explain the science of image formation and vision, and interpret related technologies |

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| **Content** | **Connections** |
| **Mechanical Systems** |  |
| **Focusing Questions** | **General Outcomes** |
| 1.How is energy transferred in mechanical devices? | 1. Illustrate the development of science and technology by describing, comparing and interpreting  mechanical devices that have been improved over time |
|  | 2. Analyze machines by describing the structures and functions of the overall system, the subsystems  and the component parts |
| 2.How do mechanical devices provide for controlled application of energy in ways that are efficient, effective and responsible? | 3. Investigate and describe the transmission of force and energy between parts of a mechanical system |
|  | 4. Analyze the social and environmental contexts of science and technology, as they apply to the  development of mechanical devices |

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| **Content** | **Connections** |
| **Freshwater and Saltwater Systems** | **Builds on ideas introduced in Grade 6**  **Topic C: Sky Science** |
| **Focusing Questions** | **General Outcomes** |
| 1. How do water, land and climate interact? | 1. Describe the distribution and characteristics of water in local and global environments, and identify the significance of water supply and quality to the needs of humans and other living things |
| 2.What are the characteristics of freshwater and saltwater systems, and how do they affect living things, including humans? | 2. Investigate and interpret linkages among landforms, water and climate |
|  | 3. Analyze factors affecting productivity and species distribution in marine and freshwater environments |
|  | 4. Analyze human impacts on aquatic systems; and identify the roles of science and technology in  addressing related questions, problems and issues |

**EVALUATION CRITERIA \_\_\_\_\_\_\_\_\_**

**Grade Outcome Represents Final Understanding of Course Material**

**Students Demonstrate Understanding of Curricular Outcomes**

**SUMMATIVE**

**FORMATIVE**

In-Class Activities, Practice, Homework, Small Assignments, Group Work, Check-Ups, etc.

Quizzes, Tests, Major Projects, Unit Exams, Final Exam

* **Formative** work is mandatory. All **formative** work must be completed in order for students to be successful on **summative** assessments. Failure to complete **formative** work will result in any combination of the following:
  + **mandatory after school or lunch extra-help tutorial**
  + **ineligibility to participate in summative assessment rewrites**
  + **on-campus reassignment**
* **Summative** tasks are mandatory. All summative tasks must be completed to accurately assess a

student’s understanding and abilities of course goals and outcomes. If a student fails to complete a summative assignment, he or she will be required to find time before or after school to complete the assigned tasks. Parent contact will be made should the student fall short of the agreed upon plan. If the assigned task continues to be outstanding on the third day, the student will be placed in on-campus reassignment until the work is complete:

* + **mandatory after school or lunch extra-help tutorial**
  + **on-campus reassignment**
  + **parent/teacher/student/administrator meeting**
  + **student performance contract**

**ASSESSMENT OF STUDENT PERFORMANCE\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

Quizzes and Assignments 25%

Show What You Know (Performance Assessments) 25%

Unit Tests 30%

Mid-Year Assessment 8%

Final Assessment 12%

**BASIC STUDENT RESOURCES\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

Science Focus 8 McGraw-Hill Ryerson Textbook (Provided)