***Rutland Secondary School SCIENCE 9***



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***DESCRIPTION OF COURSE:***

*Science 9 will help students develop their understanding of the four main disciplines of science – Biology, Chemistry, Physics and Earth Science. Through discussion, activities, labs and projects, the ultimate purpose of this course is to help students prepare for Grade 10 Science. The curriculum will be based upon the prescribed learning outcomes as described in the Ministry of Education’s Integrated Resource Package (IRP).*

The aims of the teaching and study of **Science** are to encourage and enable students to:

* Develop curiosity in Science
* Acquire scientific knowledge and understanding
* Develop communication skills to argue and explain scientific concepts
* Develop experimental and investigative skills whilst actively participating in scientific investigations
* Design scientific experiments and evaluate evidence to draw conclusions
* Develop critical, creative and inquiring minds
* Develop awareness of the possibilities and limitations of science
* Appreciate the relationship between science and technology and their role in society
* Develop awareness of the moral, ethical, social, economic, political, cultural and environmental implications of science and technology
* Observe safety rules and practices to ensure a safe working environment during scientific activities
* Engender an awareness of the need for and the value of effective collaboration during scientific activities.

**Course Objectives**

**1.    To provide opportunities for students to develop positive science attitudes.**

**2.    To provide opportunities for students to develop the skills and processes of science.**

**3.    To increase students’ scientific knowledge.**

**4.    To provide opportunities for students to develop creative, critical, and formal thinking.**

**Organization of your notebook should be as follows:**

a.    Processes of Science: Methods

b.    Processes of Science: Safety

c.    Chemistry

d.    Physics

e.    Earth Science

f.     Biology

**Expectations**

* Be HONEST  and RESPECT OTHERS & YOUR SURROUNDINGS
* PUT FORTH YOUR BEST EFFORT AT ALL TIMES
* ARRIVE ON TIME WITH ALL YOUR MATERIALS including: binder, agenda, paper, pens, pencils, and calculator (non-graphing).
* BE IN YOUR SEAT AND READY TO BEGIN WORK WHEN THE SECOND BELL RINGS
* BE AN ACTIVE PARTICIPANT IN ALL CLASS ACTIVITIES  and  ALWAYS RAISE YOUR HAND
* HAVE A POSITIVE ATTITUDE
* ALWAYS DO YOUR OWN WORK AND NOT COPY FROM OTHERS
* ASK FOR MY PERMISSION TO LEAVE THE CLASSROOM
* CELL PHONES MAY BE USED WHEN APPROPRIATE

**What materials are needed for each class?**

1. Section of a 3-ring binder – with a divider
2. Loose leaf Paper and/or notebooks)
3. Electronic device – smart phone, laptop or tablet
4. Agenda book to record homework, due dates and exam dates
5. Pens (various colours), pencils, ruler
6. Calculator (required during the physics unit)
7. Science 9 textbook

**Evaluation and Expectations**

Science 9 is a demanding course. Students should be prepared to do homework most days and keep up with assignments and external reading. They must bring all necessary classroom supplies and textbook to class every day, unless told otherwise by your teacher.

**Homework:** Homework will be marked daily for completion. Incomplete homework will affect the student’s work habits

**Be on time:** It is expected that at the second bell all students are in their seats and ready to start the opening activity with their books open. Doors will close at the second bell and late-comers must wait quietly on the bench until it is the appropriate time to let them in. This again will affect work habit marks.

**Deadlines:** It is expected that students hand in their completed assignments by the due date *at the beginning of class.* Late assignments collected up to the following class will be marked as late but will receive full assessment. Any assignments handed in after that point will be used to determine pass or fail for the term. If special extensions are needed, please ask well in advance of the due date. Rough draft deadlines are optional but if met will lead to better achievement on the final product.

**Absences:** All absences from the class must be excused by a phone call to the office on the day you are absent. The student is responsible for getting caught up with the material they missed. All material will be up on my website, if you do not see what you need please email me. If the student arrives to class following an absence without having caught up- this will affect their work habits marks.

**Checkpoints/Tests:** After each topic (usually a chapter) a checkpoint will be written. These quizzes will be marked and recorded. Students will have the opportunity to improve their mark for each learning outcome on the unit test.

**Assessment:** Students will be expected to take an active role in assessment and be responsible for their own learning. With the help of their teacher and their peers, they will:

* develop the ability to understand what they have already learned
* determine what they have yet to learn
* decide how they can best improve on their achievement.

All concepts, assignments and labs will be assessed using performance-based rubrics that have clear criteria.

**Extra help?**

Please arrange extra help that you may require as the academic year unfolds. I am available at a variety of times before, after and during (lunchtime) that I will be assisting students.

**Missed Class**

Attendance is extremely important. If you are aware of an upcoming absence **it is YOUR responsibility** to see Mr. Bodnar prior to your absence in order to get the work you will miss and to rearrange a test date if necessary. If you miss a class, your parent or guardian is required to contact the school explaining your absence. Check our website to see what you missed and what is required for homework, collect any missing papers from our classroom binder, and contact another student to confirm any details. Record the first and last name, email and phone number of two other students in the class that you will contact to provide missed assignments or test information in your agenda.

***METHODOLOGY and ASSESSMENT***

This course will incorporate multiple ways of learning including discussion, project-based work, cooperative learning, reflection, group and individual inquiry. Throughout the year, students will complete a variety of assessments, including *at least*

* a scientific investigation designed and carried out independently by the student
* an end-of-unit or end-of-term test or examination
* a piece of writing by the student of approximately 700–1,200 words in length

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| --- | --- |
| **Formative (monitor student progress)** | **Summative (evaluate achievement of learning outcomes)** |
| Homework | Lab Reports |
| Try This’s | Letters |
| Checkpoints | Tests |
| Work in-progress Feedback – on lab reports, letters, essays, presentations | Essays |
| Presentations |
| Providing feedbackPromoting positive attitudesDeepen understanding | Rigorous final objectives |
| Higher-order cognitive skills, real world contexts |

**Evaluation: Cumulative Grading**

This year our system of calculating marks is a continuous grading system throughout the year.

**Tests and Quizzes = 40 %**

**Projects and Assignments = 40 %**

**Cumulative Final Exam: 10%**

**Final Project: 10%**

I am really looking forward to teaching Grade 9 Science this year with all of you. Please do not hesitate to contact me at any time if you have any questions or would like some extra help in the course. Good luck! Mr. Bodnar

***Prescribed Learning Outcomes:*** ***By the end of this course, you should be able to…***

**Chapter 1: Processes of Science (Pg 2 to 30 and Pg 514 to 565)**

  A1 demonstrate safe procedures

  A2 perform experiments using the scientific method

  A3 represent and interpret information in graphic form

  A4 demonstrate scientific literacy

  A5 demonstrate ethical, responsible, cooperative behaviour

  A6 describe the relationship between scientific principles and technology

  A7 demonstrate competence in the use of technologies specific to investigative procedures and research

**Chapter 5 to 8: Physical Science: Atoms, Elements, and Compounds (Pg 148 to 269)**

  C1 use modern atomic theory to describe the structure and components of atoms and molecules

  C2 use the periodic table to compare the characteristics and atomic structure of elements

  C3 write and interpret chemical symbols of elements and formulae of ionic compounds

  C4 describe changes in the properties of matter

**Chapter 9 to 11: Physical Science: Characteristics of Electricity (Pg 270 to 363)**

  C5 explain the production, transfer, and interaction of static electrical charges in various materials

  C6 explain how electric current results from separation of charge and the movement of electrons

  C7 compare series and parallel circuits involving varying resistances, voltages, and currents

  C8 relate electrical energy to power consumption

**Chapter 12 to 15: Earth and Space Science: Space Exploration (Pg 364 to 513)**

  D1 explain how a variety of technologies have advanced understanding of the universe and solar system

  D2 describe the major components and characteristics of the universe and solar system

  D3 describe traditional perspectives of a range of Aboriginal peoples in BC on the relationship between the Earth and celestial bodies

  D4 explain astronomical phenomena with reference to the Earth/moon system

D5 analyse the implications of space travel

**Chapter 2 to 4: Life Science: Reproduction (Pg 32 to 147)**

  B1 explain the process of cell division

  B1 relate the processes of cell division and emerging reproductive technologies to embryonic development

  B3 compare sexual and asexual reproduction in terms of advantages and disadvantages