GRADE 9
SCIENCE 10F COURSE OUTLINE

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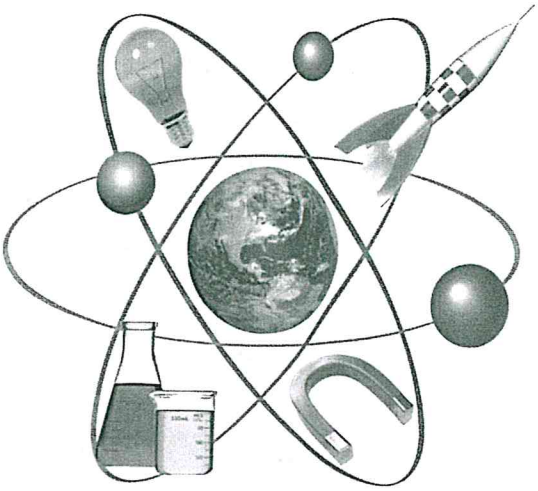
Physics Lab



Course Overview:

The grade 9 course is designed to give students a small taste of four disciplines of science; biology, chemistry, physics, and astronomy.

Topics Covered

Chemistry: Atoms & Elements

In this unit we will build on the particle theory of matter studied in previous grades. We will expand that knowledge to include what matter is made of, focusing on the atomic model and periodic table. You will become familiar with the many elements and compounds that make up our world, as well as the many chemical changes that occur every day.

Physics: The Nature of Electricity

This unit will involve learning about how electricity works, both electrostatic phenomena as well as in circuits. We will also examine the costs of electricity, as well as the safety and efficiency of electrical appliances. Finally we will investigate the sustainability of hydroelectric power, a major source of electricity in Manitoba.

Biology: Reproduction

Reproduction is an essential biological mechanism for the continuity and diversity of species. This unit will give students an opportunity to compare asexual and sexual methods of reproduction. You will learn how the human reproductive system functions and will be able to describe the major stages of human development from conception to birth. By the end of the unit, you will recognize that the cell contains genetic information and is responsible for the transmission of traits from one generation to the next.

Earth Science: Exploring the Universe

In this unit we will look to the skies! We will do some basic astronomy where we look at various celestial objects. We will also look at how our universe is organized and its various components. Finally, we will examine Canada's role in international space exploration.

ASSESSMENT

Your mark will be based on coursework and a final exam in June.

Coursework will include daily work or assignments, projects, lab experiments and activities, quizzes, and tests. Academic grades will be based on curricular learning outcomes and individual performance.

Mark Breakdown:

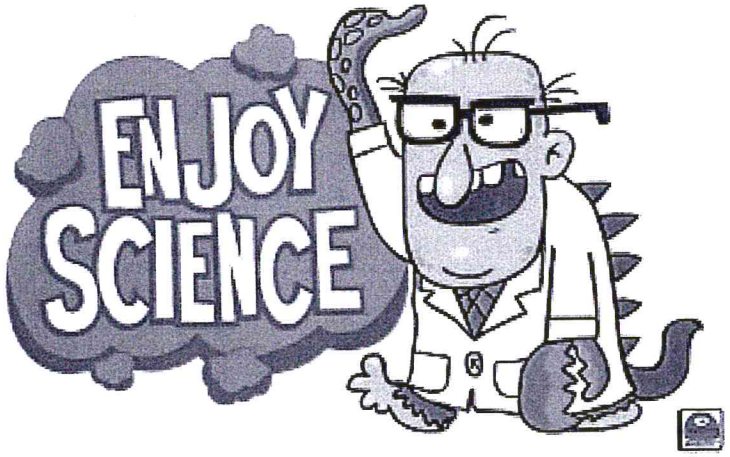
Coursework:	80% of grade
Exam:	20% of grade

Coursework assessment will fall into 3 categories:

1. Knowledge and Understanding	65%
2. Scientific Skills and Inquiry	25%
3. Science, Technology, Society, and the Environment	10%

All assignments must be completed by due dates to avoid penalty.

- Students are expected to come to class prepared.
- If absent, students are expected to see teacher before the following class. Missed handouts will be placed in a folder outside the classroom.
- Materials should be kept in binders in an organized fashion, as materials will be needed for projects/tests/exam.



Knowledge and Understanding:

- Student demonstrates knowledge of Chemistry including models of atomic structure, the organization of the Periodic table, and is able to differentiate between chemical and physical changes.
- Physics: Student can differentiate between different models of electricity, understand the interactions between electrically-charged materials at the atomic level, and solve electric circuit problems involving current, potential difference, resistance, and voltage.
- Astronomy: Student can compare and contrast historical perspectives on the relationship between the Earth and space, differentiate between the major components of the universe including planets, nebulae, stars, galaxies and black holes. Student can demonstrates knowledge of the Big Bang Theory and the supporting evidence for this theory.
- Biology: Student can illustrate the process of mitosis and demonstrate the importance of cell division to the processes of growth, aging, cancer, and reproduction. Student can describe the process of meiosis, compare and contrast sexual and asexual reproduction, outline the growth and development of an embryo. Student has an understanding of Mendellian genetics, including dominant and recessive genes, Punnet squares, sex-linked traits, and the role of mutations in changing genes.

Assessment will be based on tests/quizzes, assignments and research projects.

Scientific Skills and Inquiry

- Makes predictions/hypotheses about a scientific problem.
- Able to use equipment to make accurate measurements.
- Makes relevant observations, collects data and information, measures, and makes calculations based on measurements.
- Analyzes and interprets data to draw conclusions that explain the data.
- Identifies possible sources of error and suggests ways to make the experiment better.

Assessment will be based on lab experiments and activities.

Science, Technology, Society, and the Environment

- Student can describe scientific and technological developments, past and present, and understand their impact on society and the environment.
- Identify factors that affect health, and explain relationships between lifestyle choices and human health.

Assessment will be based on tests/quizzes, assignments, and research projects.

Assessment:

Creating the Grade:

- Grades will be based only on the demonstration of an individual student's knowledge and skills of the outcomes for each course:
    - Only items marked by the teacher will determine a student's grade
    - Grades are based on individual student achievement, not group achievement
- When determining a grade, the teacher will decide whether there is sufficient evidence of achievement. If not, the mark can be reported as an *"IN"* (incomplete). Teachers will determine with students and parents/guardians a plan for completion of work.

Establish, communicate, and apply consequences for late and missing work:

Students must understand that there will be consequences for not completing assignments that provide evidence of learning or for submitting those assignments late. If, after establishing and clearly communicating expectations regarding assignments, setting and communicating timelines for assignments, and supporting student learning using the strategies provided above, student work is still late or missing; teachers will apply the following strategies:

- confer with the student and, where appropriate, with the student's parent/guardians about the reasons for not completing the assignment, and consider the legitimacy of reasons;
- develop an agreement with the student to complete the work;
- require the student to complete missing work during lunch by attending the Assessment Completion Centre (ACC).

If, after completing the steps above, the student does not hand in the assessment by the agreed upon deadline, a zero may be used as a mark as the student has not demonstrated any knowledge or skill of the outcome.

The consequence for not completing work is to complete the work. Late marks will not be subtracted from an assignment as it is purely punitive and doesn't measure learning. The assignment will either be completed or given a zero.

The full policy is available on the SCI website under "Student Handbook".

Expectations

My expectations are high. Be prepared to work hard and to do your best. Homework and assigned reading is essential. Come to class with everything you need, including honesty and a positive attitude.

1. Be punctual
   - -on time/in desk
   - -prepared with materials/ready to work

2. Respect
   - yourself—try your best, use your time efficiently, have a positive attitude—you'll have more fun

   peers/teacher—use appropriate language, don't swear, call names, laugh at others
   - ---don't distract others from learning

   classroom—no food or drink
   - -do not write on desks/leave garbage on or under desk
   - -put your garbage in the garbage
   - -don't throw anything in the classroom

3. Use washroom before class

4. Take pride in your work
   - -hand it in on time or you will lose marks/hand it into the file on my desk
   - -assignments should be neat/not crumpled/easy to read and evaluate
   - -make sure your name and the date are written on every assignment

5. Take care of materials
   - -keep notes/handouts/work organized in your binder
   - -take care of assigned materials (books or photocopies)

6. Be responsible
   - -catch up after missing a day
   - -ask for help when you need it

7. Since our classroom is a lab there will be no food or drink (other than water) allowed. During labs it is vital that all lab rules, as outlined before the lab, are followed. Since this is a serious safety issue any failure to follow the safety rules will result in the student being asked to leave the room. To make up for the missed lab the student will be required to complete an alternate assignment, or receive a zero on the lab. Future participation in labs may also be in jeopardy.