



**Course:** Physics 11

**Course Description:**

This course aims to introduce students to the foundations of Physical Science and to develop a scientific attitude toward understanding and describing how the world behaves. In this introductory level course, the topics covered include the study of kinematics (mathematics of motion), vector diagrams, gravity, the fundamental forces (electrical, gravitational and nuclear), and nuclear and quantum physics.

**Big Ideas:**

- An object's **motion** can be predicted, analyzed, and described.
- **Forces** influence the motion of an object.
- **Energy** is found in different forms, is conserved, and has the ability to do the work.
- Mechanical **waves** transfer energy but not matter.

**Core Competencies:**

**Communication**

- Communicate about topics you know and understand well, using forms and strategies you have practiced. Gather the basic information you need and present it.
- Contribute during group activities, cooperate with others, and listen respectfully to their ideas. Work with others for a specific purpose.
- Listen and respond to others. You can consider your purpose when you are choosing a form and content. You can communicate clearly about topics you know and understand well.
- You can identify and apply roles and strategies to facilitate groupwork. You are an active listener and speaker.

**Thinking**

- Use your imagination to get new ideas on your own, or build on other's ideas or combine other people's ideas in new ways
- Assess your own efforts and experiences and identify new goals (give, receive and act on constructive feedback).
- Use observation and data to draw conclusions, make judgements, and ask new questions.
- You can use what you know and observe to identify problems and ask questions.
- You can consider more than one way to proceed and make choices based on your reasoning and what you are trying to do.
- You generate new ideas as you pursue your interests. You deliberately learn a lot about something by doing research, talking to others, or practicing so that you can generate new ideas.

**Personal & Social**

- Act toward meeting your own wants and needs and find joy and satisfaction, and work toward a goal or solving a problem.
- You can interact with others and your surroundings respectfully.
- You can identify your individual characteristics and explain what interests you.



## **Course Content**

Students are expected to know the following:

- vectors and scalar quantities
- horizontal uniform and accelerated motion
- projectile motion
- contact forces and the factors that affect magnitude and direction
- mass, force of gravity, and apparent weight
- Newton's laws of motion and free-body diagrams
- balanced and unbalanced forces in systems
- conservation of energy; principle of work and energy
- power and efficiency
- simple machines and mechanical advantages
- applications of simple machines by First Peoples
- electric circuits (DC), Ohm's law, and Kirchhoff's laws
- thermal equilibrium and specific heat capacity
- generation and propagation of waves
- properties and behaviours of waves
- characteristics of sound
- graphical methods in physics

Week 1 - 3: Kinematics

Week 4 - 6: Dynamics

Week 7 - 8: Energy

Week 9 - 10: Electric Circuits

Week 11 - 14: Waves and Sound

## **Resources:**

Fundamentals of Physics, Alternate Edition, Heath, MacNaughton, and Martindale, 1981 D.C. Heath Canada Ltd.

With respects to the First People's Principles of Learning, students may be alternatively assessed in ways that people can display knowledge and subject mastery. The alternative assessment can be storytelling, art or other expressions of self, knowing and learning.

- Learning involves patience and time.
- Learning is holistic, reflexive, reflective, experimental, and rationale (focused on connectedness, on reciprocal relationships, and a sense of place).

## **Assessment:**

Formative (30%)

Core Competencies

Bid Ideas

FPPL

Attendance, class participation



**Coquitlam College**  
Brookmere Secondary

Summative: (70%)

Test and Quizzes (of Curricular Competencies)

Homework, in-class assignments (labs and reports)

Midterm Exam

Final Exam

**Expectations:** Attendance in the classroom is mandatory. Students are expected to use their electronics responsibly, speak English, and participate in daily activities. Students will take an active role by discussing, doing work, working in partners or groups, and taking notes. Students are responsible for any missed assignments.