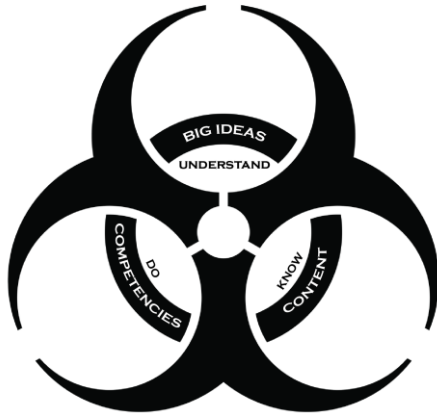


Course Outline*

Physics 11, Mr. R. Johnson. Email: rjohnson@sd44.ca
(Please feel free to email anytime)

In class learning will be supported with the use of Microsoft Teams. Students should check they have their notifications on and can receive messages via the Teams platform.



Objective

To develop the attitudes, skills, and knowledge necessary for scientific literacy by working and communicating scientifically, practicing scientific inquiry, thinking critically and creatively, and acting with personal and social responsibility.

Curricular Competencies

- Questioning and Predicting
- Planning and Conducting
- Processing and Analyzing data and information
- Communicating
- Applying and Innovating
- Evaluating

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 work.
- Mechanical **waves** transfer energy but not matter.

Course Content (Chapter references are for BC Science Physics 11)

Ch 1 Skills, Methods, and the Nature of Physics (plus additional in-class notes)

- **vector and scalar quantities:**
 - addition and subtraction, right-angle triangle trigonometry

Ch 2 Kinematics (plus additional in-class notes)

- **uniform and accelerated motion:** graphical and quantitative analysis
- **projectile motion:** 1D and 2D, including:
 - vertical launch, horizontal launch, angled launch

Ch 3 Forces and Ch 4 Newton's Laws of Motion (plus additional in-class notes).

- **contact forces:** for example, normal force, spring force, tension force, frictional force
- **Newton's laws of motion:**
 - First: the concept of mass as a measure of inertia, Second: net force from one or more forces, Third: actions/reactions happen at the same time in pairs
- **forces in systems:**
 - one-body and multi-body systems, inclined planes, angled forces, elevators

Ch 4.4 Momentum: *This is not a ministry requirement and may be deleted due to time constraints.

Ch 5 Energy.

- **power and efficiency:**
 - mechanical and electrical (e.g., light bulbs, simple machines, motors, steam engines, kettle)
 - numerical examples (e.g., resistance, power, and efficiency in circuits)
- **simple machines:** lever, ramp, wedge, pulley, screw, wheel and axle
- **thermal equilibrium:** as an application of law of conservation of energy (e.g., calorimeter)

Ch 6 Waves (plus additional in-class notes): Wave Properties Wave Phenomena.

- **propagation of waves:** transverse versus longitudinal, linear versus circular
- **properties and behaviours:**
 - properties: differences between the properties of a wave and the properties of the medium, periodic versus pulse
 - behaviours: reflection (open and fixed end), refraction, transmission, diffraction, interference, Doppler shift, standing waves, interference patterns, law of superposition
- **characteristics:** for example, pitch, volume, speed, Doppler effect, sonic boom
- **frequency:** for example, harmonic, fundamental/natural, beat frequency

Not in text: Circuits. (In-class notes)

- **electric circuits (DC), Ohm's law, and Kirchoff's laws:** including terminal voltage versus electromotive force (EMF) (e.g., safety, power distribution, fuses/breakers, switches, overload, short circuits, alternators)

Throughout the course:

- **graphical methods:**
 - plotting of linear relationships given a physical model (e.g., uniform motion, resistance)
 - calculation of the slope of a line of best fit, including significant figures and appropriate units
 - interpolation and extrapolation data from a constructed graph (e.g., position, instantaneous velocity)
 - calculations and interpretations of area under the curve on a constructed graph (e.g., displacement, work)

Assessment and Evaluation

Comprised of various summative and formative assessments. Marks will be: 70% tests, 30% homework/labs. (Subject to change.) Marks are cumulative. A final exam worth 20% of the mark may be given at the end of the course. You will be responsible to keep up with class work. There will be 25 questions to do (minimum) before every chapter test. Average students can expect an average test mark by doing 25 questions before every test. We will generally have a test after each chapter. Unsuccessful students have been known to do their chapter questions only the night before the chapter tests. Successful students do chapter questions a little at a time as we work our way through the chapter. Very successful students do the same, but do more than the minimum 25. Along with the homework and tests, labs may be assigned, and quizzes given throughout the course. Any missed assessment due to an excused absence must be made up upon return to school. Please come in and speak with me or send an email. Bring a note from a parent or guardian.

Expectations:

1. Attend all classes on time with appropriate materials (text, calculator, paper, pen, pencil, eraser)
2. Keep an organized and complete notebook.
3. Review each day the work completed in class.
4. Complete all labs/assignments on time. A maximum of 50% may be given for late assignments/labs.
5. Attempt a minimum of 25 problems from each chapter and submit them prior to the chapter test. Problems can be from the textbook, the internet, or any source you find suitable. You must show the solutions to these problems (not just the answers).
6. Thoroughly prepare for tests.
7. Seek immediate help from the teacher upon the development of problems.
8. Help provide a cooperative and safe classroom climate.
9. Provide a note with the reason behind an absence, immediately upon returning back to school. Note: Patterns of absences may result in a grade of 0 for missed work.
10. Notify the teacher if an extended absence is anticipated.
11. Be responsible for finding out work missed and making it up immediately after an excused absence.

* Subject to change

