Course name

Grade 12 physics

Course summary and expectations

* Continues the study of concepts that will form the foundation for you to study physics in the future.
* You have already studied many concepts in physics. For example, in grade nine science you studied electricity. In grade ten science you studied the motion of vehicles and passengers, specifically how and why they move. In grade 11 physics you studied kinematics and dynamics in more detail, plus you investigated waves, sound, light, etc.
* In this course, you will be referring to concepts that you have studied in the past as necessary prior knowledge for the new concepts you will learn in this course. Grade 12 physics will expand upon, and more fully complete, the investigation of some ideas already considered, as well as introduce many new topics. Many topics studied later in the course require that you understand and can apply knowledge from earlier in the course.

Module listing

Module 1: Kinematics

* Equations for constant acceleration, solve linear problems, and relative motion.

Module 2: Dynamics

* Vectors, equilibrium, horizontal surface, incline planes, friction, etc.

Module 3: Projectiles

* Free fall, horizontal and vertical components, problem solving.

Module 4: Circular motion

* Equations for constant speed and acceleration for movement in circle.

Module 5: Work and energy

* Equation and graphically, conservation of energy (kinetic, potential, and spring).

Module 6: Momentum

* Impulse, conservation of momentum in one and two dimensions.

Module 7: Exploration of space

* Kepler’s laws and universal gravitation.

Module 8: Low Earth orbit

* Apparent weight, orbital speed, period, etc.

Module 9: Electric and magnetic fields

* Coulomb’s law, 1 & 2 dimensions, charges, parallel plates & potential difference.

Module 10: Electric circuits

* Ohm’s law, resistivity, parallel and series, power, etc.

Module 11: Electromagnet induction

* Lenz’s law, induced voltage, transformers, etc.

Module 12: Medical physics

* Nuclear model of atom, half life, radiation, ionizing radiation, etc.

Evaluation/grading summary

Assignments: 48 module assignments weighted at 40%.

Tests: 9 module tests weighted at 40%.

Labs: 3 module labs weighted at 10%.

Exam: Summative final exam weighted at 10%.