Sir Wilfrid Laurier Secondary School
Grade 12 College Physics – SPH4C
1.0 credits

Course Description

This course develops students' understanding of the basic concepts of physics. Students will explore these concepts with respect to motion; mechanical, electrical, electromagnetic, energy transformation, hydraulic, and pneumatic systems; and the operation of commonly used tools and machines. They will develop their scientific investigation skills as they test laws of physics and solve both assigned problems and those emerging from their investigations. Students will also consider the impact of technological applications of physics on society and the environment.

Strands and Subgroups

Motion and Its Applications • analyse selected technologies that are used to move objects or track their motion, and evaluate their impact on society and the environment, including their contribution to scientific knowledge. • investigate, in qualitative and quantitative terms, the linear uniform and non-uniform motion of objects, and solve related problems. • demonstrate an understanding of different kinds of motion and the relationships between speed, acceleration, displacement, and distance.	**Mechanical Systems** • analyse common mechanical systems that use friction and applied forces, and evaluate their effectiveness in meeting social or environmental challenges. • investigate forces, torque, work, coefficients of friction, simple machines, and mechanical advantage, and interpret related data. • demonstrate an understanding of concepts related to forces and mechanical advantage in relation to mechanical systems.
Energy Transformations • evaluate the impact on society and the environment of energy-transformation technologies, and propose ways to improve the sustainability of one such technology. • investigate energy transformations and the law of conservation of energy, and solve related problems. • demonstrate an understanding of diverse forms of energy, energy transformations, and efficiency.	**Hydraulic and Pneumatic** • analyse the development of technological applications related to hydraulic and pneumatic systems, and assess some of the social and environmental effects of these systems; • investigate fluid statics, fluid dynamics, and simple hydraulic and pneumatic systems; • demonstrate an understanding of the scientific principles related to fluid statics, fluid dynamics, and hydraulic and pneumatic systems.
Electricity and Magnetism • analyse the development of selected electrical and electromagnetic technologies, and evaluate their impact on society and the environment. • investigate real and simulated mixed direct current circuits and the nature of magnetism and electromagnetism, and analyse related data. • demonstrate an understanding of the basic principles of electricity and magnetism.	

Evaluation

The final report card mark will be determined as follows:

Term Work – 70%
Unit Tests
Quizzes
Lab Reports-Assignments

Summative – 30%
Exam and/or Performance Task(s)

Attendance & Missed Evaluations

Regular attendance is an integral part of learning. Students are responsible for completing all work missed due to absence. Students must complete the missed evaluation immediately upon return to school, as determined by the subject teacher. Any missed term evaluation (e.g., test, quiz or lab) will result in a mark of zero, unless the absence is excused.

End-of-course evaluations, i.e. the summative activity and final examination are time-sensitive. Attendance is mandatory for these evaluations. Any absence will result in a mark of zero, unless validated by a doctor's certificate.

If a student participates in **academic fraud** (e.g. plagiarism in assignments/lab reports), he / she is deemed not to have met the expectations associated with that particular evaluation.

A mark of zero will be given for late assignments/labs/projects that exceed the limits.

General Course Information

Students must bring the following materials to each class:

- textbook
- separate Physics binder (to hold notes, tests, quizzes, handouts)
- pencil case (to hold pencils, erasers, ruler)
- scientific calculator
- lined paper

Course Text*:* **Physics 12 College Preparation**, Thomson-Nelson College($110.00).
The student will be issued a text, and will be responsible for the cost of replacement, or repair, if the text is lost or damaged.
