Canterbury High School

Ottawa-Carleton District School Board
Science Department
Semester I – 2010 /11 – Course Outline

Course Title: Grade 11 Physics, University Prep. **Grade Level: 11**
Course Code: SPH3U **Credit Value: 1.0**
Prerequisite: SNC2D

Teachers: Mr. Wade, Mr. Moore

Course Overview: 110 hours

This course develops students' understanding of the basic concepts of physics. Students will explore kinematics, with an emphasis on linear motion; different kinds of forces; energy transformations; the properties of mechanical waves and sound; and electricity and magnetism. They will enhance their scientific investigation skills as they test laws of physics. In addition, they will analyse the interrelationships between physics and technology, and consider the impact of technological applications of physics on society and the environment.

Strands:
Course Expectations

Kinematics

By the end of this course, students will:

- analyse technologies that apply concepts related to kinematics, and assess the technologies' social and environmental impact;
- investigate, in qualitative and quantitative terms, uniform and non-uniform linear motion, and solve related problems;
- demonstrate an understanding of uniform and non-uniform linear motion, in one and two dimensions.

Forces

By the end of this course, students will:

- analyse and propose improvements to technologies that apply concepts related to dynamics and Newton's laws, and assess the technologies' social and environmental impact;
- investigate, in qualitative and quantitative terms, net force, acceleration, and mass, and solve related problems;
- demonstrate an understanding of the relationship between changes in velocity and unbalanced forces in one dimension.

Energy and Society

By the end of this course, students will:

- analyse technologies that apply principles of and concepts related to energy transformations, and assess the technologies' social and environmental impact;
- investigate energy transformations and the law of conservation of energy, and solve related problems;
- demonstrate an understanding of work, efficiency, power, gravitational potential energy, kinetic energy, nuclear energy, and thermal energy and its transfer (heat).

Waves and Sound

By the end of this course, students will:

- analyse how mechanical waves and sound affect technology, structures, society, and the environment, and assess ways of reducing their negative effects;
- investigate, in qualitative and quantitative terms, the properties of mechanical waves and sound, and solve related problems;
- demonstrate an understanding of the properties of mechanical waves and sound and of the principles underlying their production, transmission, interaction, and reception.

Electricity and Magnetism

By the end of this course, students will:

- analyse the social, economic, and environmental impact of electrical energy production and technologies related to electromagnetism, and propose ways to improve the sustainability of electrical energy production;
- investigate, in qualitative and quantitative terms, magnetic fields and electric circuits, and solve related problems;
- demonstrate an understanding of the properties of magnetic fields, the principles of current and electron flow, and the operation of selected technologies that use these properties and principles to produce and transmit electrical energy.

Units of Study

See above section for the units of study. Each strand covered will be a unit of study.

Teaching Strategies

teacher demonstrations	small group work
laboratory experiments	student-teacher conferencing
multimedia	written assignments
investigative research	hands-on activities

Assessment and Evaluation Strategies

written tests	rubrics
lab reports	group presentations
observation (formal and informal)	discussion
homework checks and quizzes	research projects
summative assignment/evaluation	final exam

Evaluation Summary

Knowledge and Understanding	25 %
Thinking, Inquiry & Problem Solving	25 %
Communication	10 %
Making Connections	10%
Summative Evaluation	10 %
Final Examination	20 %

References

http://www.edu.gov.on.ca/eng/curriculum/secondary/2009science11_12.pdfor

Student Resources / Texts

Physics 11, Nelson Publishing. Replacement Cost – $89.95 +tax +S/H