Course Physics 553-504

Level Cycle 2 year 3, (secondary 5)

Course Description and Objectives

The Physics program is an extension of the programs in Secondary Cycles one and Two. It is intended to consolidate and enrich students' scientific training and is a prerequisite for several pre-university or technical programs at the college level. Its content focuses on one subject with compulsory concepts organized around four general concepts: geometric optics, kinematics, dynamics, and transformation of energy.

The Physics program is designed to develop the following three competencies:

-Seeks answers or solutions to problems involving physics

-Makes the most of his/her knowledge of physics

-Communicates ideas relating to questions involving physics, using the languages associated with science and technology.

Broad Areas of Learning

The broad areas of learning are described on the course outline supplement.

Cross-Curricular Competencies

The cross-curricular competencies are described on the course outline supplement.

Course Topics

Geometric Optics: Waves, light waves, Snell's laws: reflection and refraction, images: types, characteristics

Kinematics: Reference Systems, uniform rectilinear motion, uniformly accelerated, rectilinear motion, motion of projectiles

Dynamics: Different types of forces: gravitational, normal, friction, tension, centripetal. Free-body diagram, resultant of several forces, equilibrium, and Newton's laws.

Transformation of energy: Relationships among power, work and time; mechanical energy; elastic potential energy, Hooke's law

RESOURCES

Textbook: Quantum Physics, Third Year of Secondary Cycle Two.
Bensaada & Ouellette, 2010.
Physics Fundamentals of Optics and Mechanics, Elliott & Farrel,
D.C. heath Canada Ltd

Web-sites: https://www.youtube.com/channel/UCYqACVYl0c0BhlVN6X2HIMg
http://www.physicsclassroom.com
http://www.asc-csa.gc.ca/eng/
http://howstuffworks.com
http://www.physics.org/toplistdetail.asp?id=26
http://www.physics.org/toplistdetail.asp?id=10

Assessment

General information and attendance requirements for all courses are described on the course outline supplement. The table below describes the specific competencies and the relative weighting for this subject.

Competency	Description	Weighting
Seeks answers or solutions to scientific problems.	Focuses on the methodology used to solve scientific problems. The student becomes familiar with concepts and strategies using a hands-on approach. Students must ask questions and solve problems through observation and laboratory experimentation.	60%
Makes the most of his/her knowledge of science	Focuses on the student's ability to conceptualize and apply what they have learned in science. It involves examining the very nature of scientific knowledge, its evolution and its numerous societal and environmental consequences.	40%

Note

Goggles are mandatory for some laboratory work.