Cardinal Leger Secondary School
Science Department

Course Name: Physics , Grade 12
Course Code: SPH4C
Level: College Preparation
Ministry Guidelines: Science, 2008

Course Overview:

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.
Prerequisite: Science, Grade 10, Academic or Applied

Curriculum Strands and Overall Expectations:

Scientific Investigation Skills and Career Exploration

- demonstrate scientific investigation skills (related to both inquiry and research) in the four areas of skills (initiating and planning, performing and recording, analysing and interpreting, and communicating)
- identify and describe careers related to the fields of science under study, and describe the contributions of scientists, including Canadians, to those fields.

Unit 1 - 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

Unit 2- 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.

Unit 3- 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.

Unit 4- Energy Transformation

- 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.

Unit 5- Hydraulic and pneumatic systems

- 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, dynamics,and hydraulic and pneumatic systems.

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Evaluation:

Term Work	**70%**
Knowledge and Understanding	25%
Thinking	35%
Communication	15%
Application	25%
Final Assessment	**30%**
Formal Examination	20%
Culminating Task	10%
Course Total	**100%**

Learning Skills and Work Habits

E= Excellent G=Good S=Satisfactory N= Needs Improvement

Responsibility	• Fulfills responsibility and commitments. • Takes responsibility for and manages own behavior.
Organization	• Devises and follows a plan and process for completing tasks. • Establishes priorities and manages time
Independent Work	• Independently monitors, assesses, and revises plans to complete tasks and meet goals. • Uses class time to complete tasks.
Collaboration	• Accepts various roles and an equitable share of work in a group. • Builds healthy peer-to-peer relationships.
Initiative	• Looks for and acts on new ideas and opportunities. • Approaches new tasks with a positive attitude.
Self-Regulation	• Sets own goals and monitors progress towards achieving them. • Seeks clarification or assistance when needed.

Missed/Late/Incomplete Assignments

It is the student's responsibility to address missed, late, or incomplete assignments. Students are expected to complete assignments and to adhere to assignment deadlines as follows:

Due Date	10% Penalty Zone	Closure Date
A due date is set by the teacher.	1 school day late – 3% 2 school days late – 6% 3 school days late – 10% Maximum penalty of 10%	Once the closure date has passed, work is considered incomplete and a **mark of zero** applies.

Parent Signature: _____ Student Signature: _____