

# ST. JOSEPH CATHOLIC SECONDARY SCHOOL

## COURSE OUTLINE



### Grade 12 University Physics: SPH 4U

#### Course Description:

This course enables students to deepen their understanding of physics concepts and theories. Students will continue their exploration of energy transformations and the forces that affect motion, and will investigate electrical, gravitational, and magnetic fields and electromagnetic radiation. Students will also explore the wave nature of light, quantum mechanics, and special relativity. They will further develop their scientific investigation skills, learning, for example, how to analyse, qualitatively and quantitatively, data related to a variety of physics concepts and principles. Students will also consider the impact of technological applications of physics on society and the environment.

#### Catholic Graduate Expectations:

Through the study of physics, students have the opportunity to “discover the laws which govern the universe, as well as their interrelationship.” They (scientists and therefore students) can “stand in wonderment and humility before the created and feel drawn to the love of the Author of all things” (address of Pope John Paul II to the Jubilee of Scientists May 25, 2000). The study of any science helps students to learn to be reflective, critical, and creative thinkers, as well as discerning believers, who can apply their knowledge to the world around them. They can then make appropriate decisions in light of Gospel values and Church teachings. Through the study of the techniques of science, particularly experimentation, students learn to be collaborative contributors to an interdependent team, respecting the rights, responsibilities, and contributions of others. Overall, students become aware of the spiritual, as well as the physical dimension of the world and of the need to respect the environment and to use resources wisely in order to fulfil their roles as stewards of God’s creation. “By increasing his knowledge of the universe ... man has a veiled perception ... of the presence of God....” (address of Pope John Paul II to the Jubilee of Scientists May 25, 2000).

**Course Prerequisite: SPH3U**

#### Units of Study

Unit 1	<i>Dynamics</i>
Unit 2	<i>Energy and Momentum</i>
Unit 3	<i>Gravitational, Electric and Magnetic Fields</i>
Unit 4	<i>The Wave Nature of Light</i>
Unit 5	<i>Revolutions in Modern Physics: Quantum Mechanics and Special Relativity</i>

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**Evaluation**

70%	30%
Knowledge/Understanding	Culminating Task (10%) and Exam (20%)
Thinking/Inquiry	
Communication	
Application	

**Course Resources Required:**

- **Calculator**

For a detailed course description of this course, please visit  
<https://www.edu.gov.on.ca/eng/curriculum/secondary/subjects.htm>