



FOREST HILL CI

SPH4U GRADE 12 UNIVERSITY PHYSICS COURSE OUTLINE

PREREQUISITE: GRADE 11 PHYSICS (SPH3U)

Resources

Textbook: The grade 12 Physics textbook is “Physics 12” by Nelson. The replacement cost of the textbook is **\$80**.

Tools for Success/Learning Skills

Responsibility	<ul style="list-style-type: none"> Understand and follow this course outline and the policies outlined in the Student Agenda. Arrive on time Come prepared to work with all necessary tools
Organization	<ul style="list-style-type: none"> Keep an organized notebook Keep an organized calendar of important dates
Independent Work	<ul style="list-style-type: none"> Stay on task Avoid disrupting the learning of others. Do homework regularly and complete all assigned work Review/study the work often
Collaboration	<ul style="list-style-type: none"> Be a responsible group member. Help your peers succeed by sharing ideas, tutoring and studying together Prepare for labs as a team with a focus on each other’s safety
Initiative	<ul style="list-style-type: none"> Be active participants in the classroom Ask questions when unsure of the material & seek extra help when needed. Ensure that you get any missed handouts and catch up on missed work
Self-Regulation	<ul style="list-style-type: none"> Set goals and make good choices regarding academic success. Respect yourself, classmates and teachers.

Academic Honesty: Cheating and Plagiarism

Students are expected to submit only their own original work on evaluations done in class or out of class. Plagiarism is the passing off the ideas or writings of another as one’s own. Cases of academic dishonesty (cheating and/or plagiarism) will be dealt with on a case-by-case basis, but each case will involve investigation, communication with the student and his/her parent/guardian, and a mark of zero for plagiarized work. Whether the student has an opportunity to demonstrate his/her learning in another assignment will be at the discretion of the teacher and/or Principal.

Assessment and Evaluation

The primary purpose of assessment and evaluation is to improve student learning. Assessment can take on one of three forms (described below). In accordance with *Growing Success*, a student’s most recent and consistent work will be taken into account.

Diagnostic	Assessment FOR learning determines how learning should proceed at the beginning of a unit.
Formative	Assessment AS learning provides feedback for a student to determine where improvement is needed. An example of this is homework.
Summative	Assessment OF learning evaluates what a student has learned at the conclusion of a unit/course. Examples include tests, quizzes, assignments and labs

Evaluation of student achievement will be defined by four broad **Achievement Categories** (described below). The category weighting for semester work is shown.

Semester Work		70%
Knowledge & Understanding	Specific content acquired in the course and the comprehension of its meaning and significance.	25%
Thinking & Investigation	The use of critical and creative thinking skills and inquiry, research, and problem-solving skills.	25%
Communication	The conveying of meaning through various forms.	25%
Application	The use of knowledge and skills to make connections within and between various contexts.	25%
Final Exam		30%

Academic Integrity: Missed Classes, Evaluations and Assignments

It is the **responsibility of the student** to notify **all** appropriate parties (teachers, office, coach, etc) **in advance** where appropriate and in compliance with school policies and procedures as per student agenda if the student will be absent. This allows for both the student and teacher to make alternative arrangements regarding missed assignments or evaluations. In the event that advance notice is not possible, students should seek out the teacher in the morning (before school) with the appropriate documentation (e.g. Doctor’s note, photocopied note from the office) in order to ensure that they have the opportunity to make-up the missed evaluation/assignment and course work.

Overall Course Expectations

A. SCIENTIFIC INVESTIGATION SKILLS AND CAREER EXPLORATION

Throughout this course, students will:

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

B. Dynamics

- analyze technological devices that apply the principles of the dynamics of motion, and assess the technologies' social and environmental impact
- investigate, in qualitative and quantitative terms, forces involved in uniform circular motion and motion in a plane, and solve related problems
- demonstrate an understanding of the forces involved in uniform circular motion and motion in a plane

C. Energy and Momentum

- analyze and propose ways to improve, technologies or procedures that apply principles related to energy and momentum, and assess the social and environmental impact of these technologies or procedures
- investigate, in qualitative and quantitative terms, through laboratory inquiry or computer simulation, the relationship between the laws of conservation of energy and conservation of momentum, and solve related problems
- demonstrate an understanding of work, energy, momentum, and the laws of conservation of energy and conservation of momentum, in one and two dimensions

D. Gravitational, Electrical, and Magnetic Fields

- analyze the operation of technologies that use gravitational, electric, or magnetic fields, and assess the technologies' social and environmental impact
- investigate, in qualitative and quantitative terms, gravitational, electric, and magnetic fields, and solve related problems
- demonstrate an understanding of the concepts, properties, principles, and laws related to gravitational, electric, and magnetic fields and their interactions with matter

E. The Wave Nature of Light

- analyze technologies that use the wave nature of lights, and assess their impact on society and the environment
- investigate, in qualitative and quantitative terms, the properties of waves and light, and solve related problems
- demonstrate an understanding of the properties of waves and light in relation to diffraction, refraction, interference, and polarization.

F. Revolutions in Modern Physics: Quantum Mechanics and Special Relativity

- Analyze with reference to quantum mechanics and relativity, how the introduction of new conceptual models and theories can influence and/or change scientific thought and lead to the development of new technologies
- Investigate special relativity and quantum mechanics, and solve related problems
- Demonstrate an understanding of the evidence that supports the basic concepts of quantum mechanics and Einstein's theory of special relativity