



Grade 12 University Physics



Course Outline

Course Code: SPH 4U
Prerequisite: SPH 3U

Textbook:
Instructor: Antony

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. Analyze 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.

UNITS OF STUDY

Unit Topic	Key Topics	Sample Issues
Dynamics	Forces, Linear/Circular motion, friction, inertial and non-inertial frame of reference	Principle of satellites
Energy and Momentum	Work, energy, momentum, collisions, energy conservation, Hooke's law	Hydroelectricity, sports helmets
Gravitational, electric, and magnetic fields	Electric charges, electric fields, electromagnetism	Radiation in magnetic and electric fields
The wave nature of light	Properties of waves and light, diffraction, refraction, interference and polarization	Fibre optical technology
Quantum Mechanics and special relativity	Postulates of Einstein's theory, Particle model of light	Impact of Einstein's theory

COURSE EVALUATION

Evaluations will reflect the following assessment breakdown

Knowledge/Understanding Emphasizes the ability to recall factual information, recognize fundamental concepts and the foundational skills of the subject/discipline	25 %
Thinking / Inquiry Emphasizes the use of critical and creative thinking skills and inquiry, research and problem-solving skills and/or processes. It is an opportunity to demonstrate learning through the use of initiating and planning skills and strategies.	35 %
Communication Emphasizes clear, precise and effective expression and organization of ideas and information through the use of oral, written and visual language to communicate the student's understanding of information and ideas	15 %
Application Emphasizes the use of knowledge and skills to make connections within and between various contexts. Students will propose courses of action to deal with problems related to science, technology, society and the environment.	25 %

FINAL EVALUATION

The final mark will be determined according to this breakdown

TERM WORK 70 %	Learning will be assessed through work completed during the term, including assignments, quizzes, unit tests, labs and practical work.
EXAM 30 %	Learning will be assessed at the end of the course with an exam lasting 2.5 hours.

Our Lady of Mount Carmel S. S.
Science Department
Expectations, Assessment & Evaluation Policies

Behaviour and Performance Expectations

- Students should respect their peers and teachers as well as the classroom environment.
- Students should be punctual, prepared for class (with textbook, notebook, pens, pencils, etc) and in full uniform.
- There is no eating or drinking in the science laboratory.
- Students are expected to work cooperatively on activities, assignments and lab reports. If individual reports are required, “carbon copies” are not accepted. All reports must be referenced in APA format. Plagiarism will not be tolerated and will result in a mark of zero.

Lab Behaviour Expectations

- Students must be well versed in science safety
- Students must be prepared to do the laboratory activity (i.e. students have read the lab and completed any pre-lab assignment)
- Working in the lab is a privilege. This privilege can be lost and will result in lost marks. Students should follow instructions carefully, follow all safety rules and keep their work area clean.

Attendance

Regular attendance, keeping up to date with regular classroom and homework assignments is an essential component of success in this course. ***Students are responsible for the work they miss while absent including homework, assignments and laboratory results.***

Enter the names and phone numbers of two classmates to call when you are absent.

Friend: _____ Phone Number _____

Friend: _____ Phone Number _____

Test, Quiz and Assignment Policy

Students must adhere to the Our Lady of Mount Carmel “Achieve your Best” policy for test/quiz dates and assignment deadlines.

Progress Reports

A progress report will be issued to each student periodically during the semester. Parents/guardians are asked to sign the report and are invited to comment. If you have any questions or concerns please contact the classroom teacher at any time during the semester at extension 68019.

I _____ (student’s name) have read the Science Department Policies on Expectations and Assessment and Evaluation and have shared the information with my parents/guardians.

Student’s signature

Parent/Guardian’s Signature