Physics 12

Course Outline

Course Overview

Physics 12 explores the world around us and is designed to build students' knowledge of physics concepts. This course builds on the material learned in physics 11 and focuses on the big ideas related to 2 dimensional motion, dynamics and energy as well as an in-depth look at electricity and magnetism. This course uses vector analysis to analyze 2D motion problems. Students are given a choice of projects to help enrich their learning in each unit. These projects vary in difficulty and depth but all relate the skills learned in the unit to the real world. Physics 12 provides a solid foundation for students carrying on to university science or careers in BC Hydro.

Course Content and Suggested Timelines

The suggested timeline is for students aiming to complete the course in one semester (5 months). Double the timeframes for two semesters (10 months).

Unit 1- Math and Kinematics (Suggested time: 2 weeks)

In this unit you will learn about vectors and how to analyze quantities in both one and two dimensions. You will use the skills you learned in physics 11 kinematics to solve practical navigation problems and two dimensional projectile motion.

Unit 2 – Dynamics and Torque (Suggested time: 2 weeks)

In this unit you will study the applications of Newton's laws of motion in two dimensions and in a variety of situations to solve problems. Again you will build on the fundamentals that you learned in physics 11.

Unit 3 – Energy and Momentum (Suggested time: 2 weeks)

In this unit you will be continuing your study of energy and momentum and expanding your knowledge to two dimensions. Again you will build on the fundamentals that you learned in physics 11.

Unit 4 – Circular Motion (Suggested time: 2 weeks)

This unit is new material for your study of physics. You will use forces and vectors to analyze objects in uniform circular motion and solve problems of various situations including planetary motion and more terrestrial examples.

Unit 5 – Electrostatics (Suggested time: 2 weeks)
This unit introduces you to coulomb's law and electric fields. You will also learn about electrical energy and voltage.

Unit 6 – Electrical Circuits (Suggested time: 2 weeks)
In this unit you will learn about circuits and how electricity flows through them. You will learn about parallel and series circuits and use Kirchoff's laws to solve more challenging situations. Finally you will learn about power transmission and terminal voltage.

Unit 7 – Electromagnetism (Suggested time: 2 weeks)
Electromagnetism is an exciting combination of electricity and magnetism. You will learn about fields and forces and how they interact together. The practical applications of this unit are numerous.

Unit 8 – Inducing Current (Suggested time: 2 weeks)
This unit covers the heart of electricity and magnetism. You will learn about motors, generators, transformers and inducing current. You will get to study the laws that govern these machines as well.

Course Materials
A textbook is not required for this course. The learning materials consist of online materials from a variety of sources that may be printed out if the student prefers to study from a paper format. If a student wishes a physics reference book, any general high school or first year Physics textbook will meet this purpose. Please be aware that a textbook will have more in-depth information and may sometimes lack a small component of the curriculum.

The prescribed learning outcomes for this course are available at: physics 12 irp

Assessment Information

Quizzes	10% of course
Learning Guides	10% of course
Projects	10% of course
Unit Tests	20% of course (2.5% each)
Midterm Exam	20% of course
Final Exam	30% of course

Quizzes: (10%)

At the end of each section you will be given a brief quiz on the topic learned. You may use your notes and other resources to answer them. You will have two attempts on each quiz, so if you don't achieve at least 75% on the first try please review the material again before making your second attempt. If you need to use your second attempt, the highest score you achieve will be recorded. Please review the feedback while the quiz is still open as it will help you to improve on your second attempt. Your quiz mark will be given to you immediately and your gradebook will be updated.

Learning Guides: (10%)

For each unit there is one learning guide assignment that needs to be completed. These learning guides are displayed on the course website and can be accessed directly from there. You may use your notes and other resources to help you with these assignments. These learning guides have an answer key on the back page of the learning guide. Please use this answer key as you go through the learning guide. If you have trouble reaching the answer given in the key then please ask for help. DO NOT move on. The idea of the learning guide is to learn the material and practice new skills. It is a lot better to practice these skills correctly. Learning guides are marked on a rubric based on completeness and properly showing work. When you have completed your assignment, you will need to submit it to be marked. Once the assignments have been marked you can view the feedback in your gradebook.

Projects: (10%)

Students are given a choice of projects to help enrich their learning in each unit. These projects vary in difficulty and depth but all relate the skills learned in the unit and to the real world. Labs and projects are an important component to any science course. Due to the nature of being an online course, some labs are simulations and require the use of JAVA to be run. The purpose of these labs is not to show your knowledge of how to do a lab write up, but to help you with the concepts taught in this course. When you have completed your project, you will need to submit it to be marked. Once the project has been marked you can view the feedback in your gradebook.

Unit Tests: (20%)

There are eight unit tests in this course. All units have a comprehensive test at the end of the unit. Please note that all unit tests are "CLOSED BOOK" tests, which means that you are not permitted to use your notes or any other reference materials to help answer the questions. ***You are permitted to use your formula sheet and your calculator***. Your unit tests must be **supervised by a parent or trusted adult.**

Midterm: (20%)

There will be a midterm exam for physics 12 covering units 1-4. The exam is CLOSED BOOK, which means that you are not permitted to use your notes or any other reference materials to help answer the questions. ***You are permitted to use your formula sheet and your calculator***. Your Midterm exam is to be ***INVIGILATED by an EBUS approved invigilator***. Please **contact me AT LEAST 1 week prior** to when you want to write your midterm exam.

Final Exam: (30%)

There will be a final exam for physics 12 covering units 5-8. The exam is CLOSED BOOK, which means that you are not permitted to use your notes or any other reference materials to help answer the questions***. You are permitted to use your formula sheet and your calculator.*** Your Final exam is to be ***INVIGILATED by an EBUS approved invigilator.*** Please **contact me AT LEAST 1 week prior** to when you want to write your final exam.

Supervised and Invigilated Exams:

Supervised exams are exams that can be taken at home with parent or other adult supervision. The supervised exams for physics 12 are all unit tests.

Invigilated exams are exams that need to be invigilated by EBUS approved invigilators. The invigilated exams for physics 12 are the midterm and the final exams.

When students are not meeting the learning outcomes/ falling behind

When students fall behind the expected pace or plan, they will be contacted via email or phone and if there is no improvement or response, parents will also be contacted. If deemed necessary, contact with the student's home school may also occur to help determine a solution.

Students are expected to let the course teacher know when they are struggling with course content. In response, the course teacher will provide appropriate help or strategies to support learning. The course teacher will also provide feedback on course work to support learning and help students improve. Parents will be made aware if their child is actively working but struggling to meet the learning outcomes of the course.

Students falling behind in a manner where it does not appear that they will complete the course within a year will be sent reminder emails. Without a response or renewed efforts in the course, the student may be assigned an F or withdrawn. Should they begin actively working in the course, the student may be given an alternate completion date.

Expectations

- Adhere to the EBUS Academic Integrity Policy
- Contact your teacher when help is needed
- Review feedback from assignments and tests, where applicable
- Work to complete the course in a timely manner
- Communicate respectively
- Review weekly progress reports

Reporting to Parents:

There are 4 term report cards that can be downloaded from the student dashboard. A notice will go out when these report cards are available.

Every week that EBUS is in Session the teacher will send out a progress report showing the student's progress.

Contacting Your Teacher:

Your teacher will be available Monday to Friday during regular school hours. If you are having trouble with any concepts, you can phone 1-800-567-1236 ext. 2238 or email ssedgwick@sd91.bc.ca.