SPH4UI Grade 12 University Physics
Course Outline and Information Package – Feb 2020

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Course Description

This course is very different from the grade 11 physics course. While the grade 11 course relied on the conceptual understanding of key ideas and on demos and labs, this course is more heavily geared towards theory and creative problem solving. Strong math (algebra and trigonometry) skills will be required in this course.

Course Outline

Each unit within this course covers key big ideas and essential skills that ***must*** be understood to be successful in this course. The big ideas and essential skills of each unit are outlined below.

Big Ideas / Essential Skills

#	Essential Learnings
1	Scientific Investigation and Analysis - 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) - Understand, evaluate and make predictions based on analysis of real life data
2	*Dynamics: Motion – Analysis of 2 Dimensional Motion (linear and circular)* - Use equations of motion to evaluate uniformly accelerated motion in one and two dimensions - Evaluate and understand uniform circular motion
3	*Dynamics: Forces – Analysis of forces causing motion* - Demonstrate an understating of and application of Newton's Laws in two dimensions
4	*Energy and Momentum* - Demonstrate an understanding of work as a transfer of energy from one object to another - Use conservation laws of momentum and energy to solve problems that cannot be solve with dynamics alone.
5	*Fields* - Develop concepts to show that electromagnetic fields share many of the same properties as gravitational fields - Develop and use mathematical relationships to compute and compare field strengths
6	*Wave Nature of Light* - Demonstrate an understanding of the wave (and particle) properties of light
7	*Modern Physics* - Relativity – develop an understanding of time being relative to a person's frame of reference - Quantum Mechanics – develop an understanding that all physical properties can be broken down into finite components

Evaluation and Assessment: Students will be provided with numerous and varied opportunities to demonstrate the full extent of their achievement. Students will be assessed in a variety of ways and will receive ongoing formative assessment based on class work, conservations and observations. Summative assessment will include assignments, labs, quizzes and tests as well as a mandatory final exam. The final grade will be determined as follows:

Term Work **70%** **Final Evaluation** **30%**

Major Assessment Policy (labs, assignments, tests, exam)

Within each unit there are major assessments that ***must*** be completed to earn a credit in this course. Major assessments assess the student's learning of key components of the course's big ideas. As such, each of the major assessment **MUST** be completed.

1. All major assessments must be completed and submitted by the due date.
2. For all major assessments not completed by the due date, some or all of the following will occur:
    a) the student will speak with the teacher to negotiate an extension
    b) communication will take place between the teacher and the student's parent(s)/guardian(s)
3. Major assessments not completed by the negotiated due date will receive an incomplete (I) and will be reflected in the learning skills.
4. The essential learning required for major assessments will still need to be demonstrated and the teacher will use his/her professional judgment to determine an appropriate final course mark.

Tests and Quizzes

All students will write tests on the date given. If you know ahead of time that you will be absent for a test, you must make arrangements beforehand to write the test at another time. If you are unable to make arrangements beforehand (for an acceptable reason), then you will write the test on the day you return (the next day of your class, at the latest).

Labs, Projects, Assignments

You are responsible for completing all work in this course (even if you are absent the day it is assigned). When you miss a class, check with a class member or your teacher to see what you have missed and complete any outstanding work.

If you miss a lab, please check with your teacher as soon as possible to determine the best course of action to complete the lab. (lab report formats to be provided).

Cheating and Plagiarism Policy

Plagiarism, including theft and misrepresentation of original work, cheating, theft of evaluation instruments, use of unauthorized aids, and false representation of identity, will result in appropriate consequences. The teacher will inform administration and meet with the student to determine the nature and extent of the incident, the student's understandings of the situation and intent. Please refer to the student planner for more information.

Course Materials

There is no text book for this course and as such taking good notes is essential. Handouts will be available in class and where appropriate these handouts will be made available through our classroom website. If you are absent from a class ensure you check with classmates what you missed and also check the website for any available materials. For key homework questions, answers will be posted on-line.

Supplies

Each day you should bring your notebook (3-ring binder, with lined paper), scientific calculator, pencils, pens, eraser and ruler. Graph paper will also be required for many classes.

Classroom Policies

The physics classroom is designed as a lab and as such there are some special considerations. Due to safety concerns and a desire to create the best learning environment, the following items are not permitted within the physics lab area: food, beverages, coats, jackets. The classroom must be left as you find it at the beginning of class (equipment returned to its proper place, no garbage on the desks, paper in recycling bin).

Study Habits

Physics is a problem solving course and as such you cannot solely rely on your memory to be successful in this course. *Watching someone else solve problems is not a good way to learn how to solve problems.* You must actively practice solving a variety of problems independently in order to be successful in this course.

Extra Help

Extra help is available during class, at lunch or after school as required. Please make appointments if possible. *Seek out extra help when required, do not wait until the day before a test or evaluation.*

Signatures

Please sign below indicating you have read and understand the requirements for successful completion of this course. Please cut off and return this portion.

Student	Parent/Guardian
Date	Date

Contact Information

If desired, please indicate the email address(es) you wish me to use for information about the course and your son/daughter's progress.

Email Address	Email Address