Physics 12: Course Outline

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General:

* Physics 12 is a second introductory course to Physics. You should already have completed Physics 11. Many of the Physics 11 topics you know and love will be revisited (see the syllabus on the next page) but at a greater level of depth and understanding. As well, many topics will be extended, and some topics will be brand new.

Physics is a fascinating subject.

* We will deal with many abstract concepts, and will approach problems using the beautiful language of mathematics. If you hope to succeed in this course you will need a **minimum of Principles of Mathematics 11, but really you should be taking, or have taken Principles of Mathematics 12 (A little calculus wouldn’t hurt either).**
* Beyond that **you will need to work**. I expect you to keep up with the material, as we will move quickly in order to complete the curriculum. I expect you to **ask questions as they arise**. Please do not wait until the end of a unit to decide that you don’t understand anything, by then it will be too late.
* Tests will follow each major unit. Quizzes will be mixed throughout. A missed test or quiz results in a score of zero.

Rules:

* Obviously all of the general school rules apply here as well, but here are my favourites.

1. The classroom is a safe space. You will be respectful to everyone in the room at all times.
2. No hateful language. I will not tolerate homophobic, racist, sexist or any other discriminatory language in my class.
3. No electronic gadgets, except, of course, for calculators. Turn your phone off, take your earbuds out/headphones off.
4. No sleeping in class.
5. Be on time, one minute late is still late. When the second bell rings, you should be in your seat with all of your materials, a twinkle in your eye and a smile on your face\*.

Homework and Extra Help:

* Most of the work in this course will be in the form of worksheets. The answers/solutions for these sheets will be posted in the classroom. You are expected to

a) Attempt the problems.

b) Check your work

c) Attempt you corrections

d) Ask me for help from if you still have difficulty.

* I truly want my students to come in for help; however I expect that they are prepared. This means you must bring all of attempted solutions and corrections so that I can try to determine what the source of the misunderstanding is.
* I will not simply tell you how to do a question, as that will do little or nothing to help you learn the concepts.

Syllabus:

**This is only a list of topics. The exact order in which these are covered may be changed.**

A: Newtonian Mechanics

1. *Mathematics: A look into the mathematics you will need to succeed in physics. The focus will be on graphing, proportionality, units and dimension, 2 dimensional vectors and, hate to say it, significant figures.* ***(Chapter 1)***
2. *Vector Kinematics: The motion of objects in 2-D assuming constant acceleration. Includes vector addition and subtraction.* ***(Chapter 2, 3)***
3. *Vector Dynamics: Newton’s laws of motion in 2-D.*
4. *Newton’s First Law: Includes torque and rotational equilibrium.*
5. *Newton’s Second Law: Includes the study of uniform circular motion, and the*

*impulse-momentum theorem.*

1. *Newton’s Third Law: Systems of objects as well as the law of conservation of momentum.*

***(Chapter 4, 5, 7, 9)***

1. *Work and Mechanical Energy: An in depth look at the concepts of kinetic and potential energies, as well as the concept of conservation of energy.* ***(Chapter 6)***
2. *Gravitation: A deeper look at gravity. Included will be Newton’s law of universal gravitation, a new look at gravitational potential energy and (time permitting) a brief look at Einstein’s theories of gravitation.*

***(Chapter 4, 5)***

*B: Electricity and Magnetism*

1. *Electrostatics: A new fundamental quantity CHARGE.* ***(Chapter 18, 19)***
2. *Circuits: A beginning look at DC circuitry.* ***(Chapter 20)***
3. *Electromagnetism: The incredible and oft’ bizarre links between electricity and magnetism.*

***(Chapter 21, 22)***

Mark Distribution (approximate):

**Term 1 Term 2 Term 3 School Mark**

# Labs, Projects, Homework 0% 0% 0%

Tests and Quizzes 100% 70% 100%

Topics 1-6 Exam 30% **75%**

**Weight 20% 20% 35%**

**In Class Final 25%**

Marks will be cumulative.

Please note that \_\_\_\_\_\_\_% of your mark is based on Term 3 and the Final Exam!