Course: Physics 11

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Course Website: https://sites.google.com/site/mrblaysclassroom/
https://sites.google.com/view/holtteaching/home

Course Description:

Physics 11 is an introductory physics course, which includes one-dimensional classical mechanics, wave phenomena and relativity. The goal of this course is to introduce students to fundamental physics knowledge and teach them basic science skills that are useful beyond the realm of physics. These include critical thinking skills, problem solving skills, and the ability to collect and interpret data. This will be done through a combination of hands-on learning, physical experiments, "thought experiments" and problem solving sessions. Students will be expected to work both independently and in groups.

The following inquiry questions will guide the students' learning:

- **How has humanity built knowledge of the world around us over time?**
- **How does the framework and language of science support investigation of our physical world?**
- **How can Newton's laws be used to explain changes in motion?**
- **What further areas can we explore by assuming energy is conserved?**
- **Why does light behave as both a particle and a wave?**

Summer Learning Beliefs:

Summer Learning provides an engaging learning environment where all students can challenge themselves academically and fulfill their learning goals. To ensure this, students will:

- abide by the student Code of Conduct
- adhere to the Academic Honesty policy
- adhere to the *Summer Learning* Student Engagement policy
- respect themselves and others
- attend every class and be punctual
- inquire, think, and participate to the best of their ability
- access technology in class when instructed to do so and for learning purposes only
- challenge themselves and have fun learning

All Summer Learning policies can be accessed at:
https://www.sd44.ca/school/summer/policies/Pages/default.

Learning Plan:

	Evidence of Learning (Assessment)	Learning Plan
80%	• in class quizzes • tests • lab reports • small projects	*What the students will know:* • There are limits to our ability to measure phenomena. • How to write numbers to communicate confidence in a measurement. • How to describe movement with constant acceleration using kinematics. • How Newton's laws describe changes in motion. • How to calculate the momentum transfer of a collision. • The different forms of energy. • How to do calculations where energy is conserved. • How to relate work, power, and efficiency to energy. • How to calculate and describe the behaviour of light. *What the students will do:* • Question and predict. • Collect and interpret experimental data. • Evaluate scientific data and knowledge. • Solve physics problems in familiar and unfamiliar situations. • Communicate an understanding of physics in a variety of formats. *What the students will understand:* • Newton's laws are central to our understanding of mechanics. • Forces influence the motion of an object. • Energy is a fundamental property that is conserved. • Momentum is physical property that is conserved in a closed system. • Waves behave in particular ways that makes them different than particles. • Light behaves as both a particle and a wave. • Humanity has built knowledge through various approaches. • A logical approach to construction of knowledge has led humanity to deep understandings about the nature of reality.

		• The study of physics allows us to make and test predictions.
20%	School Based Summative Assessment	A problem based test including: • material from all units • conceptual questions • calculation questions • routine questions taught in class • questions synthesizing multiple units • non-routine questions that require critical thinking extend material learned in class
100%		

Grade Boundaries:

An "**A**" student will/can….
Produce high-quality, frequently innovative work. Communicate scientific ideas to connect and synthesize concepts and skills learned over time. Consistently demonstrate sophisticated critical and creative thinking. Collect, present, and (correctly) transform experimental data. Interpret, analyze and critique scientific findings and experimental data. Frequently transfers knowledge and skills and use concepts to solve non-routine problems.

A "**B**" student will /can …
Sometimes produces high-quality, innovative work. Communicate scientific ideas to compare and critique concepts and skills learned over time. Consistently demonstrate a degree of critical and creative thinking. Collect and present scientific data in an appropriate manner. Assess, interpret, and revise scientific findings and experimental data. Transfer knowledge and skills and use concepts to consistently solve routine problems correctly with few mistakes.

A "**C**" student will /can …
Produce work of an acceptable quality. Communicate a basic understanding of scientific concepts and operate superficially within a scientific contextual framework. Display an emergent level of application when it comes to critical thinking skills. Collect scientific data in an appropriate manner. Be inflexible in the use of knowledge and skills, requiring support even in familiar classroom situations. Make attempts to use knowledge, skills and scientific concepts to solve routine problems, with occasional mistakes.

Celebration of Learning:

The 2018 Celebration of Learning is shaped around "Ways of Knowing".

The ways that physicists understand reality is through a combination of many different ways of knowing. This class we will explore how physicists use a combination of **reason, language, and sense perception** to develop an understanding of the world.

Our class will collaborate to create one Pecha Kucha presentation. A Pecha Kucha presentation uses imagery and spoken word. Each student is responsible for preparing 3 slides of images and 30 seconds of spoken content about the ways in which we know.

Resources:

Please make sure you bring the following to class:

Resources
• One Three Ring Binder
• Lined paper
• Graph paper
• Pencil/Pens/Ruler

• Scientific Calculator
  ○ I recommend any one of the "two line" calculators where you can see the equations that you type
  ○ Graphing Calculators are not required – but if you have one, that's great!