Physics SPH4U Course Syllabus  
Vincent Massey Secondary School

Course Objectives

In today's rapidly changing world, it is essential to develop critical thinking skills required for scientific inquiry. 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. They will further develop their scientific investigation skills, learning, for example, how to analyse, 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, with an emphasis on environmental sustainability.

Course Content

<table>
<thead>
<tr>
<th>Unit</th>
<th>Major Concepts</th>
<th>Lab/Assignment</th>
<th>Quiz</th>
<th>Test</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Introduction: Scientific Skills Review</td>
<td>Review of: Units and Prefixes, Scientific Notation, Significant Digits</td>
<td>N/A</td>
<td>N/A</td>
<td>Diagnostic</td>
<td>2</td>
</tr>
<tr>
<td>Dynamics</td>
<td>Speed, Velocity, and Acceleration in 1D and 2D, Projectile Motion, Common Forces, Free Body Diagrams, Newton's Laws of Motion, Inertial and Non-Inertial Frames of Reference, Uniform Circular Motion</td>
<td>Static Equilibrium, Roller Coaster Physics, Analyzing Uniform Circular Motion</td>
<td>Dynamics and Projectile Motion</td>
<td>Diagnostic, Dynamics and Forces Unit Test</td>
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*Note: The above is subject to change; some topics/labs/assignments may be added or removed depending upon time constraints.
**Resources**  

**Expectations**

*To be successful in this course you must put forth effort. Practicing assigned problems is essential for success!*

Participation and a positive attitude in class are expected and encouraged. Students must be prepared for class on a daily basis with a 3-ring binder, pencils, eraser, ruler, and scientific calculator. Students need to be on time and attend class regularly. If absent, it is the student’s responsibility to catch up. Students are encouraged to have a reliable friend to inquire about lessons, homework, etc. If laboratory work is missed, alternate arrangements will be made to perform the experiment.

Assignments will consist of scientific inquiry problems, lab reports, written reports, and research activities. All assignments must include a title, student name(s), and date and be computer-generated unless otherwise indicated. Copying and plagiarism will result in a mark of zero (0) for that particular assignment or test, no exceptions.

Please see me for extra help during class or during my office hours if you are experiencing difficulty. Remember: I am here to assist you! Solutions to problems, lessons, and important dates can be found on my website at [msrousseausclassroom.wordpress.com](http://msrousseausclassroom.wordpress.com).

**Late Assignments**

Unless special arrangements have been made with the teacher, all late assignments including lab reports, research papers, projects, etc. will be assessed a penalty of 10% per day to a maximum of 50% (5 days) after which time the assignment will no longer be accepted for marking.

**Tests**

Major tests and quizzes will be announced at least 7 days in advance. In the event that a student is absent for a test or quiz, a mark of zero (0) will be assigned unless special arrangements have been made with the teacher before the test. If a test is missed due to illness, the student will write the test the first day back to school.

**Evaluation**

The final grade for this course will be determined as follows:

a) **70%** will be based on assessment and evaluation conducted throughout the course. Student achievement is weighted in the five units below per Ontario curriculum expectations based on assessments (tests, quizzes, lab investigations, reports, projects, in-class assignments, presentations).

   - Unit 1 - Dynamics
   - Unit 2 - Energy and Momentum
   - Unit 3 - Gravitational, Electric, Magnetic Fields
   - Unit 4 - The Wave Nature of Light
   - Unit 5 - Modern Physics

b) **30%** of the grade will be based on a summative exam administered towards the completion of the course. The exam will be weighted according to the units listed above.

c) Students will also be evaluated on their Learning Skills (independent work, teamwork, organization, homework, work habits, and initiative) based on the following scale:

   E = Excellent  
   G = Good  
   S = Satisfactory  
   N = Needs Improvement

Lastly...

Discovering the world of physics is an adventure that is both fascinating and challenging. I hope that you find your experience in this course to be an enjoyable one! Ms. Rousseau