

**Guelph Collegiate Vocational Institute  
Upper Grand District School Board**

Course Outline



**Department: Science**

**Course Title: Grade 12 Physics**

**Course Type: University Preparation**

**Grade: 12**

**Course Code: SPH 4U**

**Credit Value: 1.0**

**Department Head: Joanne Ryan/Carrie Warren**

**Teachers: Brad MacNeill**

**Teacher email: (not mandatory)**

**Date of Development: September 2015**

**Curriculum Document:** (copy subject-specific document from secondary curriculum website <http://www.edu.gov.on.ca/eng/curriculum/secondary/>)

[http://www.edu.gov.on.ca/eng/curriculum/secondary/2009science11\\_12.pdf](http://www.edu.gov.on.ca/eng/curriculum/secondary/2009science11_12.pdf)

**Course Prerequisites/Corequisites:**

Physics Grade 11 - SPH 3U

Mathematics Grade 11 - MCR 3U is strongly recommended

**Course Description:**

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.

**Term Work (70% of the final mark)**

**Unit Title, Big Ideas, and Unit Culminating Tasks**

Dynamics - Lab reports, Quizzes, Unit Test, Proposal

Energy and Momentum - Lab reports, Quizzes, Unit Test

Gravitational, Electric, and Magnetic Fields - Lab reports, Quizzes, Unit Test

The Wave Nature Of Light - Lab reports, Quizzes, Unit Test

Quantum Mechanics and Special Relativity - Lab reports, Quizzes, Assignment, Unit Test

**Culminating Tasks/Exams (30% or the final mark)**

**Course Culminating Task/Exams and Description**

Final Exam – 30%

Based on the range of students' learning needs, a selection from the strategies listed below may be utilized. Refer to [list of teaching and assessment strategies](#).

**Teaching Strategies:**

Direct Instruction (explicit teaching, mastery lecture, drill and practice, demonstrations)  
Indirect Instruction (problem solving, inquiry)  
Experiential Learning (conducting experiments, simulations, model building)  
Independent Study (homework, assigned questions)

**Assessment and evaluation strategies:**

Formative (quizzes, observation)  
Summative (unit tests, lab reports, projects)

**Textbooks/Learning Resource Materials (align with Policy 603)**

Nelson Physics 12

**Fees for Learning Materials/Activities**

Learning Materials/Activities	Cost

Please refer to the [GCVI Student Handbook](#) for our school policies on:

- academic integrity
- late and missed assignments