

## Sir John A. Macdonald Collegiate Institute Course Brief

<b>Course Name</b>	Physics, Grade 12 College Preparation	<b>Grade</b>	12
<b>Course Code</b>	SPH4C	<b>Credit Value</b>	1.0
<b>Pre-Requisite</b>	SNC2D or SNC2P	<b>Or Recommended Pre-Requisite</b>	
<b>Type of Course</b>	College		

### TEXTBOOKS

Nelson Physics 12: College Preparation

### REPLACEMENT COST (if lost or damaged)

\$124.95

### COURSE DESCRIPTION

This course develops students' understanding of the basic concepts of physics. Students will explore these concepts with respect to motion; mechanical, electrical, electromagnetic, energy transformation, hydraulic, and pneumatic systems; and the operation of commonly used tools and machines. They will develop their scientific investigation skills as they test laws of physics and solve both assigned problems and those emerging from their investigations. Students will also consider the impact of technological applications of physics on society and the environment.

### CURRICULUM STRANDS

- **MOTION AND ITS APPLICATIONS**
  - all motion involves a change in the position of an object over time
  - motion can be described using mathematical relationships
  - many technologies that utilize the principles of motion have societal and environmental implications
- **MECHANICAL SYSTEMS**
  - mechanical systems use force to do work
  - the operation of mechanical systems can be described using mathematical relationships
  - friction is a force that influences the design, use, and effectiveness of mechanical systems
  - mechanical systems can be used to address social and environmental challenges
- **ELECTRICITY AND MAGNETISM**
  - relationships between electricity and magnetism are predictable
  - electricity and magnetism have many technological applications
  - technological applications that use electricity and magnetism can affect society and the environment in positive and negative ways
- **ENERGY TRANSFORMATIONS**
  - energy can be transformed from one type to another
  - systems that involve energy transformations are never 100% efficient
  - although technological applications that involve energy transformations can affect society and the environment in positive ways, they can also have negative effects, and therefore must be used responsibly
- **HYDRAULIC AND PNEUMATIC SYSTEMS**
  - fluids under pressure can be used to work
  - fluids under pressure have predictable properties and many technological applications
  - the uses of hydraulic and pneumatic systems can have social and economic consequences

### CATEGORIES

**Knowledge and Understanding:** Subject-specific content acquired in each grade/course (knowledge), and the comprehension of its meaning and significance (understanding)

**Thinking:** The use of critical and creative thinking skills and/or processes

**Communication:** The conveying of meaning through various forms

**Application:** The use of knowledge and skills to make connections within and between various contexts

### Assessment and Evaluation of Student Achievement

Unit	Unit Title/Description	Evaluation Task	Achievement Chart Focus
Unit 1	Motion and its Applications	1-2 labs 1-2 Problem Sets Test	T, C, A K, C, A K, C
Unit 2	Mechanical Systems	Lab Problem Set Test	T, C, A K, C, A K, C
Unit 3	Energy Transformations	Roller Coaster Build Problem Set Test	T, A K, C, A K, C

Unit 4	Electricity and Magnetism	1-2 Labs Problem Set Test	T, C, A K, C, A K, C
Unit 5	Hydraulic and Pneumatic Systems	1-2 Labs Problem Set	T, C, A K, C

### Levels of Achievement

For Grades 9 to 12, a student's achievement of the overall curriculum expectations will be evaluated in accordance with the achievement charts in the provincial curriculum and will be reported using percentage marks.

Achievement Level	Percentage Mark Range	Achievement Description
HL4/L4+ L4 LL4/L4-	95 – 100 87 – 94 80 – 86	Level 4 identifies achievement that surpasses the provincial standard. The student demonstrates the specified knowledge and skills with a high degree of effectiveness.
HL3/L3+ L3 LL3/L3-	77 – 79 73 – 76 70 – 72	Level 3 represents the provincial standard for achievement. The student demonstrates the specified knowledge and skills with considerable effectiveness. Parents of students achieving at level 3 can be confident that their children will be prepared for work in subsequent grades/courses
HL2/L2+ L2 LL2/L2-	67 – 69 63 – 66 60 – 62	Level 2 represents achievement that approaches the provincial standard. The student demonstrates the specified knowledge and skills with some effectiveness. Students performing at this level need to work on identified learning gaps to ensure future success.
HL1/L1+ L1 LL1/L1-	57 – 59 53 – 56 50 – 52	Level 1 represents achievement that falls much below the provincial standard. The student demonstrates the specified knowledge and skills with limited effectiveness. Students must work at significantly improving learning in specific areas, as necessary, if they are to be successful in the next grade/course

Students who achieve below 50% have not met curriculum expectations; a credit will not be granted.

Learning Skills	Assessment of Learning Skills
Responsibility Organization Independent Work Collaboration Initiative Self-Regulation	Excellent (E) Good (G) Satisfactory (S) Needs Improvement (N)

Weighting by Strands/Categories			
Knowledge and Understanding	22%	Communication	22%
Thinking	34%	Application	22%

**Assessment and Evaluation Strategies:** the following is a list of potential A/E strategies used within the course; the list may not be exhaustive and is subject to change.

- |                                     |                     |                                      |
|-------------------------------------|---------------------|--------------------------------------|
| →Paper and Pencil Tests and Quizzes | →Problem Sets       | →Graphical Analysis and Presentation |
| →Practical Lab Performance          | →Research Projects  | →Scientific Illustration             |
| →Formal Lab Reports                 | →Formal Examination | →Construction Project                |

### CALCULATION OF FINAL MARK

- 70% for evaluations conducted throughout the course.
- 30% for a Culminating Activity – the C/A will occur in the final 6 weeks of the course (includes a final exam).

**\*\*Assessments and evaluations are subject to change\*\***