# Physics 12: Course Outline

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|---|---|---|---|
| **Course:** | Physics 12 | **Course Length:** | 10 months (approx. 120 hours) |
| **Teacher:** | Leila Dianati | | |
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## Course Curriculum

The curriculum for this course is organized around these Big Ideas:

- Measurement of motion depends on our frame of reference.
- Forces can cause linear and circular motion.
- Forces and energy interactions occur within fields.
- Momentum is conserved within a closed and isolated system.

Students are expected to know the following:

- frames of reference
- relative motion within a stationary reference frame
- postulates of special relativity
- relativistic effects within a moving reference frame
- static equilibrium
- uniform circular motion:
- centripetal force and acceleration
- changes to apparent weight
- First Peoples' knowledge and applications of forces in traditional technologies
- gravitational field and Newton's law of universal gravitation
- gravitational potential energy
- gravitational dynamics and energy relationships
- electric field and Coulomb's law
- electric potential energy, electric potential, and electric potential difference
- electrostatic dynamics and energy relationships
- magnetic field and magnetic force
- electromagnetic induction
- applications of electromagnetic induction
- impulse and momentum
- conservation of momentum and energy in collisions graphical methods in physics

## Course Content

This course is broken down as follows:

| Unit | Formative Assignment | Cumulative Assessment |
|---|---|---|
| Preliminary Assignments | Course Outline<br>Course Progress and Timeline | n/a |
| Unit 1: Physics Review | Learning Guide<br>Review Quizzes | Unit Test |
| Unit 2: Equilibrium and Torque | Learning Guide<br>Inquiry Project<br>Review Quizzes | Unit Test |
| Unit 3: Centripetal | Learning Guide<br>Inquiry Project<br>Review Quizzes | Unit Test |
| Unit 4: Momentum | Learning Guide<br>Inquiry Project<br>Review Quizzes | Unit Test |
| Unit 5: Electricity | Learning Guide<br>Inquiry Project<br>Review Quizzes | Unit Test |
| Unit 6: Electro-magnetism | Learning Guide<br>Inquiry Project<br>Review Quizzes | Unit Test |
| Unit 7: Induction | Learning Guide<br>Inquiry Project<br>Review Quizzes | Unit Test |
| Unit 8: Modern Physics | Learning Guide<br>Inquiry Project<br>Review Quizzes | Unit Test |
| Course Completion | Core Competency Reflection | n/a |

## Assessment

Quizzes and Unit Tests will be marked using a percentage.

| Percentage | Proficiency Scale |
|---|---|
| 86%+ | Extending |
| 73% - 85% | Proficient |
| 60% - 72% | Developing |
| 0% - 59% | Emerging |

Upon the completion of this course, you will receive a final grade calculated by weight:

| Category | Percentage |
|---|---|
| Learning Guides | 20% |
| Inquiry Projects | 30% |
| Quizzes | 15% |
| Unit Tests | 35% |

## Learning Guides

Please complete the Learning Guide as you work through the lessons. There is an answer key at the end of the learning guide for you to check your learning. A strong student will examine their mistakes and try to fix them to improve their understanding.

Be sure to keep your work neat and organized, as you will be studying from the Learning Guide for the Unit Test. Communicate your ideas as well as you can and try not to skip any questions. If you need help with a question, please email your teacher.

## Inquiry Projects

Inquiry projects are designed to help you apply what you've learned to real-life situations. These will closely examine your ability to apply the curricular competencies to new environments. These are worth the largest portion of your grade, so be sure to fully explain your thinking in as much detail as possible.

## Review Quizzes

Review Quizzes are designed to help you gauge how well you know the lessons you have completed.

Most quizzes allow two attempts, and the highest mark of the two attempts will be used for the final mark calculation.

## Exam Supervision

There is a unit test at the end of each unit. There is a total of eight-unit tests. All exams are "closed book" and require the supervision of a parent, guardian, or teacher.

Your testing invigilator must:

- ensure the student has submitted the unit assignments and inquiry projects
- email the teacher at Leila.Dianati@burnabyschools.ca for the passwords
- Supervise your test-taking to ensure no additional notes or resources are used while taking the test.

Students will only have one attempt at the unit test. Online courses are set up with lots of opportunities to practice and to ask for help. When students request a test or an exam, it is expected that they have completed all the required work, reviewed the marks they received on their assignments, asked all necessary questions, and are prepared to take the test or exam.

**Consequently, no rewrites, and no redo's will be considered for assignments, quizzes, tests, and exams.**

### Course Activity

Students must be working to complete learning engagements on a regular basis. Students who are inactive after two weeks will receive an email to their Brightspace email program providing a warning of inactivity. Students who are inactive after 1 month may be withdrawn from the course. If a student is planning to be inactive due to personal reasons, they need to contact their teacher to inform them of the period of inactivity.

Students should aim to complete one unit every month to finish the course within 10 months (excluding July and August).

To finalize your registration, you need to complete the preliminary assignments within a week of enrollment. You may be removed from the course if this is not completed on time.

If you are inactive for one term and have not communicated with your teacher, you will be unenrolled automatically from the course.

## Resources

There are NO textbooks required for this course.

A scientific calculator is required.

There is a course Data Booklet under the Course Overview.

## Plagiarism

Plagiarism is unacceptable under any circumstances. You are expected to create authentic work that demonstrates your own understanding. If you are caught cheating, plagiarizing, or submitting AI-generated responses within this course, you may be removed from the course.

## Keys to Success

1. Actively work through each lesson: try examples and reflect on the materials.
2. Be actively engaged in the course and submit work regularly
3. Use the Learning Guide as your tool for documenting your understanding. Lay it out neatly and well-organized.
4. Review feedback from your teacher and from quizzes before writing Unit Tests.
5. Use the message system for regular communication with your instructor.
6. Cite all sources (including AI use) properly.
7. Answer in your own words. Ultimately, this is your learning experience!