



Course: Physics 11

Text: *Physics: Principles and Problems* (Merrill)

Monday - Friday, Block D

teacher: Mr. D. Woelders

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Helpful Websites:

[www.pasco.com/support/downloads](http://www.pasco.com/support/downloads)

<https://public.me.com/woelders>

[www.padumamis.net](http://www.padumamis.net)

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## Course Outline

The course outline is designed to give you an idea of the course content and as a general timeline and order of events for the course. *Class content will not be dependent on this schedule.* Likely, as the class progresses, the schedule will be rearranged to accommodate our learning.

### Introduction to Course

The World of Physics

### Kinematics (18-20 classes)

Scalar and Vector Quantities

Distance and Displacement

Acceleration

How they differ

Why communication of events is important.

Velocities over continuous time

### Newton's Laws (9-11 classes)

Newton's First Law

Newton's Third Law

Newton's Second Law

Applications and verification

Application and verification

Helping to describe and predict kinematics

### Forces (14-16 classes)

Gravitational Pull/Field

Friction

Hooke's Law

Effects of mass

Kinetic and Static Friction

### Momentum (5-7 classes)

Momentum

Impulse

Applications

Effects of velocity and mass, conservation of momentum

Changes in momentum

Collisions and Explosions

### Energy (9-12 classes)

Work

Energy

Molecular Energy

Conservation of Energy

Power

Descriptive or just science jargon?

Potential/Kinetic

Temperature vs. Thermal Energy vs Heat

Gravitational, Kinetic, Thermal

Relationship between work, time, efficiency and power

### Wave Motion (4-6 classes)

Wave Properties

Universal Wave Equation

Amplitude, frequency, period, wavelength, phase, speed.

How it describes wave properties

<b>Phenomena</b>	Refraction, reflection, diffraction, interference, Doppler shift, polarization
<u><b>Optics (8-10 classes)</b></u>	
Visible Light	Electromagnetic spectrum
Reflection	Incident ray, reflected ray, angle of incidence, angle of reflection
Snell's Law	How it describes refraction.
Image Distortion	Characteristics of plane mirrors
Convex/Concave Properties	Effects on images. Curvature, image/object distance.
<u><b>Special Relativity (1-3 classes)</b></u>	
Inertial Reference Frame	A matter of perspective
Michelson-Morley Experiment	The infamous "null"
Special Theory of Relativity	Relativity principle, constancy of speed of light
<u><b>Nuclear Fission and Fusion (1-2 classes)</b></u>	

## Shape of the Day

Day-to-day activity is dependent on the unit and material we are covering. You do not need a teacher to learn, they are your guides. Enter the class each day as an independent learner and look for ways to get started. Expect the beginning of class to be primarily a time of review. This might include review questions, reading/previous class summaries, and/or possible quizzes. The bulk of the class will be devoted to critical thought challenges. This may result in discussion and may require further research done either by the student or teacher-lead.

## Evaluation \*

<b>Summative</b>	20% Project(s)/Presentation(s) 30% Exam(s) 10% Summative Assignments
<b>Formative</b>	10% Quizzes 20% Challenges 10% Online Blog/Participation

\* Marks will be kept updated on a weekly basis using [www.engage.ca](http://www.engage.ca). You will be given an access code in class and you should have a user name from last year. If you do not have a user name or forgot what it is, create a new one. You are expected to register online within the first 2 weeks of school.

## Participation

This speed of the course is dependent on the learner. If you are waiting for the teacher to tell you when to learn, you have already wasted a great opportunity. If you are expecting notes with vocabulary listed in bold print, you will be disappointed. The purpose of information is to utilize it, not memorize it. Since learning is just as much a social event as it is a personal one and we want to make sure all of our ideas and questions are shared, part of your mark will be dedicated to the degree in which you take part in the class. Step outside of your comfort zone and share your thoughts. If you do not share, I can only assume you have nothing to share. Taking part in the class would also involve staying caught up in the class; in particular, staying caught up with class challenges.

### Quizzes

While quizzes are helpful as assessment *OF* your learning, they are also vital as assessment *FOR* your learning. Take quizzes as an opportunity to discover what you know. Because I am more concerned with *what* you know than *when* you know it, quizzes can be rewritten, with the expectation that the rewrite *will* be your mark, even if the mark is lower. Rewrites may also require more demanding responses.

### Summative Assignments

Assignments are checkpoints and opportunities to reveal information and challenge what you know. These assignments are individual and will challenge you much more than what you may expect from a typical assignment. It would be of greater value for you to work independently first and then compare responses with a partner. Assignments will almost always require you to expand beyond what the curriculum requires.

### Projects

Projects are often designed to personally assist your learning. While the project mark is not associated with your exam mark, the effort you put in will likely be reflected in your summative success. Make your projects personal, include information that is relevant to you.

### Presentations

Presentations, unlike projects, are designed to not only complement *your* learning in class but also the *learning of others*. Therefore, when you design your presentation you should be doing it with an audience in mind. Be engaging, thorough and creative in the way you represent your knowledge.

### Exams

Exams will likely be given at the end of each unit. Exam dates will be finalized within the first few weeks of classes. *Last minute cram sessions are not an effective way to study*; be sure to stay on top of the material and study as the class proceeds.

### Online Blog

The online blog is an opportunity to share your knowledge, ideas and solutions to a world that is interested in what you have to say. In this case, the teacher is not your audience therefore you cannot assume the audience is an expert in the field. Your assessment for your online blog falls into two categories: **Accurate/Well Supported** and **Engaging**. The length of the online post is dependent on the assignment or challenge. Do yourself and your audience a favor and take some time at the beginning of the year to design your template as well as add some photos or video to the post.

### What I expect from you

Most students are afraid of physics before they ever find out what it is. You are different. You did not register for this class so that you can do poorly and learn nothing. As such I expect you take this course seriously and take everything you possibly can from it. I expect you to come to class on time, with all supplies, and prepared to learn and participate. Because the depth of your insight is dependent on previous knowledge, you cannot simply sweep a subject that you don't understand under the rug. I highly recommend that you challenge yourself with the material on a daily basis to ensure your understanding. The first and most important thing you should learn in this course is how to learn in this course (metacognition).

### Late and/or Missing Assignments

Handing in material on time is part of your participation in this class and thus no one should get in a habit of turning in late work. With that said, late assignments will occur and will be accepted as long as I have not marked and returned the assignments to the rest of the class (note: I mark quickly!). If the assignment is not

completed because of unusual circumstances (ie illness, family emergency, etc) I will have it omitted. Presentations/projects and exams must be completed/handed in upon student's return (no omits).

## **Cheating**

Cheating includes, but not restricted to, the use of cheat sheets, electronic devices, looking at another student's work, allowing another student to look on your exam, or talking with another student during the exam. In any of these cases, the student's exam will be confiscated and s/he will receive a zero. If the student is caught a second time, they will be removed from the class with an explanation of their removal added to their academic record.

## **Plagiarism**

Plagiarizing may include, but not restricted to, copying and pasting from internet sources without citation and/or quotation, turning in another student's work as your own, and/or giving incorrect information about the source. Plagiarism is a major offense and in the literary world, can be grounds for a lawsuit. Within the academic world, it is grounds for expulsion and retribution on your academic record. However, most plagiarism can be avoided by simply citing your sources. I will not expect perfect MLA or APA references but I do expect you cite the author, source and date.

## **How to Succeed**

1. Attend ALL classes: This gives you a good idea of what is considered the most important. It also allows you to learn by hearing and seeing simultaneously, which is much more effective than either one of these alone.
2. Use tutorials to go over questions you have, or test your own understanding by explaining material back to another student or teacher. It is always better not to be an anonymous face in a crowd. Get to know your teacher.
3. Come to class prepared by having read and outlined the assigned pages ahead of time. This will help you make more sense of the lecture as you listen to it and this, in turn, will help you to.
4. Engage your brain in the class. Don't allow yourself to become a note-taking robot. Think! Be critical! Be skeptical! Ask questions! If you are shy, ask questions after class or during break.
5. Put proper closure on each class. Within 24 hours of each class: (1) ask yourself what the class was about without using your notes, and (2) write your answer in the form of a concept map. This is the best time to spot points of confusion or discrepancies between text and notes, which you should write down and follow-up on.
6. Pay attention to the figures in your text, especially the summary figures. Figures are expensive to produce and publishers try to use them sparingly in order to reinforce main points.
7. Budget your time. There is such a huge amount of material to be mastered that studying cannot be put off into an all-night cram session before tests. This is a time-tested recipe for failure; if not failure of the test itself, then failure to understand physics. Everything we do is cumulative. What is your plan for keeping material from the beginning of the semester fresh and in mind?
8. Don't be a hermit. Once you have studied a good bit on your own, get together with a few others who are interested in understanding physics in order to bounce questions off each other, compare concept maps, create sample test questions, explain concepts to each other, and to be able to answer your colleagues' questions regarding those same explanations.