

University of Victoria
Department of Physics and Astronomy
Physics 111 - Introductory Physics II
Summer 2016 Syllabus

General Information

Instructor: Travis Martin **Email:** travismartin@uvic.ca **Office:** Elliot 108
Office Hours: Wednesday & Friday, 2:30-4:00 **Phone:** 250-721-7703
Course Webpage: <http://coursespaces.uvic.ca>

Lecture Schedule: Tuesday, Wednesday, Friday from 1:30am - 2:20pm in **Elliot 167**.

Prerequisites: PHYS110 and credit or concurrent registration in a calculus class. The calculus class (MATH100 or 102) must be at UVic if it is taken concurrently. The course is structured assuming you are taking MATH 101 at the same time as PHYS111.

Required Materials:

- **University Physics** by Young & Freeman, Custom Edition Vol. II
- PHYS111 Workbook (Keeler/Laidlaw)
- PHYS111 Lab Manual
- University approved calculator (e.g. Sharp EL-510R or EL-510RNB; they can be bought in the Bookstore for about \$10)

Note: The **University Physics Vol. I** from the first term was sold in the Bookstore packaged with access to an online course management system: MasteringPhysics. This system is required in order to access, complete, and receive credit for assignments.

Labs: The lab schedule can be found at http://www.uvic.ca/science/physics/assets/docs/timetables/2016-17/Summer_2016_Labs.pdf. The email addresses for your lab TA can be found in the same document.

Some notes regarding the labs for this course:

- **You must attend your scheduled lab section.** You are not free to attend other lab sections without approval of the lab supervisor, Doug McKenzie.
- **You must complete all labs.** If you miss a lab period for a **valid reason**, contact me ASAP. I will determine approval to perform a make-up lab, and forward the approval to the lab supervisor.
- **You must achieve a passing grade in the labs in order to pass the course.**

Students who have completed the labs before with a satisfactory grade (average 70% or above, all labs completed) may be granted a lab exemption. Contact me if you wish to request a lab exemption.

Course Overview

This course will give an overview of several areas of physics, including: heat engines, harmonic motion, wave motion, geometric and wave optics, and modern physics. You will learn to analyze physical systems and identify the principles by which they operate. You will also learn to apply and interpret mathematical tools, including vectors, calculus, and algebra, in order to predict and understand the behaviour of these systems. The goal is to stimulate your curiosity about the physical world and help develop analytical thinking skills that are broadly applicable.

Supplementary material will be available via the CourseSpace for Phys 111. This material will help guide study preparations for lectures and exams.

Week	Chapters	Topic Description
1	1	State variables, thermal expansion, ideal gas law
2	2	Heat and temperature change, Calorimetry, Methods of heat transfer, Heat capacities
3	3	Work done in volume change, First law of thermodynamics, Q&W for thermodynamic processes
4	4	Heat engines: efficiency and examples, Refrigerators, Second law of thermodynamics, Entropy
5	5	Simple harmonic motion, energy in harmonic motion, other harmonic systems, applications and resonance
6	6	Mechanical waves, periodic waves, mathematical description of travelling wave, wave speed, energy transport, superposition condition, other types of waves
7	7.1-7.9	Standing waves on a string, standing waves in air tubes, other applications of standing waves, beats, interference from two sound sources, interference from two light sources
8	7.10+, 8	Thin film interference, diffraction, doppler effect
9	9.1-9.7	Nature of light (reflection/refraction), total internal reflection, image formation, magnification
10	9.8+, 10.1-10.5	Thin lenses and optical systems, Michelson interferometer, Time dilation, Length contraction
11	10.6+, 11.1-11.3	Lorentz transformations, relativistic momentum and energy, photoelectric effect, compton scattering
12	11.4+	Uncertainty principle, Bohr atom, Radioactivity, Review

Grading

Assignments: 10%

Assignments will be assigned and due approximately weekly. Assignments are administered through www.masteringphysics.com, course-ID PHYS111UVIC201605. This system allows for prompt feedback that will help you in learning the material.

Laboratory Activities: 15%

These are experiential sessions to provide students with a hands-on understanding of the material. More information about the labs is provided in the lab manual that students must have for the course.

Midterm Exams: 25%

There will be two midterm exams, tentatively scheduled for June 6 and July 4. More information about the time and location of the exams will be provided closer to the date, as I need to schedule the rooms. If these exams conflict with your scheduled university activities, contact me as soon as possible. There may be no way I can accommodate you if you tell me about a conflict last minute.

Final Exam: 50%

The final exam will occur during the August exam period. The date is centrally scheduled, and will likely be finalized in July. Do not plan August travel until you know the exam schedule! Final exam completion is mandatory for this course.

Accommodations:

Accommodations can be made for missed exams/assignments due to illness or other severe affliction, as well as conflicts with classes and religious observances. Accommodations will be made for issues documented through RCSD.

If you miss an exam or assignment, I expect you to contact me as soon as possible. If you anticipate missing a course requirement, you must contact me a reasonable time in advance. If something occurs during a test, please talk to me. I can't help if I don't know about the problem.

Keys to Success

Don't cheat on exams, assignments, or in your labs. Cheating, plagiarism, and other forms of academic fraud are taken very seriously both by the instructors and the University. You should note that the typical penalty for cheating on an exam is being assigned the grade F in the course. If the instructors have a reasonable apprehension that an academic integrity violation has occurred then they may take this into account in their exercise of academic judgment when assigning grades; this is separate from any disciplinary process.

For more information on the academic integrity policy, see the next page.

There are several places where you can get help, both with Physics and with other issues:

- The Physics Aid Center (drop-in Physics Q&A held in Elliot 038)
- The Learning Commons (help with Math, Writing, and Learning Skills.)
- Your instructors. We have office hours for a reason.
- Resource Centre for Students with a Disability (472-4946)
- Counseling Services (721-8341)

Keys to success:

- Attend lectures – you won't be exposed to the material if you don't.
- Read the text – the text explains things in a slightly different way from us; having access to different perspectives will help you synthesize the material.
- Read the workbook – we have put examples in it to illustrate key points and to serve as examples of concepts we believe are important.
- Do the assignments – We choose the problems to help teach the principles that are important for learning.
- Study – We expect that this class will take you around 12 hours per week between classes, labs, assignments, and studying.
- Ask for help if you find yourself falling behind.

What we expect you to do:

- Read the text prior to coming to lecture.
- Work through the workbook as the material is covered.
- Start your assignments well before the due date.
- Study continually; this isn't a class you can do well in with a "cram and memorize" strategy.

University Regulations on Academic Integrity

These regulations are reproduced from <http://web.uvic.ca/calendar2011/FACS/UnIn/UARe/PoAcI.html>. For full information, including procedures for dealing with academic integrity infringement, see the webpage linked above.

Academic integrity requires commitment to the values of honesty, trust, fairness, respect, and responsibility. Any action that contravenes this standard, including misrepresentation, falsification or deception, undermines the intention and worth of scholarly work and violates the fundamental academic rights of members of our community.

Several types of academic integrity violations are covered in brief below.

Plagiarism

A student commits plagiarism when he or she:

- submits the work of another person as original work
- gives inadequate attribution to an author or creator whose work is incorporated into the student's work, including failing to indicate clearly the inclusion of another individual's work
- paraphrases material from a source without sufficient acknowledgement as described above

Students who are in doubt as to what constitutes plagiarism in a particular instance should consult their course instructor.

Falsifying Material Subject to Academic Evaluation

Falsifying materials subject to academic evaluation includes, but is not limited to:

- fraudulently manipulating laboratory processes, electronic data or research data in order to achieve desired results
- using work prepared by someone else (e.g., commercially prepared essays) and submitting it as one's own
- citing a source from which material was not obtained
- using a quoted reference from a non-original source while implying reference to the original source
- submitting false records, information or data, in writing or orally

Cheating on Assignments, Tests/Quizzes and Examinations

Cheating includes, but is not limited to:

- copying the answers or other work of another person
- sharing information or answers when doing take-home assignments, tests and examinations except where the instructor has authorized collaborative work
- having in an examination or test any materials or equipment other than those authorized by the examiners impersonating a candidate on an examination or test, or being assigned the results of such impersonation
- *assisting others to engage in conduct that is considered cheating*

I will be using software to analyze student responses on the reading assignments and quizzes to ensure that student responses are sufficiently unique.