PHYS 110 – Introductory Physics I
Course Outline: Sept 2019 – Dec 2019

Dr. R. Keeler	Dr. M. Laidlaw
A01	A02, A03, A04
Elliott 218	Elliott 106
721-7746	721-7701
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Lectures: 10:30 – 11:30 TWF, ELL 167 (A01)
11:30 – 12:30 TWF, ELL 168 (A02)
1:30 – 2:30 TWF, BWC B150 (A03)
8:30 – 9:30 TWF, ELL 167 (A04)
We will post individual office hours on the PHYS 110 "CourseSpace" site.

Labs: Lab sections are normally held in Elliott 144. Labs start September 9.
You will be given your laboratory schedule at the first lab.
You must complete all labs and have satisfactory standing to obtain credit for the course. Students who miss their first scheduled lab (during the September 9th week) may be required to withdraw from the course.

Prerequisite: MATH 100, 109, or 102 (MATH 102 is not recommended)
To register in this class, you must have credit for, or be concurrently registered (at UVic) in a calculus class (MATH 100, 102, or 109).
We expect that you have mastered equivalent material to BC Physics 12.

Required Texts: "PHYS 110 Textbook" Keeler/Laidlaw
"PHYS 110 Workbook" Keeler/Laidlaw
"PHYS 110 Lab Manual"

You must purchase an electronic resource package that contains the textbook and the workbook from the UVic Bookstore. This package also gives access to the mandatory assignments. We recommend that you purchase hard copies of the textbook and workbook; these are sold at the bookstore for about $15 each – essentially the cost of printing them.

In this course we will give an overview of, and teach the basic principles of, a number of areas of physics. You will learn to analyze physical systems and to identify the principles by which they operate. You will also learn to apply and interpret mathematical tools such as vectors, calculus, and symbolic manipulation to predict and understand the behavior of these systems. In the process we will stimulate your curiosity about the physical world and help you develop analytical thinking skills that you can apply in your future studies.

Calendar Description: Newton's laws; particle dynamics and curvilinear motion; force and momentum; kinetic and potential energy; circular and rotational motion; gravitational and electric forces.

Organizational Details:

Midterm Exams:

There will be two midterm exams, tentatively scheduled for 2:30-4:00pm on both Saturday Oct 5 and Saturday Nov 16**.** We will give instructions about exam location near the time of the exams. We expect you to write both midterm exams. **We will not offer makeup midterms or quizzes. The alternate grading schemes detailed below are the accommodation in the case of illness.**

Final Exam:

There will a final exam during the December exam period. The date is normally finalized in late October. Do not plan December travel before you know the exam schedule. You must write the final exam to get credit for this course.

Course Material:

We will distribute all course material via the "CourseSpaces" site for PHYS 110, available at coursespaces.uvic.ca. This material includes electronic (pdf) versions of the text and workbook. We expect that this material will include guidance about what material to study in preparation for lectures and exams.

Assignments:

Assignments will be assigned and due approximately weekly.
Assignments will be administered through the "CourseSpace" site for PHYS 110.
You must purchase the textbook package to be able to access the assignments.
We have chosen to administer assignments though this system because the interactive nature provides prompt feedback that will help you learn the material.

Accommodations:

We are willing to arrange reasonable accommodations for:

- Conflicts between classes or examinations and your religious observances;
- Issues documented through CAL; and
- Other issues.

If you miss an exam for any reason, we expect you to contact us as soon as possible after the exam. If you anticipate missing a course requirement, we expect you to contact us a reasonable amount of time in advance. If something comes up that adversely affects your performance, please talk to your instructor or the course coordinator. We can't help you if we don't know about the problem. CAL mediated accommodation will be arranged through the course coordinator.

Lab Exemption:

Students who have previously attempted PHYS 110 may be eligible to be *exempted* from laboratory work; if you wish to apply for this exemption you must be registered in the course and apply before September 20. To apply for exemption contact the lab coordinator Doug McKenzie at dmckenzi@uvic.ca. Students who are exempted from laboratory work must write a laboratory exam on September 27.

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. The *Policy on Academic Integrity* can be found in the Undergraduate Calendar. It is available online at:

http://web.uvic.ca/calendar2019-09/FACS/UnIn/UARe/PoAcI.html

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.

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 chosen the problems in it to serve as examples of the 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.
- Stay caught up in your MATH courses – there is a lot of synergy between their content and the content of PHYS 110.
- 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 problems in 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.

You may ONLY use <u>non-programmable</u> and <u>non-graphing</u> calculator models Sharp EL-510RN or EL-510RTB for exams. They can be bought in the Bookstore for about $12. Use of a non-authorized calculator may result in dismissal from the exam, sanctions under the *Policy on Academic Integrity,* or both

Marking and Grades:

To obtain credit in the course you must:

- Have a satisfactory score on the final (end-of-term) exam. In the past a score of roughly 40 has been minimally satisfactory.
- Complete all labs *and* have satisfactory standing in the labs.
- Have a score above 50 based on the following method of calculation:

	Scheme 1	Scheme 2	Scheme 3	Scheme 4
Assignments	10	10	10	10
Labs	14	15	15	0
Midterm I	13	15	0	15
Midterm II	13	0	15	15
Final Exam	50	60	60	60

Your score will be calculated from the version that gives the higher result. Students exempted from the labs will have their "lab exam" score used as their lab mark. Only students exempt from the labs will be eligible for scheme 4.

In all cases, we will use the score (as determined above) to guide our determination of an appropriate letter grade. Another factor we will take into account, through a Bayesian analysis, is which individual questions were answered correctly. Once we have determined an appropriate letter grade, we will assign a corresponding percentage grade.

The narrative descriptions of letter grades and their associated percentage grades are explained in the current Undergraduate Calendar. We will ensure that assigned grades correspond to the narrative descriptions. The official descriptions can be found online:
http://web.uvic.ca/calendar2019-09/FACS/UnIn/UARe/Grad.html.
In Physics, a discipline norm is that mastery combines very good comprehension with the ability to demonstrate that comprehension under time pressure, such as in an exam situation. Full engagement with course activities includes submitting essentially all assignments.

Marks in individual components typically roughly correspond to the following grades:

Exams:	0-40: F	40-60: C/D	60-80: B-range	80-100: A-range
Assignments:	0-50: F	50-80: C/D	80-100: A or B-range	
Labs:	0-50: F	50-70: D	70-100: A through C-range	

In the past, courses like this have typically had roughly the following grade distribution:
A-range: 20%; B-range: 40%; C/D-range: 30%; F: 10%

We do not grade on a curve.
We will review all lab marks prior to assigning a final grade.
All instructors will review all final grades assigned.
We will normally not offer supplemental examinations or assign the grade E.
We will assign the grade F if you do not have satisfactory standing in the labs.
The grade N is a failing grade that indicates that you did not complete the required course work. I will assign an N if you do not write the final exam or fail to complete all labs.
We will assign the percentage grade 0% for all N grades

Studies being done on this course

#1 - Assignments

Assignment completion rates and behaviour in this course will be the subject of a study conducted by Mark Laidlaw and Richard Keeler. The purpose of this research is to

- Measure the percentage of students who complete the assigned homework
- Quantify the relationship between homework completion habitsand assigned final grades.
- Assess the viability of different methods of automated assessment

The data collected include your score on individual assignments and the times at which you accessed and answered individual assignment items.

The anticipated benefit is to demonstrate whether assignments can be administered through UVic's CourseSpaces system, and to identify assignment completion habits correlated with success so they can be taught to future class sections. The data used in the study will be anonymous. The use of your data will not affect your mark in any way; no analysis will be done before grades are finalized.

Your data will be processed as follows: Using the student number, final grades will be associated with scores on each assignment and the times the assignment items were accessed. All identifying features such as student number are then removed from the data.

If you have questions about the methods and goals of the research, about how your data will be used, or about the use of your data, please contact Mark Laidlaw by email at laidlaw@uvic.ca. You may verify the ethical approval of this study, or raise any concerns you might have, by contacting the Human Research Ethics Office at the University of Victoria (250-472-4545 or ethics@uvic.ca).

#2 – Exams

Exam results in this course will be the subject of a study conducted by Mark Laidlaw. The object of the study is to characterize the difficulty of exam questions. The anticipated benefits of the study are to help standardize course grades from year to year, and to improve question design. The data used in the study will be anonymous and will be statistical in nature (for example: 53% of students who got a "B" answered question 20 correctly). The use of your exam data will not affect your mark in any way, as no analysis will be done before grades are finalized. You will receive a follow-up email with more details after the completion of the course. If you have questions about the methods and goals of the research, or about how your data will be used, please contact Mark Laidlaw by email at laidlaw@uvic.ca.

You may verify the ethical approval of this study, or raise any concerns you might have, by contacting the Human Research Ethics Office at the University of Victoria (250-472-4545 or ethics@uvic.ca).