

Elementary University Physics II

PHYS1008

2007 Information and Course Outline

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1. Who teaches the course, when and where.

Timetable PHYS1008 A January - April 2007

Time Slot	Room	Lecturer	Office	Email
8:30 MWF	2000 MC	P. J. S. Watson	2462 HP	watson@physics.carleton.ca

This course will be repeated during the Summer Session, the times will be published in the Summer Calendar.

2. How the course is run:

2.1 Information:

All information about the course will be posted on the website

(http://www.physics.carleton.ca/~watson/1000_level/1008_Index.html). This can be accessed through WebCT.

2.2 Prerequisites

Students in this course must have passed MATH0107 and PHY1007, or equivalents. Any exceptions MUST see the coordinator (P. J. S. Watson)

2.3 Labs

Lab Supervisor: Igor Ivanovich 3368HP igor@physics.carleton.ca

Lab: 4160HP

The Lab Schedule is attached. It is imperative that ALL students attend the first lab. at the time specified for the Lab section in which they are registered.

2.4 Lab/Tutorial Timetable

A1	2:35 – 5:25 M	4160HP
A2	2:35 – 5:25 T	4160HP
A3	2:35 – 5:25 W	4160HP
A4	2:35 – 5:25 R	4160HP
B7	8:35 – 11:25 T	4160HP

Labs start the week of Jan 8th 2007. Time-tabling problems and re-scheduling of lab. Sections will be taken care of at that time. Students who may be exempt from the Lab (if they are repeating the course, for example) MUST contact the lab supervisor and obtain permission from him; otherwise, they are NOT excused or exempt.

2.5 Required Texts, etc

1. Physics: Principles with Applications, Sixth Ed., (note 5th ed. is acceptable). Douglas C. Giancoli, Prentice Hall, 2004 **available at the Bookstore, Southam Hall**
If you are only enrolled in PHYS 1008, Vol. II alone is acceptable
2. 6 soft cover, lab report booklets.
3. A *non-programmable* scientific calculator, **available at the College of Natural Sciences, Storeroom 118 Steacie Bldg.**
4. The "LABORATORY MANUAL FOR PHYS1007/1008", 2004.

2.6 Pre-Class Tests and Assignments: WebCT

These are both completed using WebCT v3.2. To access these you need a computer connected to the Internet running a web-browser such as Netscape (7.0 or higher) or Internet Explorer (v5.5 or higher).

WebCT is available from the Carleton home page; find the link on the left hand side menu. Click on ***Student Login Hints *** and the following notes on establishing an account are given:

a. To set-up your account:

- Your WebCT username and password is the SAME as your Student Computing login and password.
- If you do not have a Student Computing Account, you must first establish one at <http://apps.carleton.ca/ccs/acct/student/scaccount.asp#scaweb>, following the instructions provided.
- You will not be able to access WebCT until you have activated your Student Computing Account.
- Once you have activated your Student Computing Account, your WebCT account will be created within the hour.
- WebCT courses will be added to your myWebCT profile within a 24-hour period, or on the first day of class.
- Usernames are ALWAYS LOWERCASE to a maximum of 8 characters long (e.g. Jane Smith = jsmith).
- Passwords are 6 to 8 characters long, and should not include special characters such as @ # ! \$ & * etc. DO not reveal your password to anyone
- For Student Computing Account password resets, please visit <https://connect.carleton.ca/secure-cgi/newuser.html>, and follow the instructions provided.
- For help please contact the Campus Help Desk at 520-3700 (press 0) or email ccs_service_desk@carleton.ca

b. To access your WebCT account

- "fire-up" your favourite browser: Netscape v7.0 or higher, IE version 5.5 or higher
- connect to <http://webct.carleton.ca/>
- 'bookmark' this in your browser, login and click on **PHYS 1008 A**

c. Use WebCT for the Pre-Class Test, and Assignments.

Having got logged-on you can now use WebCT to do the '**Pre-Class**' tests and **Weekly Assignments**. These are found under the icon labelled Quizzes and Assignments. If a title line is visible without a corresponding list of tests, click on the green arrow to see the list. The **Pre Class** tests and **Assignments** are all marked. Check the due dates on the list - the deadline is usually the start time of the morning lecture - 8:30. If you are within the time limit the title will be coloured red.

For the **Pre Class** tests: first read the appropriate Chapter in the textbook, then answer the 5 qualitative questions within 15 minutes. Note that in general there are no second chances with the Pre-Class tests - the exception is the first test where two tries are given so that you may familiarise yourself with the system. This means that you need to be sure of your facts before starting it.

To begin a test - click on the title and you are brought to a page with a table on the right hand side summarising your progress, the questions are on the left hand side. Note that the clock starts as soon as you display the page. Click on the answer you think is correct and when you are sure about your answer, click 'Save Answer'. You will see the progress table updated and one of the red stars will change to green. Continue on through the five questions and when you have completed them click on 'Finish'. It will ask you if you wish to submit the quiz for grading - click on 'OK'. Finally click on 'View Results' to see how you did and to find your score.

The **Assignments** are completed in a similar way. There are 5 quantitative questions to be answered in 60 minutes and for the assignments there are two chances. Your final mark is based on the highest score achieved. Be ready with your calculator, pens and paper as you will need to do some old fashioned scribbling to solve these problems.

In answering these questions enter the answer as a decimal, and do not add the units. If you need to use scientific notation (for very large or small numbers) then do so in the following format:

enter 1.60E-19 for 1.6×10^{-19}

Note that three figure accuracy is required by WebCT so in the above example, entering 1.6E-19 would be incorrect! The three-figure accuracy is important to adhere to: use of four or more digits will also be marked incorrect!

d. Calculation of the marks from the Pre-Class tests and Weekly Assignments.

It is recognized that there will occasionally be problems in accessing WebCT. To have them work properly requires a long chain of hardware and software to operate correctly. **In recognition of this and also because there is an initial learning curve that has to be overcome, the final mark in both the Pre-Class tests and Weekly Assignments will be calculated by dropping the lowest mark, and basing the final mark on the remaining tests/assignments.**

2.7 Instructor-led tutorials and tests

These take place during the regular lab period every alternate week - see the Calendar in section 4.1. They are comprised of a 1-hour tutorial followed by a test. During the tutorial students will work in teams to solve a few of the more difficult problems at the back of the Chapter. These problems will be at a more advanced level than those encountered in the Assignments. Once the team has solved the problems each individual will then be tested on that same problem and will be asked to write down a detailed description of how the problem is solved. Marks are allocated for showing how the answer was derived as well as for accuracy.

IMPORTANT NOTE

Students must normally attend/write the Instructor tutorial/test only in the Lab section to which they belong. To be able to write in a different section, students must obtain **written** permission from their instructor. Such permission will usually be granted only for emergencies or medical reasons. The permission must be stapled to the cover of the test booklet, so that the marks can be correctly recorded.

2.8 The Final Examination

The final examination will be scheduled during the regular examination period in April. It is the responsibility of the student to be present during this period; in particular, holiday travel arrangements must not be made before the examination schedule is known.

One section on the final exam will be related to material contained within the lab. portion of the course. This question is not optional and has to be answered.

A Memory Aid Sheet, consisting of both sides of an 8.5" x 11" page, will be admissible in the Final Exam. It will be the right of the examination proctor to decide on the admissibility of ambiguous material. A non-programmable calculator is also admissible.

2.9 The Marking Scheme

Term marks	{	Pre-Class tests	5%
		Weekly assignment	10%
		Instructor-led tests	20%
		Laboratory	30%
Final Exam			<u>35%</u>
Total			100%

2.8 Passing Conditions

In order to pass the course, students should attempt all tests, WebCT exercises, and all labs. Missing tests or labs must be accounted for, usually by bringing in a Doctor's note, to either the Lab Supervisor or the Test Instructor.

Students must obtain a minimum of 25 out of the 65 marks available for term work as defined in the above table. Term work resulting in a mark less than this is not satisfactory.

2.8 Copying, plagiarism and other forms of cheating

The attention of all students is drawn to the paragraph on Instructional Offences in the Calendar. In PHYS1008 such offences will normally result in a mark of zero for the test, Lab report or exam in question. Depending on the severity of the case, a report will be sent to the Dean of the student's Faculty, for possible further disciplinary action.

2.9 Notice Board and Website

Students are advised to check frequently the PHYS1008 Notice Board (located outside the Lab, Room 4130 HP) for announcements, problem solutions, Lab. assignments, lists of marks, etc. Please also check WebCT.

2.10 Deferred Exams

Deferred Exams are generally only granted to students who cannot take the regularly scheduled exam due to illness. Students must present a doctor's note to the Science Registrar within five working days of the date of the final exam: see University Calendar p49. The Deferred Exam replaces only the Final Exam portion of the marks. The deferred exam for PHYS1008 will take place in the summer: **June 15 - 25, 2007**.

2.11 For those repeating the course

If the lab component of the course has been successfully completed with a sufficiently high grade, then credit for this may be carried forward, and only the theory sections of the course need be repeated. Students must confirm eligibility for this with the Lab Supervisors, Dr. Ivanovich.

3. LECTURE SCHEDULE AND SYLLABUS (note topics may not be discussed on exactly the given day)

Week Hour		Topic	TEXT	Due Dates:	
				Pre-Class	Assignment
1.	1.	Electric Charge and Fields: Coulomb's Law.	Ch. 16		
1.	2.	Fields and Conductors	Ch. 16		
2	3.	Electric Potential	Ch. 17	1(Ch.17)	
2.	4.	Dipoles	Ch. 17		
2.	5.	Capacitance and Dielectrics.	Ch. 17		1(Ch.16)
3	6.	Conductivity	Ch. 18		
3.	7.	Electrical Currents.	Ch. 18	2(Ch.18)	
3.	8.	Power	Ch. 18		
4.	9.	D.C. Circuits, Kirchoff's Rules	Ch. 19		2(Ch. 17)
4.	10.	Capacitors in Circuits RC time constants	Ch. 19	3(Ch.19)	
4.	11.	<i>Catch-up, Applications, Problem Solving</i>			
5.	12.	Magnetism: Force on a current carrying wire.	Ch. 20	4(Ch.20)	3(Ch.18)
5.	13.	Ampere's Law, torque on current loop, applications	Ch. 20		
5.	14.	Faraday's Law, electrical generators	Ch. 21	5(Ch.21)	
6	15	Inductance, RL circuits, RLC circuits.	Ch. 21		4(Ch. 19)
6.	16.	E.M. Waves, (not displacement current), spectrum	Ch. 22	6(Ch.22)	
6.	17.	Measurement of speed of light, radio and T.V. waves	Ch. 22		
7.	18.	<i>Catch-up, Applications, Problem Solving</i>			5(Ch. 20,21)
7.	19.	Thin Lenses, lens equation.	Ch. 23	7(Ch.23)	
7.	20.	Geometrical Optics, Snell's Law, total internal reflection	Ch. 23		
<i>Study Week</i>					
8.	21.	Wave Nature of Light: Interference, Young's Slits	Ch. 24	8(Ch.24)	6(Ch.22)
8.	22	Diffraction, spectroscopy, thin films	Ch. 24		
8.	23.	Optical Instruments, camera, eye, telescope, microscope	Ch. 25	9(Ch.25)	
9.	24.	Lens Aberrations, Rayleigh criteria, resolution	Ch. 25		7(Ch.23)
9.	25.	<i>Catch-up, Applications, Problem Solving</i>			
9.	26.	Early Quantum Theory, Photoelectric effect	Ch. 27	10(Ch.27)	
10.	27.	Wave Nature of Matter	Ch. 27		8(Ch. 24,25)
10.	28.	Electron Microscopes, Atomic Spectra.	Ch. 27		
10.	29.	Quantum mechanics, double slit expt.	Ch. 28	11(Ch.28)	
11.	30.	QM of hydrogen atom, Lasers	Ch. 28		9(Ch. 27)
11.	31.	Nuclear Physics and Radioactivity, α , β , and γ decay	Ch. 30	12(Ch.30)	
11.	32.	Half Life, Decay Series, Radioactive dating	Ch. 30		
12.	34.	Nuclear Energy: fission reactors.	Ch. 31	13(Ch. 31)	10(Ch. 28)
12.	35.	Passage of radiation through matter, radiation therapy	Ch. 31		
12.	36.	Nuclear Magnetic Resonance	Ch. 31		11(Ch.30)
13	<i>Review Week</i>				

4. LABORATORY SCHEDULE

Week beginning

Jan.	3	No Labs
	8	DC Circuits and Resistance
	15	Tutorial/Test 1
	22	Oscilloscope 1
	29	Oscilloscope 2
Feb.	5	Tutorial/Test 2
	12	Tutorial/Test 3
	19	<i>Study Break</i>
	26	Simple Lens
Mar.	5	Tutorial/Test 4
	12	Diffraction Grating
	19	Tutorial/Test 5
	26	Thermocouple

n.b. NO LAB EXAM

Deadline for late submission of reports - Thurs., April 5th, 4 pm, 2007

5. Requests for Academic Accommodations

For Students with Disabilities:

Students with disabilities needing academic accommodations are required to contact a co-ordinator at the Paul Menton Centre to complete the necessary *letters of accommodation*. The student must then make an appointment to discuss their needs with the instructor at least two weeks prior to the first class or ITV test. This is to ensure sufficient time is available to make the necessary accommodation arrangements.

For Religious Obligations:

Students requesting academic accommodation on the basis of religious obligation should make a formal, written request to their instructors for alternate dates and/or means of satisfying academic requirements. Such requests should be made during the first two weeks of class, or as soon as possible after the need for accommodation is known to exist, but no later than two weeks before the compulsory event. Accommodation is to be worked out directly and on an individual basis between the student and the instructor(s) involved. Instructors will make accommodations in a way that avoids academic disadvantage to the student.

Students or instructors who have questions or want to confirm accommodation eligibility of a religious event or practice may refer to the Equity Services website for a list of holy days and Carleton's Academic Accommodation policies, or may contact an Equity Services Advisor in the Equity Services Department for assistance.

For Pregnancy:

Pregnant students requiring academic accommodations are encouraged to contact an Equity Advisor in Equity Services to complete a *letter of accommodation*. The student must then make an appointment to discuss her needs with the instructor at least two weeks prior to the first academic event in which it is anticipated the accommodation will be required.