Elementary University Physics II
PHYS 1008

2008 Information and Course Outline

Contents:

P. J. S. Watson December 19, 2008

1. Who teaches the course, when and where. (January - April 2008)

Time Slot	Room	Lecturer	Office	Email
1:30 MWF	2000 MC	P. J. S. Watson	3348 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/announcements about the course will be posted on the website (http://www.physics.carleton.ca/~watson/Physics/1000_level/PHYS1008_Index.html)
This can be accessed through WebCT. Students are advised to check frequently the PHYS1008 Notice Board (located outside the Lab, Room 4130 HP) for problem solutions, Lab. assignments.

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 Lab Supervisor: Dr. Julia Wallace 3346HP Julia_Wallace@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. 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.

2.4 Lab/Tutorial Timetable

A01	8:35 – 11:25 W	4160HP
A02	2:35 – 5:25 T	4160HP
A03	8:35 –11:25 R	4160HP
A04	8:35 –11:25 M	4160HP
A07	2:35 – 5:25 W	4160HP

Labs start the week of Jan 7th 2008. Time-tabling problems and re-scheduling of lab. sections will be taken care of at that time.

2.5 Required Texts, etc

1. Physics, Giambattista, McGraw Hill, 2004 **available at the Bookstore, Southam Hall**
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", 2008.

2.6 Pre-Class Tests and Assignments: WebCT

These are both completed using WebCT v6. To access these you need a computer connected to the Internet running a modern web-browser . WebCT is available from the Carleton home page; find the link on the right hand side menu.

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/
- 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 two similar problems and will be asked to write down a 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 In-class tests

Approximately once a week there will be a short in-class test. This will be either multiple choice or a short calculation. Discussion of the problem with other members of the class is encouraged.

2.9 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.

2.10 The Marking Scheme

	Pre-Class tests	**5%**
Term marks	**Weekly assignment**	**10%**
	Instructor-led tests	**20%**
	Laboratory	**30%**
	In-class tests	**5%**
Final Exam		**30%**
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. The lowest marks for both WEBCT pre-class tests and weekly assignments will be dropped: no note is required.

Students must obtain a minimum of 30 out of the 70 marks available for term work as defined in the above table. Term work resulting in a mark less than this is not satisfactory.

2.9 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.

2.10 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**, 2008.

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. Wallace.

3. LECTURE SCHEDULE AND SYLLABUS (note topics may not be discussed on exactly the given day: also due dates for WebCT assignments may be changed.)

	Week	Hour	Topic	TEXT	Due Dates: Pre-Class	Assignment
Jan 7	1.	1.	Introduction to Electrostatics	Ch. 16		
	1.	2.	Electric Charge and Fields: Coulomb's Law.	Ch. 16		
	1.	3.	Fields and Conductors	Ch. 16		
Jan 14	2	4.	Electric Potential	Ch. 17	2 (Ch.17)	
	2.	5.	Dipoles	Ch. 17		
	2.	6.	Capacitance and Dielectrics.	Ch. 17		1 (Ch.16)
Jan 21	3	7.	Conductivity	Ch. 18	3 (Ch.18)	
	3.	8.	Electrical Currents.	Ch. 18		
	3.	9.	Power	Ch. 18		2 (Ch.17)
Jan 28	4.	10.	D.C. Circuits, Kirchoff's Rules	Ch. 18		
	4.	11.	Capacitors in Circuits RC time constants	Ch. 18		
	4.	12.	Magnetic Fields Intro.	Ch. 19	4 (Ch.19)	3 (Ch.18)
Feb 4	5.	13.	Magnetism: Force on a current carrying wire.	Ch. 19		
	5.	14.	Torque on current loop, applications	Ch. 19		
	5.	15.	Faraday's Law, electrical generators	Ch. 20	4(Ch.20/21)	4(Ch. 19)
Feb 11	6	16	Inductance, RL circuits, RLC circuits.	Ch. 20		
	6.	17.	AC circuits	Ch. 21		
	6.	18.	E.M. Waves, spectrum	Ch. 22	5(Ch.22)	5(Ch.20,21)
Feb 18th		*Study Week*				
Feb 25	7.	19.	Measurement of speed of light, radio and T.V. waves	Ch. 22		
	7.	20.	Reflection/Refraction, Geometrical Optics,	Ch. 23	6(Ch.23)	
	7.	21.	Thin Lenses, lens equation.	Ch. 23		6(Ch.22)
Mar 3	8.	22.	Compound optics, Optical Instruments	Ch. 24	7(Ch.24)	7(Ch.23)
	8.	23	Eye, telescope, microscope	Ch. 24		
	8.	24.	Wave Nature of Light: Interference, Young's Slits	Ch. 25	8(Ch.25)	
Mar 10	9.	25.	Lens Aberrations, Rayleigh criteria, resolution	Ch. 25		
	9.	26.	Early Quantum Theory, Photoelectric effect	Ch. 27	9(Ch.27)	
	9.	27.	X-rays, Bohr model	Ch. 27		8(Ch. 24,25)
Mar 17	10.	28.	Wave Nature of Matter	Ch. 28	10(Ch.28)	
	10.	29.	Electron Microscopes, Atomic Spectra.	Ch. 28		
	10.	30.	Quantum mechanics, double slit expt.	Ch. 28		9(Ch. 27)
Mar 24	11.	31.	QM of hydrogen atom, Lasers	Ch. 28		
	11.	32.	Atomic Physics,	Ch. 28	11(Ch.29)	
	11.	33.	Nuclear Physics and Radioactivity, α,β, and γ decay	Ch. 29		10(Ch. 28)
Mar 31	12.	34.	Half Life, Decay Series, Radioactive dating.	Ch. 29		
	12.	35.	Radiation therapy, Nuclear Magnetic Resonance	Ch. 29		
	12.	36.	Nuclear Energy: fission reactors,	Ch. 29		11(Ch.29)
Apr 7	13	*Review Week*				

4. LABORATORY SCHEDULE

Week beginning

Jan.	7	**DC Circuits and Resistance**
	15	Tutorial/Test 1
	21	**Oscilloscope 1**
	28	**Oscilloscope 2**
Feb.	4	Tutorial/Test 2
	11	Tutorial/Test 3
	18	*Study Break*
	25	**Simple Lens**
Mar.	3	Tutorial/Test 4
	10	**Diffraction Grating**
	17	Tutorial/Test 5
	24	Easter
	31	**Thermocouple**

n.b. NO LAB EXAM. **Deadline for late submission of reports** - Mon., April 7th, 4 pm, 2008

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.