Physics 271 - Fall 2011
General Physics: Electrodynamics, Light, Relativity and Modern Physics (Laboratory)
Instructor: Professor Fred Wellstood

Official Course Description: PHYSA 271 (1 credit) Grade Method: REG/P-F/AUD. CORE Physical Science Lab (PL) course only when taken concurrently with PHYS 270. Prerequisite: PHYS261. Co-requisite: PHYS270. Lab includes experiments on ac circuits, magnetism, light and modern physics. PHYS270 and PHYS271 (lab) must be taken in the same semester and the grade for the courses will be combined into a single grade for both. To pass, students must complete passing work in both PHYS270 and PHYS271. Students must pay a $50.00 laboratory materials fee.

Co-requisite: PHYS270
CORE status: This course is designated a CORE Physical Science Lab (PL) Course when taken in conjunction with PHYS270

Instructor: Prof. Fred Wellstood,
Dept. of Physics, Room 0367 Physics Building,
well@squid.umd.edu (on campus x57649)
Office Hours: Tuesday, 1:30pm to 2:30pm or by e-mail appointment

Laboratory sections: You must attend your assigned section at the scheduled meeting time.

Section #	Meeting time	Room	Teaching Assistant	e-mail
102	M..... 3:00pm- 5:50pm	PHY 3220	Yong Zhao	yongzhao1018@gmail.com
103	M..... 6:00pm- 8:50pm	PHY 3220	Joseph Garret	jgarret2@umd.edu
105	Tu.....10:00am-12:50pm	PHY 3220	Chris Verhaaren & Ismail Inlek	chrisverhaaren@gmail.com inlek@umd.edu&
106	Tu..... 1:00pm- 3:50pm	PHY 3220	Joseph Garret	jgarret2@umd.edu
107	Tu..... 4:00pm- 6:50pm	PHY 3220	Yong Zhao	yongzhao1018@gmail.com
116	W..... 1:00pm- 3:50pm	PHY 3220	Ismail Inlek	inlek@umd.edu&
117	Th.....11:00am- 1:50pm	PHY 3220	Joseph Garret	jgarret2@umd.edu
118	Th..... 2:00pm- 4:50pm	PHY 3220	Ismail Inlek	inlek@umd.edu&
119	Th ..... 5:00pm - 7:50 pm	PHY 3220	Yong Zhao	yongzhao1018@gmail.com

Table of Lab sections

lab start time	M	Tu	W	Th	F
8:00 AM					
9:00 AM					
10:00 AM		105 Verhaaren & Inlek			
11:00 AM				117 Garret	
12:00 PM					
1:00 PM		106 Garret	116 Inlek		
2:00 PM				118 Inlek	
3:00 PM	102 Zhao				TA preparation
4:00 PM		107 Zhao			
5:00 PM				119 Zhao	
6:00 PM	103 Garret				
7:00 PM					
8:00 PM					
9:00 PM					

Lecture and Lab: To pass Physics 271, you must complete all the labs in Physics 271 and you must enroll in and pass the lecture part of the course (Physics 270) in the same semester.

Grading Policy:

prelab questions (due before your lab session starts)	10%
data (due at the end of your lab session)	25%
analysis (due at the end of your lab session)	20%
postlab questions (due at the end of your lab session)	10%
Culminating lab	35%

Your score from the Physics 271 Lab will be combined with your score from the Physics 270 Lecture part of the course to produce one, overall, common score for both Physics 270 and Physics 271. The score from Physics 271 will be weighted 25% and the score from Physics 270 will be weighted 75% to produce this final score.

Required Textbook: Physics 271 Laboratory Manual, Fall 2006 Edition.

Required Software: You will also need a Mastering Physics access code so you can do the pre-lab questions on-line. If you are taking Physics 270, then you should already have had to get a code and do not need to get another one. If you took Physics 161 or 260 in the last year then you are all set - your Mastering Physics access code is good for two years. If you don't already have an access code, then you have two options:

1) Purchase a used book, and purchase the Mastering Physics access code at www.masteringphysics.com for $44.50.
2) Buy textbook bundles with Mastering Physics directly from the publisher. Only one volume needs to be bundled with Mastering Physics, the others can be bought unbundled.

The access number is needed to get on-line access to the web-based homework collection system called Mastering Physics. Also, make sure you get the second edition! If you are wondering if you really need to get the book and access number to pass the course, the answer is: Yes, you really need to get the book and access number to pass the course.

Course Outline: Ordinarily your Physics 271 lab meets every week. The exceptions are the first two weeks when there are no labs (the first and second weeks of class are too short for all sections to meet) and Thanksgiving week when people will be able to make-up a Lab they missed. See the Schedule below. If you are not familiar with using an Excel spreadsheet, you can stop by the second week of classes to get some practice. Otherwise, we expect to see you in the lab on the third week of classes (the week of Sept 12). Don't be late.

Each lab session lasts three hours, and will begin with a 10 minute discussion of the lab by the TA. Each week you must turn in answers to the Prelab questions by putting your solutions into Mastering Physics before the start of your lab period. The pre-lab questions are found in the lab manual.

At the end of your lab session, you need to turn in a lab report. This report is to be turned in to the Physics 271 area in ELMS Blackboard. The report itself consists of an Excel spreadsheet which will contain all data taken, as well as analysis and discussion. The report is expected to be a succinct summary of data, analysis and conclusions without redundant or superfluous discussion. **The spreadsheet itself must be turned in at the end of the lab session (upload it to the Physics 271 site on ELMS Blackboard).** Lab reports turned in after the end of a lab but less than an hour late will have 10% of the total possible score deducted. Lab reports turned in more than one hour late will lose all credit for the lab. The key point is to turn in a copy of your report before you leave. In fact, it is best if you upload copies regularly to Blackboard as you are working on the experiment so that there is no chance of getting a zero for a lab you completed.

The Prelab Questions: Prelab Questions are due before the start of your lab section. You must log into the Physics 271 area in Mastering Physics and turn in the answers to your questions no later than the start of your regular lab session. The labs generally require less than two hours to perform, leaving ample time for analysis and interpretation. However, to perform the experiment in this limited time you will have to be prepared. It is therefore essential that you come to lab having completed the pre-lab questions and having read and understood the lab write-up. It should not surprise you to learn that the answers to all the Prelab Questions can be found by reading the lab.

The Lab Report: At the end of your lab session, you will need to turn in a lab report. Lab reports are not meant to be long or extremely time consuming. In fact, in this class all we require you to turn in is the Excel file in which you recorded all your data, made plots, did analysis and wrote out the answers to the questions.

The Final Questions in Each Lab: At the end of each lab there is typically a set of "Final Questions". These are to be completed and turned in with your lab report spreadsheet at the end of each lab session.

The Culminating Lab: is a closed book practical exam, in which you answer questions about the labs, which may require you to take data using the equipment from the prior lab sessions. To give you a better idea of what is involved, there is a practice lab for the Culminating Lab. You are not required to attend this practice, but failure to prepare for the Culminating Lab will likely be detrimental to your performance on the real exam.

Missing a Lab: In order to pass the class all labs and culminating lab must be completed, without exception. Students are permitted to perform labs in make-up sessions only if they have a legitimate reason for failing to attend a lab session. In the event that you miss a lab session, e-mail the instructor, who may be able to make arrangements for you to attend another section during the same week. If you do not hear from your instructor right away, then by all means try stopping by the Lab to see if there is an open spot. The labs are full and in general there are not going to be any open seats available. However, experiments run for two weeks and if you can take care of a missed lab in the week it is still set up, by all means do so. However, you will need to make sure that the TA who you are sitting in with, your regular TA, and your instructor, all are aware of your situation. It is not OK to just go to a section because it is more convenient than your assigned section.

***Important Notes**:
(1) YOU MUST COMPLETE ALL THE LABS IN PHYSICS 271 IN ORDER TO PASS PHYSICS 270. There are no exceptions. Students who do not complete all of the experiments in physics 271 will automatically get an F in both Physics 270 and Physics 271. Don't believe anyone who tells you differently.
(2) Phys 271 sections will start meeting the **second** week of class. You must do Experiment 0 to be eligible to do the rest of the course.
(3) You must take the Culminating Lab, which is a practical exam, in order to pass the course.
(4) No lab, prelab, or exam scores will be dropped. Missing a lab will require that you make it up as soon as possible, and preferably in the same week that it is missed. The new due date must be arranged by consulting with Dr. Wellstood (well@squid.umd.edu) as soon as possible after it becomes apparent that there will be a problem. If you are going to miss a lab because of a religious holiday, it is your responsibility to inform the instructor of any intended absences for religious observances in advance, so that suitable arrangements can be made.

About the course: Physics 271 is the lab for the third semester of the three-semester 161/260/270 sequence in introductory physics intended for engineering students. You must also be enrolled in the Physics 270 in order to pass Physics 271. Physics 270/271 is a CORE physical science course with a lab. Students are responsible for all assigned material, including reading, homework and labs.

Exams: There is one exam in the class. It is called the Culminating Lab and is a practical test of what you have learned in the lab. If you cannot attend the exam at the scheduled time, see Professor Wellstood before the exam! If you miss the exam with a valid excuse, a makeup exam will be given and it is your responsibility to arrange this in a timely fashion with the instructor. Students are responsible for all material in the lab and homework.

Excuses: Turning in a late lab report, or missing a lab or exam is not allowed without a valid documented excuse as defined by the University (medical problem, religious holiday, or serious family crisis). In all cases, a makeup lab or exam must be completed in a reasonable amount of time or you will receive a score of zero. The makeup test or lab, and the due date, must be arranged by consulting with Dr. Wellstood as soon as possible after it becomes apparent that an exam or assignment due date will be missed. If you are going to miss a lab or exam because of a religious holiday, it is your responsibility to inform the instructor in advance so that suitable arrangements can be made.

Getting started on electronic submission of Prelab Questions: In order to turn in answers to the prelab questions, you will need to register at the Mastering Physics website http://www.masteringphysics.com/.

To register, you need two things - an access number and the class ID. The access number will be packaged with new copies of the Knight text book. In other words, when you buy your textbook you need to get a new copy that comes packaged with an access number. The class ID for the Physics 271 Lab is MPWELLSTOOD29464.

The site is best accessed with a current version of Windows Explorer. If you run into problems check the system requirements. If you have not used Mastering Physics before then you should log on to the site and try the practice set before attempting any of the real prelab sets.

Note that the software may randomize the numbers on a problem, so be careful and remember that the lab manual or other students working on exactly the same problems may have other numbers! The best way to do physics problems is first to work out carefully a general solution and then plug in the numbers at the end. This is especially true if the numbers are being randomized each time so everyone has different numbers. For calculating complicated expressions, I strongly recommend using an electronic spreadsheet, such as Excel, rather than a calculator.

Academic honesty: I expect you to get together in small groups and discuss the labs. However, do not use these discussions as an excuse to copy someone else's data, prelab answers or solutions to the homework or let someone else copy your solution. That is cheating. The right way to proceed is first to read through the lab, then do the prelab, and then take a look at the homework. With this preparation you can then discuss with others and see if you have missed something. All work you submit must be your own and should reflect your own understanding. Academic dishonesty, including copying homework, Googling for solutions on the web, or cheating on an exam, is a very serious offense which may result in suspension or expulsion from the University. Don't do it. Details on the policy can be found at

www.testudo.umd.edu/soc/dishonesty.html.

Help with understanding the material: Learning physics and engineering is a cumulative process: the knowledge learned at each stage builds upon previous knowledge and skills. If you find that you

are falling behind, seek help early on, rather than waiting until just before an exam. Help can be obtained by:

- Regularly attending lecture and discussion sections.
- Visiting the Slawsky Clinic, in room 1140 Physics Building.
- Going to the office hours of Professor Wellstood or your TA.
- The Learning Assistance Service (2201 Schoemaker Bldg., 301-314-7693) helps students with time management, reading, note taking, and exam preparation skills.

If you find that you are having more general academic problems, or are having trouble figuring out what you want to do, I recommend that you stop by Room 1120 Physics and talk to Tom Gleason, the Physics Coordinator of Student Services. Tom graduated from Maryland and also used to be an advisor in Letters and Science (undeclared majors). He is now the advisor for physics majors, but he knows all the University rules and is a great person to talk to because of his perspective on Physics and other programs at the University.

PRELIMINARY SCHEDULE
for
Physics 271- Fall 2011

week #	Dates	Experiment
1	August 31	Start of Fall semester - First Day of classes
	Aug. 31- Sept. 2	no Labs
2	Monday, Sept. 5	Labor Day - no labs
	Sept 6 - 8	No Labs, but stop by for review of Excel or to pick up new Experiment 0 write-up
3	September 12-15	new Experiment 0 - Equipotentials and Fields
4	September 19-22	Experiment 1 - The Multimeter and Oscilloscope
5	September 26-29	Experiment 2 - Resistors and Capacitors
6	October 3-6	Experiment 3 - Faraday's Law of Induction
7	October 10-13	Experiment 4 - Resonance in LRC Circuits
8	October 17-20	Review for First Culminating lab
9	October 24-27	First Culminating Lab
10	Oct. 31 - Nov. 3	Experiment 5 - Diffraction
11	November 7-10	Experiment 6 - Polarized Light
12	November 14-17	Experiment 7 - The Hydrogen Spectrum
13	November 21-23	Make-up Labs
	Nov. 24	Thanksgiving Vacation - No Labs
14	Nov. 28 - Dec 2	review for Second Culminating Lab
15	Dec 5 - 9	Second Culminating Lab
16	Dec 12-16	Make-up Labs