

Spring 2013 Syllabus for Physics 271
General Physics: Vibrations, Waves, Heat, Electricity and Magnetism (Laboratory)

Course description: *General Physics: Vibrations, Waves, Heat, Electricity and Magnetism (Laboratory) Lab includes experiments on mechanics, vibrations, waves, heat, electricity and magnetism. 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.*

Instructor: **Prof. J. Robert Anderson**, Dept. of Physics, Room 2346 Physics Building, banders@umd.edu, 301-405-6142, Office Hours TBA or by e-mail appointment

Required Textbook: Physics 271 Lab Manual, 2006 Edition.

Grading Policy:

| | |
|---|-----|
| prelab questions (due before each of your lab sessions start) | 10% |
| data (due at the end of each of your lab sessions) | 25% |
| analysis (due at the end of each of your lab sessions) | 20% |
| postlab questions (due at the end of each of your lab sessions) | 10% |
| Culminating lab | 35% |

Your score from the PHYS271 will be combined with your score from the PHYS270 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. **NOTE:** To pass PHYS271, you must complete all the labs in PHYS271 and you must also be enrolled in and pass PHYS270 in the same semester.

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

See Schedule: Group A meets on weeks 2, 4, 6, 8, 11, 13, 15

Group B meets on weeks 3, 5, 7, 10, 12, 14, 16

| Section # | Meeting time | Room | Group A or B | Teaching Assistant | e-mail |
|-----------|-------------------|----------|--------------|--------------------|--------|
| 0101 | M 9:00am-11:50am | PHY 3220 | B | | |
| 0102 | M 12:00pm- 2:50pm | PHY 3220 | B | | |
| 0103 | M 3:00pm- 5:50pm | PHY 3220 | B | | |
| 0104 | Tu 8:00am-10:50am | PHY 3220 | A | | |
| 0105 | M. 6:00pm- 8:50pm | PHY 3220 | A | | |
| 0106 | Tu 11:00am-1:50pm | PHY 3220 | A | | |
| 0107 | Tu 4:00pm-6:50pm | PHY 3220 | B | | |
| 0108 | W. 5:00pm- 7:50pm | PHY 3220 | A | | |
| 0109 | Th 1:00pm- 3:50pm | PHY 3220 | A | | |
| 0110 | W 2:00pm- 4:50pm | PHY 3220 | A | | |
| 0111 | Th 9:00am-11:50am | PHY 3220 | B | | |
| 0112 | Th 1:00pm- 3:50pm | PHY 3220 | B | | |
| 0113 | Th 7:00pm- 9:50pm | PHY 3220 | B | | |
| 0115 | W 8:00am-10:50am | PHY 3220 | A | | |
| 0116 | W 5:00pm- 7:50pm | PHY 3220 | B | | |
| 0117 | Tu 4:00pm- 6:50pm | PHY 3220 | A | | |
| 0118 | M 3:00pm- 5:50pm | PHY 3220 | A | | |

**Note: Each Lab Section is labeled as Group A or Group B
Both groups complete Lab 0 during first week (stop by the lab if you need help)**

**Table for Group-A sections: Group A meets on weeks 2, 4, 6, 8, 10, 12, 14, 16
(see schedule below)**

| | Monday | Tuesday | Wednesday | Thursday | Friday |
|----------|---------|---------|-----------|----------|--------------------|
| 8:00 AM | | | | | |
| 9:00 AM | | 104 - A | 115 - A | | |
| 10:00 AM | | | | | |
| 11:00 AM | | | | | |
| 12:00 PM | | 106 - A | | | |
| 1:00 PM | | | | | |
| 2:00 PM | | | | 109 - A | |
| 3:00 PM | | | 110 - A | | TA Lab preparation |
| 4:00 PM | 118 - A | | | | |
| 5:00 PM | | 117 - A | | | |
| 6:00 PM | | | 108 - A | | |
| 7:00 PM | 105 - A | | | | |
| 8:00 PM | | | | | |
| 9:00 PM | | | | | |

**Table for Group-B sections: Group B meets on weeks 3, 5, 7, 9, 11, 13, 15, 17
(see schedule below)**

| | Monday | Tuesday | Wednesday | Thursday | Friday |
|----------|---------|---------|-----------|----------|--------------------|
| 8:00 AM | | | | | |
| 9:00 AM | | | | | |
| 10:00 AM | 101 - B | | | 111-B | |
| 11:00 AM | | | | | |
| 12:00 PM | | | | | |
| 1:00 PM | 102 - B | | | | |
| 2:00 PM | | | | 112 - B | |
| 3:00 PM | | | | | TA Lab preparation |
| 4:00 PM | 103 - B | | | | |
| 5:00 PM | | 107 - B | | | |
| 6:00 PM | | | 116- B | | |
| 7:00 PM | | | | | |
| 8:00 PM | | | | 113 - B | |
| 9:00 PM | | | | | |

Course Outline: You will attend lab once every two weeks. Look at the above tables to figure out if your section is an A or a B section and then check the schedule at the end of the syllabus to find out which weeks it meets. Group A meets the second week, Group B meets the third week, followed by group A the fourth week, etc. See the Schedule below.

The lab will not meet the first week of the semester. For the rest of the semester, there are five experiments (Labs 1, 2, 4, 5, 6), a practice lab for the Culminating lab, the Culminating Lab itself, and one week to make up missed labs.

Each week you must turn in answers to the Prelab questions. The answers are due at the start of your lab session.

Each lab session lasts three hours, and begins with a 10 minute discussion of the lab by the TA. At the end of your lab session, you need to turn in your own lab report. It doesn't matter if your lab partner turned in a report, you need to turn in your own report. It does not matter if your report is the same as your lab partner's. Of course you have the same data as your lab partner. But, if you want to get a grade for the lab you must turn in your report to your own Physics 271 area in ELMS Canvas (go to <http://www.elms.umd.edu>) before you leave the lab. 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).**

The Prelab Questions: Prelab Questions are due at the start of your lab section. 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 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, each and every student must turn in their own lab report. It seems that every semester there are a few students think that they don't need to turn in a lab report because their lab partner did - these are students who have to go back and make up the lab or end up failing the class.

Lab reports are not meant to be long or extremely time consuming. In fact, the only thing you turn in is the Excel file that you and your lab partner worked on during the lab. The spreadsheet should have all your data, your plots, all the analysis and your answers to the questions. Just make sure that both you and your lab partner each turn in your lab report. Each of you will need to log in to ELMS at <http://www.elms.umd.edu>, select the Physics 271 link, then click on "submit Lab report" and follow the instructions to upload your spreadsheet report. Don't forget to hit the submit button. Note also that you can only submit one file, so make sure it is the right and final file that you submit. If you make a mistake and send the wrong thing, e-mail Dr. Anderson and your TA to let them know what happened along with a copy of your spreadsheet.

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. Failure to prepare for the Culminating Lab will likely be detrimental to your performance on the real exam. If you cannot attend the exam at the scheduled time, see Professor Anderson 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

Missing a Lab: In order to pass the class all labs and culminating lab must be completed. 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) You must turn in your own lab report to ELMS at the end of your lab session. You can't turn it in later and you no one else can turn it in for you.
- (3) Phys 271 sections will start meeting the **second** week of class.
- (4) You must take the Culminating Lab in order to pass the course.
- (5) 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. Anderson (banders@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 in advance, so that suitable arrangements can be made.

Excuses: Missing a lab or an 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 makeup exam must be completed in a reasonable amount of time or you will receive a score of zero for the assignment or exam. The makeup test or lab, and the due date, must be arranged by consulting with Dr. Anderson as soon as possible after it becomes apparent that an exam or lab 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.

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, do the prelab, and then take a look at the final questions. With this preparation you can 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](#), Mon. – Fri., 10-11 and 12-1, in room 1140 Physics Building.
- Going to the office hours of Professor Anderson 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 are having general academic problems, you can try stopping by Room 1120 Physics and talking 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- Spring 2013

| week # | Dates | Group | Main Topics |
|--------|---------------|-------|--|
| 1 | Jan. 23-25 | A & B | no lab, but work through Lab 0 if you are not already familiar with Excel. |
| 2 | Jan. 28- 31 | A | Group A Lab 1: The Oscilloscope and the Multimeter |
| 3 | Feb. 4-7 | B | Group B Lab 1: The Oscilloscope and the Multimeter |
| 4 | Feb. 11-14 | A | Group A Lab 2 - Resistors and Capacitors |
| 5 | Feb. 18-22 | B | Group B Lab 2 - Resistors and Capacitors |
| 6 | Feb.25- 28 | A | Group A Lab 4 - Resonance in LRC Circuits |
| 7 | March 4-7 | B | Group B Lab 4 - Resonance in LRC Circuits |
| 8 | March 11-14 | A | Group A Lab 5: Diffraction |
| 9 | March 18-22 | - | Spring Break |
| 10 | March 25-28 | B | Group B Lab 5: Diffraction |
| 11 | April 1-4 | A | Group A Lab 6: Polarized Light |
| 12 | April 8-11 | B | Group B Lab 6: Polarized Light |
| 13 | April 15-18 | A | Group A Makeup and Practice for Culminating Lab |
| 14 | April 22-25 | B | Group B Makeup and Practice for Culminating Lab |
| 15 | Apr. 29-May 2 | A | Group A Culminating Lab |
| 16 | May 6-9 | B | Group B Culminating Lab |
| 17 | May 11-17 | | Finals Week – No labs |