

# Syllabus for Physics 271 - Fall 2015

## General Physics: Electrodynamics, Light, Relativity and Modern Physics (Laboratory)

**1. Official Course Description:** PHYS271 General Physics: Electrodynamics, Light, Relativity and Modern Physics (Laboratory); (1 credit) Grade Method: REG/P-F/AUD. Corequisite: Concurrently enrolled in 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.

**2. Co-requisite:** PHYS270 is a mandatory co-requisite for PHYS 271. To pass PHYS271, students must complete passing work in **both** PHYS270 and PHYS271. If you are not taking PHYS 270, but only taking PHYS 271 (i.e. premed students) you should contact me ASAP. Otherwise you won't get any credit at the end.

**3. Instructor:** Sungwoo Hong,  
Dept. of Physics, Room 3260 PSC (physical sciences complex), [lab\\_2xx@physics.umd.edu](mailto:lab_2xx@physics.umd.edu)  
Office Hours: Wednesday 2PM to 3PM or by e-mail appointment

**4. Lecture and Lab:** To pass PHYS 271, you must complete **ALL** the labs and Culminating lab in PHYS 271 and you must enroll in and pass the lecture part of the course (PHYS 270) in the same semester. If you are not taking PHYS 270, but only taking PHYS 271 you should contact me ASAP. Otherwise you won't get any credit at the end.

### **5. Grading Policy:**

|  |     |
|--|-----|
| prelab questions (due <b>before</b> your lab session starts) | 10% |
| Lab report   | 55% |
| Culminating lab (at the end of the semester)                 | 35% |

**6. Note:** Your score from the PHYS 271 Lab will be combined with your score from the PHYS 270 Lecture part of the course to produce **one, overall, common score for both PHYS 270 and PHYS 271**. The score from PHYS 271 will be weighted 25% and the score from PHYS 270 will be weighted 75% to produce this final score. Note that scores you can see on ELMS is NOT weighted ones (as given above) and you should not take the final percentage as the official one. Instructor will generate weighted final score (and with normalization over different sections) at the end of the semester.

**7. Required Textbook:** The lab manual for PHYS271 will be hosted via the online service Expert TA. In order to purchase lab manuals from Expert TA, you need to follow the steps listed below. Please note that the university bookstore will list "no textbook required" for the course. Again, you need to purchase lab manual via Expert TA.

Steps to purchase lab manuals:

Expert TA Registration Information for PHYS271

1. Open <https://www.theexpertta.com/registration/ClassRegistration.aspx>
2. Enter the class code, listed below, based on your section number:

|      |            |      |            |
|------|------------|------|------------|
| 0102 | 8EE41D-15P | 0106 | A0B6D6-168 |
| 0103 | 547E94-165 | 0117 | 9BC754-169 |
| 0104 | AAC89C-166 | 0118 | 65F99A-16A |
| 0105 | 9A35BD-167 |      |            |

3. Complete registration and payment.

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

| Section | Meeting Time         | Room      | TA            | E-mail   |
|---------|----------------------|-----------|---------------|--|
| 0102    | M 3:00pm - 5:50pm    | PHYS 3213 | Arnold, Harry | <a href="mailto:harryarnold@gmail.com">harryarnold@gmail.com</a> |
| 0103    | M 6:00pm - 8:50pm    | PHYS 3213 | Arnold, Harry | <a href="mailto:harryarnold@gmail.com">harryarnold@gmail.com</a> |
| 0104    | W 4:00pm - 6:50pm    | PHYS 3213 | Sinha, Sumit  | <a href="mailto:sinhon2030@gmail.com">sinhon2030@gmail.com</a>   |
| 0105    | Tu 10:00am - 12:50pm | PHYS 3213 | Baqai, Bilal  | <a href="mailto:bilalfbaqai@gmail.com">bilalfbaqai@gmail.com</a> |
| 0106    | Tu 1:00pm - 3:50pm   | PHYS 3213 | Baqai, Bilal  | <a href="mailto:bilalfbaqai@gmail.com">bilalfbaqai@gmail.com</a> |
| 0117    | Th 11:00am - 1:50pm  | PHYS 3213 | Baqai, Bilal  | <a href="mailto:bilalfbaqai@gmail.com">bilalfbaqai@gmail.com</a> |
| 0118    | Th 2:00pm - 4:50pm   | PHYS 3213 | Arnold, Harry | <a href="mailto:harryarnold@gmail.com">harryarnold@gmail.com</a> |

### 9. Time Table

|          | Monday        | Tuesday      | Wednesday    | Thursday      | Friday |
|----------|---------------|--------------|--------------|---------------|--------|
| 8:00 AM  |               |              |              |               |        |
| 9:00 AM  |               |              |              |               |        |
| 10:00 AM |               | 0105         |              |               |        |
| 11:00 AM |               | Baqai, Bilal |              | 0117          |        |
| 12:00 PM |               |              |              | Baqai, Bilal  |        |
| 1:00 PM  |               | 0106         |              |               |        |
| 2:00 PM  |               | Baqai, Bilal |              | 0118          |        |
| 3:00 PM  | 0102          |              |              | Arnold, Harry |        |
| 4:00 PM  | Arnold, Harry |              | 0104         |               |        |
| 5:00 PM  |               |              | Sinha, Sumit |               |        |
| 6:00 PM  | 0103          |              |              |               |        |
| 7:00 PM  | Arnold, Harry |              |              |               |        |
| 8:00 PM  |               |              |              |               |        |
| 9:00 PM  |               |              |              |               |        |

**10. Course Outline:** You will attend a lab every week. Look at the above table to figure out your lab time. **We do have actual lab during the first week. Please check your section and don't miss the class.** Please read course syllabus very carefully, and also look around ELMS Canvas and Expert TA website to make yourselves be familiar with the system. If you need help, contact your TA (check who is your TA from the first table above) and ask help. Before you ask questions, be sure to check this syllabus first !

There are nine main experiments, one week to make up missed labs, review/practice for the Culminating labs, and the two (first/second) Culminating Labs. Each lab you must turn in answers to the Prelab questions **before** actual lab starts. You can do the prelab by answering the assignment in **Expert TA** (NOT ELMS) website. The answers are due at the start of the lab (No paper submission, submit via Expert TA). You don't have to answer or submit prelabs in Lab manual. Answering and submitting the assignment in Expert TA is **THE PRELAB**.

Each lab session lasts two hours and fifty minutes, and begins with about 10 ~ 15 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). 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 your TA to let your TA know what happened along with a copy of your spreadsheet.

**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 manual. You can do the prelab by answering the assignment in Expert TA website. The answers are due at the start of the lab (No paper submission, submit via Expert TA). You don't have to answer or submit prelabs in Lab manual. **Answering and submitting the assignment in Expert TA is THE PRELAB.**

**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 labs for the Culminating Labs. 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 the instructor (Sungwoo Hong) 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 or TA as soon as possible, 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 one week 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 BOTH PHYSICS 270 AND 271.

There are no exceptions. Students who do not complete all of the experiments in physics 271 will automatically get an F in both PHYS 270 and PHYS 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) 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 the instructor (shong710@umd.edu) or TA 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 the instructor or TA 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](http://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 the instructor 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, 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 (Fall 2015)

| Week | Dates           | EXP | Main Topics                           |
|------|-----------------|-----|---------------------------------------|
| 1    | Aug.31 – Sep.4  | 1   | Electric and Magnetic Fields          |
| 2    | Sep.7 – Sep.11  |     | No Labs This Week (due to Labor Day)  |
| 3    | Sep.14 – Sep.18 | 2   | The Multimeter and Oscilloscope       |
| 4    | Sep.21 – Sep.25 | 3   | Resistors and Capacitors              |
| 5    | Sep.28 – Oct.2  | 4   | Faraday's Law of Induction            |
| 6    | Oct.5 – Oct.9   | 5   | Resonance in LRC Circuits             |
| 7    | Oct.12 – Oct.16 | 6   | Review for the First Culminating Lab  |
| 8    | Oct.19 – Oct.23 | 7   | The First Culminating Lab             |
| 9    | Oct.26 – Oct.30 | 8   | Photovoltaic Cell                     |
| 10   | Nov.2 – Nov.6   | 9   | Polarized Light                       |
| 11   | Nov.9 – Nov.13  | 10  | Interference and Diffraction          |
| 12   | Nov.16 – Nov.20 | 11  | Optical Spectroscopy                  |
| 13   | Nov.23 – Nov.27 |     | Thanksgiving Break – No Labs          |
| 14   | Nov.30 – Dec.4  | 12  | Review for the Second Culminating Lab |
| 15   | Dec.7 – Dec.11  | 13  | The Second Culminating Lab            |
| 15   | Dec.11          |     | Last Day of Classes                   |
| 16   | Dec.12          |     | Reading Day                           |
| 16   | Dec.14 – Dec.19 |     | Final Exams                           |
| 16   | Dec.19          |     | Main Commencement Ceremony            |