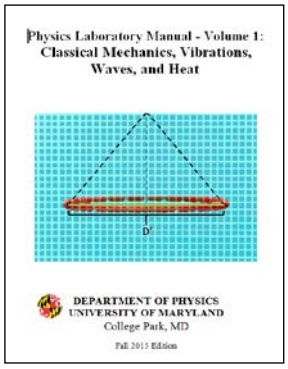
# Syllabus for Physics 261- Spring 2016
## General Physics: Vibrations, Waves, Heat, Electricity and Magnetism (Laboratory)

**Official Course description**: *PHYS261 General Physics: Vibrations, Waves, Heat, Electricity and Magnetism (Laboratory) Credits: 1, Corequisite: PHYS260. Lab includes experiments on mechanics, vibrations, waves, heat, electricity and magnetism. PHYS260 and PHYS261 (lab) must be taken in the same semester.*

**Instructor**: **Prof. Fred Wellstood**
Room 0367 Physics Building
e-mail: well@squid.umd.edu.
Office Hours: Wednesday 1-2 PM or by e-mail appointment

**Schedule**: You need to attend lab the first week of the semester and every week thereafter, except for the week of spring break. A detailed schedule of the experiments is given at the end of this syllabus.




**Required Textbook**: "***Physics Laboratory Manual - Volume 1: Classical Mechanics, Vibrations, Waves, and Heat, Fall 2015 edition***." This Lab Manual and access to the PreLab Questions for PHYS261 are only available electronically from the online service Expert TA. In order to purchase the lab manual from Expert TA, follow the steps listed below. Please note that the University bookstore may incorrectly list "*no textbook required*" for the course. Don't be fooled - you need to purchase electronic access to the lab manual and Prelab questions by going to Expert TA.

**Purchasing the Lab Manual from Expert TA and getting access to the Prelab Questions**:

1. Locate your section number in the table below and then find the class code for your specific section. Make sure you have the correct section and the correct code.
2. Go to https://www.theexpertta.com/registration/
3. Follow the instructions... be sure to enter the correct class code for your section listed below.

**Lab Location**: All Lab sections meet in Room 3219, Physics Building.

**Laboratory sections and class codes**:

| Section | Meeting Time | class code | TA | E-mail |
|---|---|---|---|---|
| **0101** | M 6:00 PM to 8:20 PM | USH22MD-F84C57-1CG | Al-Hussaini, Sarah | sarahbot@umd.edu |
| **0102** | M 12:00 PM to 2:20 PM | USH22MD-ABCE04-1CF | Chen, Chen | chenchen@umd.edu |
| **0103** | W 6:00 PM to 8:20 PM | USH22MD-31D0BA-1CE | Al-Hussaini, Sarah | sarahbot@umd.edu |
| **0104** | Tu 2:00 PM to 4:20 PM | USH22MD-821666-1CD | Chen, Chen | chenchen@umd.edu |
| **0105** | Tu 5:00 PM to 7:20 PM | USH22MD-57FDCB-1CC | Shi, Chuan | cshi@umd.edu |
| **0107** | W 11:00 AM to 1:20 PM | USH22MD-64D335-1CA | Shi, Chuan | cshi@umd.edu |
| **0108** | Th 12:00 PM to 2:20 PM | USH22MD-72CE84-1C9 | Al-Hussaini, Sarah | sarahbot@umd.edu |
| **0109** | Th 9:00 AM to 11:20 AM | USH22MD-F625A3-1C8 | Shi, Chuan | cshi@umd.edu |
| **0110** | Th 3:00 PM to 5:20 PM | USH22MD-E91D5C-1C7 | Chen, Chen | chenchen@umd.edu |

**Note**: You must attend your assigned section at the scheduled meeting time.
You cannot attend a section that you are not enrolled in.

**Course Outline:** Labs start meeting the first day of the first week of the semester. There are 11 experiments, including a review lab and a Culminating Exam lab. All of these labs are required in order to pass the course.

Each week, before the start of your lab session, you must turn in answers to the Prelab questions using Expert TA.

Each lab session lasts two and one-half hours and typically begins with a brief 5 minute discussion of the lab by the TA. By the end of your lab session, you must turn in your own spreadsheet lab report to ELMS Canvas. It does not matter if your lab partner already turned in a report. It does not matter if your report is the same as your lab partner's. If you want to get a grade for the lab, you must turn in your own report to your own Physics 261 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 should contain all your data, as well as analysis, plots and answers to any questions. The report is meant to be a succinct and organized 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 261 site on ELMS).**

**Weekly schedule of the different Sections**

| | Monday | Tuesday | Wednesday | Thursday | Friday |
|---|---|---|---|---|---|
| 9:00 AM | | | | 109 Chuan | |
| 10:00 AM | | | | | |
| 11:00 AM | | | 107 Chuan | | |
| 12:00 PM | 102 Chen | | | 108 Sarah | |
| 1:00 PM | | | | | TA preparation |
| 2:00 PM | | 104 Chen | | | |
| 3:00 PM | | | | 110 Chen | |
| 4:00 PM | | | | | |
| 5:00 PM | | 105 Chuan | | | |
| 6:00 PM | 101 Sarah | | 103 Sarah | | |
| 7:00 PM | | | | | |
| 8:00 PM | | | | | |
| 9:00 PM | | | | | |

**Grading**: Your total numerical score for the course will be calculated using the following weights

| | |
|---|---|
| Prelab Questions (due before each of your lab sessions start) | 15% |
| Spreadsheet Lab Reports | 50% |
| both Culminating Lab | 35% |

The scoring of each lab report will typically break down roughly as follows:

| | |
|---|---|
| data | 45% |
| analysis and plots | 35% |
| postlab questions | 20% |

**Note:** To pass PHYS 261, you must complete **ALL** the labs. This includes Experiment 10 (the Review for the Culminating Lab) and Experiment 11 (the Culminating Lab). Students who do not complete all the labs receive an automatic grade of F.

**Note**: Total scores listed on ELMS are NOT weighted as given above and thus they are not your correct or current official final score. Although your scores on each lab will be listed correctly on ELMS, the total scores or percentages listed on ELMS are completely bogus. Your instructor will generate a correctly weighted final score at the end of the semester and this is what is used for assigning your grade.

**The Prelab Questions**: Prelab Questions are due just before your lab section starts. The labs should typically require less than two hours to complete, leaving ample time for analysis and thought. However, to perform the experiment in this limited time you have to prepare before you get to the lab. In particular, it is essential that you read through the lab write-up and complete the Prelab Questions before you get to the lab. It should not surprise you that the answers to all the Prelab Questions can be found by reading the lab.

To actually complete the Prelab Questions and get credit for them, you must log onto the Expert TA website and complete the assignment. No paper submissions can be accepted - you must submit via Expert TA. Answering and submitting the assignment in Expert TA is the only way to get credit for the Prelab Questions.

**The Lab Report**: At the end of your lab session, each and every student must turn in their own lab report to ELMS Canvas. It seems that every semester there are a few students that think that they don't need to turn in a lab report to ELMS because their lab partner did - these are students who end up failing the class or have to go back and make up the lab.

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 261 link, then click on "Assignments", find the current lab assignment and follow the instructions to upload and submit your spreadsheet report. Don't forget to hit the submit button. Also be sure that it is the right and final file that you submit. If you make a mistake and send the wrong thing, e-mail Dr. Wellstood and your TA to let them know what happened along with a copy of your spreadsheet.

***Important Notes**:

(1) Phys 261 sections start meeting the **first** week of class.

(2) By the end of each lab session, you must turn in your own lab report to ELMS. You can't turn it in after your section ends. It is great if your lab partner turned in a report to his or her own area in ELMS, but if you don't want to get an F you need to log onto ELMS and turn in your own report to your own area. No one else can turn in a report for you.

(3) YOU MUST COMPLETE ALL THE LABS IN PHYSICS 261 IN ORDER TO PASS. Students who do not complete all of the experiments in physics 261 will automatically get an F in Physics 261. Don't believe anyone who tells you differently.

(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 make-up date must be arranged by consulting with your TA and Dr. Wellstood (well@squid.umd) 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, you must inform your TA and instructor in advance and make arrangements for doing a make-up.

**Missing a Lab**: In order to pass Physics 261, you must complete all the experiment, including both culminating labs. Students are permitted to perform labs in make-up sessions only if they have a legitimate reason for failing to attend a lab session. It is not OK to just go to a section because it is more convenient than your assigned section. In the event that you miss a lab session, e-mail your TA and Dr. Wellstood (well@squid.umd), 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. However, many of the lab sections are full and there is a good chance that there are not going to be any open seats in a given section. Experiments run all week, and if you can take care of a missed lab later in the week, by all means do so. You will need to make sure that the section's TA, your regular TA, and Dr. Wellstood (well@squid.umd), all are aware of your situation.

**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 your TA and Dr. Wellstood (well@squid.umd) 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**: You may get together in small groups and discuss the labs. However, do not use these discussions as an excuse to copy someone else's data or prelab solutions, or to 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 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 is not easy. 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 your lab, 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 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.

**The Culminating Lab:** The Culminating Lab is a closed book practical exam in which you answer a set of questions that may require data to be acquired using apparatus from the different experiments.

# PRELIMINARY SCHEDULE for Physics 261
# Instructor - Prof. Fred Wellstood
# Spring 2016

| Week | Date | Experiment # |
|---|---|---|
| | Monday Jan. 25 | First day of classes |
| 1 | Jan. 25 - 29 | Exp 1 - Intro to Data Analysis with Spreadsheet |
| 2 | Feb. 1 - 5 | Exp 2 - Uncertainty in Measurement |
| 3 | Feb. 8 - 12 | Exp 3 - Position, Velocity and Acceleration |
| 4 | Feb. 15 - 19 | Exp 4 - Momentum and Drag |
| 5 | Feb. 22 - 26 | Exp 5 - Centripetal Motion |
| 6 | Feb. 29 - Mar 4 | Exp 6 - The Pendulum and g |
| 7 | Mar 7- 11 | Make-up Labs |
| 8 | Mar 13-20 | Spring Break |
| 9 | Mar 21-25 | Exp 7 - Forced Harmonic Motion |
| 10 | Mar 28 - Apr 1 | Exp 8 - Waves on a String |
| 11 | Apr 4 - 8 | Exp 9 - Ideal Gas Law and Absolute Zero Temp |
| 12 | Apr 11 - 15 | Make-up Labs |
| 13 | Apr 18 - 22 | Exp 10 - The Review |
| 14 | Apr 25 - 29 | Exp 11 - The Culminating Lab |
| 15 | May 2-6 | Make-up Labs |
| 16 | May 9-10 | No Labs |
| | Tuesday May 10 | Last Day of Classes |
| | Wednesday May 11 | Reading Day |
| | May 12-18 | This is week of Final Exams for lecture courses |

Labs meet first week