# Syllabus For Physics 141, Summer 2014

(June 2, 2014 - July 13, 2014)

**Lecture**: MTuWThF 5:30pm - 6:50pm; Room: 1204 Physics Building.
**Discussion**: MW 7:00pm - 7:50pm; Room: 1204 Physics Building.
**Lab**: TuTh 7:00pm - 9:00pm; Room: 3314 Physics Building.

**Instructor:** Simin Mahmoodifar, siminm@umd.edu
**Office:** 3131 Physical Sciences Complex, **Phone:** (301) 405-6119
**Office hours:** M: 1-2 pm, W: 2-3 pm, F: 2-3 pm, or by appointment.

**TA:** Yi Wang, billwang0102@gmail.com
**Office:** 1132 Chemical and Nuclear Engineering Building
**Office hours:** W & F: 4-5 pm.

## Course Description:

Physics 141 is the first of a two-semester series in general physics. The first semester covers the fields of mechanics, thermodynamics, fluids, oscillations, sound and special relativity. This survey course will use calculus and is recommended for chemistry and zoology majors. It also satisfies the requirements of medical and dental schools.

## Prerequisite:

This is a calculus based course and MATH 140 (Calculus I) or equivalent background in algebra, trigonometry and calculus is required. MATH 141 or MATH 221 is co-requisite. If you have any problems following math steps discussed in class, please ask me to clear that up during or after the class or in the office hours, or ask your TA during the discussion sessions.

## Required Texts:

The textbook for the course is: "*Physics for Scientists and Engineers with Modern Physics*" by D. Giancoli; **4th edition**. Publisher: Pearson Education, Inc. (ISBN-13: 9780131495081)
Also required is 141 Lab Manual, 2nd edition.

## Lectures and Discussion Sessions:

Attendance and participation in class activities and discussion sessions are extremely important. My teaching philosophy is based on active learning, where I usually ask students to solve problems and answer questions during class, so it is very important that you attend every class. Please try to read the material that will be covered in each lecture before coming to class. This will help you to understand the new concepts more easily.
Since this summer class is very fast-paced and most of the new concepts build on previous ones covered in earlier lectures, it is very important to make sure you are not falling behind. Please

take advantage of my office hours and ask me your questions during or after class, or at other times by appointment. Also please make sure to attend all the discussion classes. They will be conducted by the TA where he will solve examples and problems from your textbook or problems from your previous homework assignments or exams.
Note that you are responsible for reading and understanding all material in assigned chapters, regardless of whether the material was specifically mentioned in the class.
You are also responsible for all information and instructions discussed in class whether or not you were present. So please get the notes from a classmate if you have an unavoidable absence.

## Lab:

Lab is an important part of this course. There are 10 experiments in PHYS141 Lab. You ***must complete ALL*** the experiments and turn in ***all*** the lab reports ***to be eligible*** for a passing grade in the course. Note that there is only one opportunity to make up a missed lab (assuming your excuse is acceptable). The makeup lab is scheduled for Tuesday July 8th, where only one experiment can be performed during this session.
Your TA will conduct the labs and grade your lab reports. The lab report is due at the end of each lab. You will not be given extra time to turn in the report. So, please read the complete experiment in the lab manual before going to the lab.

## Quizzes:

You can expect one or two 15-minute quiz per week in the class (on random days). Some of the quizzes may be given at the beginning of the discussion sessions (if that's the case you will be notified during the lecture). Each quiz will consist of a few multiple-choice or short/conceptual questions (each 1 point) and one problem (3 points); the problem will be similar to one of the previous homework problems. There will be no makeup quizzes, but the two lowest quiz grades will be dropped to accommodate unavoidable absences.

## Homework:

*The best way to learn physics is to solve as many problems as possible.*
There will be on average 3 homework assignments per week, which will be handed out as follows:
#1 handed out on Monday (topics covered on Mon and Tue) -> Due on Wednesday*
#2 handed out on Wednesday (topics covered on Wed and Th) -> Due on Friday*
#3 handed out on Friday (topics covered on Mon to Fri) -> Due on following Monday*

****All homework assignments are due at the beginning of lecture***. 25% of total points will be deducted for late homeworks that are turned in between 5:45PM to midnight of the due date, and 50% will be deducted from midnight to 9AM of the following day. After that, late homework assignments will not be accepted. Your lowest grade on homework will be dropped for final grade. If you miss one of the homework assignments, it will be counted as your dropped one.

You are expected to perform your own work on all assignments in this course. You are allowed to discuss with your peers while attempting homework problems, but the work that you turn in must be your own. Points will be taken off if your answers match word for word any other student's or the solution manual. Please don't search for the answers to homework problems on the web or the solution manual.

## Exams:

There will be two midterm exams and one final exam. All exams will be closed book, but you will be allowed to bring one 6x4 index card, where you can write whatever you want on both sides of it. You should bring a simple scientific calculator to the exam. You will not be allowed to use your cell phone's calculator during exams/quizzes.

## Missing an exam or assignment:

Turning in late homework or missing an exam is not allowed without a valid documented excuse as defined by the University. "It is the policy of the university to excuse the absences of students that result from the following causes: illness of the student, or illness of a dependent as defined by Board of Regents policy on family and medical leave; religious observance (where the nature of the observance prevents the student from being present during the class period); participation in university activities at the request of university authorities; and compelling circumstance beyond the students control. Students claiming excused absence must apply in writing and furnish documentary support for their assertion that absence resulted from one of these causes." In all cases a makeup assignment 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. Please inform me as soon as it becomes apparent that an exam or assignment due date will be missed so that suitable arrangements can be made.
More information about the University's policy on attendance and assessment/examinations may be found at:
http://www.umd.edu/catalog/index.cfm/show/content.section/c/27/ss/1584/s/1540

## Grading:

The final grade for the course will be based on the lab scores, homeworks, class quizzes, two midterms and a final exam. Lab is an important part of this course. If you do not pass the lab separately, you will not pass the course. Note that missing two labs or getting zero in two labs will result in failing the lab.

The final grade will be determined by the following weighting:

| | |
|---|---|
| Two mid-term exams (2 x 15% each) | 30 % |
| Final Exam | 30 % |
| Homework | 20 % |
| 10 Labs Experiments | 10 % |
| Quizess | 10 % |

## Students with disabilities:

Students with disabilities should meet with me at the beginning of the semester so that appropriate arrangements can be made to accommodate the student's needs. Please note, according to the University policy, students must have their disabilities documented by the Disability Support Service Office.

## Delayed Openings and Campus Closings:

The weather alerts and weather-related schedule adjustments will be announced on the University website (http://www.umd.edu/) and "snow phone line" (301-405-SNOW, 301-405-7669). In the event of a Campus Closing the department will do its best to accommodate students by scheduling make-up sessions or revision of the lab schedule.

## Academic Integrity:

All students are expected to comply with the University of Maryland's academic integrity policies. Information regarding the code of Academic Integrity, the Honor Pledge and the code of Student Conduct may be found at:
http://www.umd.edu/catalog/index.cfm/show/content.section/c/27/ss/1583/s/1566
http://www.umd.edu/catalog/index.cfm/show/content.section/c/27/ss/1583/s/1604
http://www.umd.edu/catalog/index.cfm/show/content.section/c/27/ss/1583/s/1605

Dishonesty on an exam, quiz, homework, or lab report will result in a grade of zero for that assignment. Severe cases will result in a failing grade for the course.

### A tentative schedule of topics and reading assignments:

| WEEK # | SES # | Hour 1<br>5:30-6:50pm | Chapter | Hour 2 |
|---|---|---|---|---|
| 1<br>Kinematics | L1 | Introduction & Measurement | 1 | Discussion |
| | L2 | Vectors and Scalars | 3.2-3.6, 7.2 | Lab |
| | L3 | Kinematics in one dimension | 2 | Discussion |
| | L4 | Kinematics in two dimensions | 3 | Lab |
| | L5 | Review of Kinematics and Problems | | |
| 2<br><br>Dynamics and Work | L6 | Newton's laws of motion | 4 | Discussion |
| | L7 | Friction & Circular Motion | 5 | Lab |
| | L8 | Circular Motion & Gravitation | 5 & 6 | Discussion |

| WEEK # | SESS # | Hour 1<br>5:30-6:50pm | Chapter | Hour 2 |
|---|---|---|---|---|
| | L9 | Work and Energy | 7 | Lab |
| | L10 | Midterm 1* | | |
| 3<br>Conservation of Energy, Momentum and Rotational motion | L11 | Conservation of Energy | 8 | Discussion |
| | L12 | Linear Momentum | 9 | Lab |
| | L13 | Linear Momentum II | 9 | Discussion |
| | L14 | Rotational Motion | 10 | Lab |
| | L15 | Angular Momentum | 11 | |
| 4<br><br>Oscillation, Wave, Fluids | L16 | Static Equilibrium | 12 | Discussion |
| | L17 | Oscillations | 14 | Lab |
| | L18 | Wave motion | 15 | Discussion |
| | L19 | Fluids | 13 | Lab |
| | L20 | Midterm 2* | | |
| 5<br><br>Kinetic theory and Thermodynamics | L21 | Fluids | 13 | Discussion |
| | L22 | Temperature | 17 | Lab |
| | L23 | Kinetic theory | 18 | Discussion |
| | L24 | Heat and the first law | 19 | Lab |
| | L25 | Independence Day Holiday | | |
| 6<br><br>Sound and Special Relativity | L26 | Second law | 20 | Discussion |
| | L27 | Sound | 16 | Lab |
| | L28 | Special Relativity** | Handout | Discussion |
| | L29 | Review and Problem Solving | | |
| | L30 | Final Exam (**CUMULATIVE**) | | |

* Midterm dates are tentative. Any changes will be announced in class and by email.
** Special Relativity will not be part of your final exam.

# Physics 141 Lab, SS-I, 2014

## Tuesdays & Thursdays 7-9 pm

**Instructor: Simin Mahmoodifar, siminm@umd.edu, x56119**

**TA: Yi Wang, billwang0102@gmail.com**

| Wk | Dates | Expt | Experiment Title |
|---|---|---|---|
| | | | |
| 1 | Tue, 3 Jun | 1 | Errors and Significance of Data |
| 1 | Thu, 5 Jun | 2 | Free Fall – Strobe Photography |
| | | | |
| 2 | Tue, 10 June | 3 | Equilibrium of Forces |
| 2 | Thu, 12 June | 6 | Centripetal Force & Acceleration |
| | | | |
| 3 | Tue, 17 June | 5 | Conservation of Linear Momentum – Ballistic Pendulum |
| 3 | Thu, 19 June | 4 | Two Dimensional Collisions – Air Table |
| | | | |
| 4 | Tue, 24 June | 7 | Conservation of Angular Momentum – Air Table |
| 4 | Thu, 26 June | 8 | Hooke's Law & Simple Harmonic Motion |
| | | | |
| 5 | Tue, 1 July | 9 | The Pendulum |
| 5 | Thu, 3 July | 10 | Standing Waves on a String |
| | | | |
| 6 | Tue, 8 July | 1-10 | Make-up Labs |
| 6 | Thu, 10 July | | No Lab |
| | | | |
| 6 | Fri, 11 July | - - | Summer session I ends. |
| | | | |