

# Physics 270 – Spring 2014

## Professor Min Ouyang

Sections 0201, 0202, 0203, 0204, 0205, 0206, 0207

### ▶ Course Description:

Physics 270 is the third of a three- semester sequence of calculus based introductory physics course, which is designed primarily for engineering students. Following topics will be covered: magnetism, electrodynamics, geometrical optics, wave optics, special theory of relativity and introduction to quantum mechanics.

### ▶ General Information:

**Prerequisites:** PHYS.260, PHYS.261 and MATH.241

**Corequisite:** PHYS.271. Physics 271 is the laboratory part of Physics 270. You must complete and pass PHYS.271 (do all the labs) in order to pass PHYS.270. If you believe that you have completed the lab in a previous semester, you should go to Student Services (Room 1120, Physics Building) during the second week of this semester to have your grade verified. PHYS.271 is run separately and is organized by [Mr. Sungwoo Hong](#) this semester. All questions specific to the lab should be addressed to [Mr. Sungwoo Hong](#).

**Text:** Physics for Scientists and Engineers – A Strategic Approach, 3<sup>rd</sup> Edition, by Randall D. Knight

**Lecture:** MWF 12:00pm-12:50pm in Room 1412, Physics Building

### **Mandatory Discussion:**

<b>Section</b>	<b>Time</b>	<b>Classroom</b>
0201	M 9-9:50am	PHYS 1402
0202	W 9-9:50am	PHYS 1402
0203	M 10-10:50am	MTH 0411
0204	M 11-11:50am	MTH 0403
0205	W 11-11:50am	PHYS1204
0206	W 10-10:50am	PHYS 0405
0207	TBD	TBD

### ▶ The Crew:

**Instructor:** Professor Min Ouyang  
Office: 1366 Physics Building (CNAM Annex)  
Phone: 301-405-5985  
Email: [mouyang@umd.edu](mailto:mouyang@umd.edu)

Office Hours: Friday 10-11 am. In addition, I am available at other times by drop-in or by email appointment.

\*please come often (strongly encouraged!) – my door is always open. If you have problems with homework, the lectures, or anything else, this is a good place to go for help.

**\*you can find my office in the CNAM Annex either by (1) going through the blue door labeled “Center for Nanophysics and Advanced Materials” in the basement of the physics building, or (2) entering from the plaza between the Math and Physics buildings. My office is on the second floor of the CNAM. A map is available [here](#). Please note that the doors to the CNAM lock after 6:00pm on weekdays, and remain locked all weekend.**

*TAs:*

**Sections** 0201, 0202, 0204

Ms. Mina Cho

Office: 4205A Physics Building

Email: [minacho19@gmail.com](mailto:minacho19@gmail.com)

Office hour: TBD

**Sections** 0203, 0205, 0206

Mr. Kyle Wardlow

Office: 3260 New Physics Building

Email: [kwardlow@umd.edu](mailto:kwardlow@umd.edu)

Office hour: TBD

**Section** 0207

Mr. Anton de la Fuente

Office: 4208 Physics Building

Email: [matonski@gmail.com](mailto:matonski@gmail.com)

Office hour: TBD

► Note on Lecture and Schedule:

The primary purpose of the lecture is to explain and demonstrate some of the most important concepts in each chapter, not to repeat every detail or derivation that you could read by yourself. **However, students will be responsible for all of the material in every covered chapter whether or not it is discussed during lecture.** Your goal should be to proficient in the subject matter of the course and to acquire the ability to solve the problems using the course material. Please attend every class and try to read up the class materials before coming to the class, which always makes it easier to understand the lectures.

A tentative [schedule](#) of lecture topics is provided. You are advised to read the relevant chapter before lecture in order to increase your probability of understanding the subject covered.

### ► Note on Discussion

Discussion begins in the second week of classes. You must attend the discussion section to which you are assigned. If you have a conflict, see the instructor. **The primary purpose of the discussion sections is to practice problem-solving skills.** The TA will cover material relevant to the homework and exams which may not be covered elsewhere. The TA will also discuss problem-solving strategies. **Please come prepared to ask questions in the discussion section**, which means read the chapters, review your lecture notes, and attempt the homework problems.

### ► Note on Homework

Most of the lecture time will be spent describing the physical principles that you must learn, but the most important aspect of this course is problem solving. You cannot adequately learn the material by simply listening to the lectures and reading the text book. The knowledge you gain that way is superficial and temporary compared with what you learn by confronting and solving problems.

It is very important that you complete and understand all of the homework - you cannot understand the material without being able to solve problems. **Practice is essential to the mastery of any subject of skill.**

There are two different homework: the *online homework* and the *paper homework*.

Online homework (OHW): OHW will be assigned and completed online, using the [Mastering Physics](#). Instruction for the use of this system may be found [here](#). You need to register for this. **The course ID is: OUYANG2014SPRING.** Registering should be finished before the end of first week of class. There are time limits on the assignments and if you miss them there is no way to correct for this later on. The problem assignments should be considered the minimum that you must perform. There are many more good problems in the text book; do as many as you can find time for.

OHW assignment will be available each Monday morning and will be due one week later (before class on Monday). For most assignments you will have a few tries to get the problems correct. Note that each submission of answers will be counted as try even if you have not attempted some of the problems. **It is important that you derive the correct symbolic result first before plugging any numerical values – this procedure is strongly recommended!**

Any technical problem of using [Mastering Physics](#) website should be resolved by sending a message to [support@masteringphysics.com](mailto:support@masteringphysics.com)

The lowest *two* OHW grades will be dropped. OHW solution will be available on [ELMS course site](#) (Canvas) shortly after due date. Because the solution key is available immediately after the homework due date, **no late homework will be accepted.** If you

miss an assignment for a medical reason, you will need a signed medical excuse to have that grade dropped from your total.

Paper Homework (PHW): PHW will be assigned each week through the [ELMS course site](#). PHW will be due each week in discussion section. These PHW will typically involve working two or three problems that are identical or similar to the week's online homework, but will emphasize symbolic, conceptual or graphical rather than numerical results. To perform good on the PHW assignments, take into account the following guide: describe in words, why and where equations being used appear in your write-up. Show your work! Solutions or answers turned in without explanation will NOT receive full credit. Always write out your solution in algebraic form before you substitute in numerical values. Always carry along correct dimensional units (i.e., mass, length, etc.). Turn in neat homework and box your answers. Late PHWs are accepted only under medical circumstances. If you know it will be impossible to turn in an assignment on time you must discuss this with me in advance of the due date. Solutions to PHW will be available on [ELMS course site](#) shortly after the due date, therefore, no late submission will be accepted except that you have a signed medical excuse.

You will be able to drop the lowest *two* PHWs you receive.

#### ► Note on Lecture Quiz:

*Lecture quiz:* quizzes will *occasionally* be given during the lecture. The primary purpose is to check your current state of knowledge, your understanding of lecture materials and an encouragement for your attendance.

Your performance of lecture quizzes will be used as extra credit in determining your final grade should you be on the border between two grades.

#### ► Note on Exams and Schedule

There will be THREE 50 minute midterm exams during lecture periods and ONE comprehensive final exam. Exams are designed to test your understanding of the materials covered in this course. Exams will be closed book, but you are allowed to bring one crib sheet. The final exam will be based on the entire semester's work; the materials covered in the in-class exams are indicated on the schedule.

Your best 2 of 3 midterm exams will be used in the final grade, but **no make-up exams will be offered** – there is no problem if you miss one of the midterm exams, but **DO NOT MISS TWO!** Also, you must take the final exam to pass the course! In the case of intended absence for religious observances, the student must inform the instructor in advance. All such notice must be provided before the end of schedule adjustment period.

Please bring a standard scientific calculator to all exams and discussions. Your calculator should provide arithmetic, trigonometric, exponential and logarithmic functions. Programming and plotting functions will not be necessary.

In order to help you prepare exams three practice midterm exams as well as solutions will be provided in [ELMS course site](#).

*Tentative Schedule:*

Exams	Date	Content (based on 3 <sup>rd</sup> ed.)	Place
Midterm 1	02/28/2014, 12-12:50pm	Ch.32, 33	Rm.1412
Midterm 2	04/04/2014, 12-12:50pm	Ch.34, 35, 36	Rm.1412
Midterm 3	05/09/2014, 12-12:50pm	Ch.22, 23, 37, 38, 39	Rm.1412
Final	TBA	Ch.22-23, 32-40	TBA

### ► Note on Grading Policies

**Honor pledge:** please take a moment to review the [honor pledge](#).

**Grading weight:**

Online Homework (Mastering Physics):	15%
Paper Homework:	10%
Midterms Exams:	30%
Final Exam:	20%
Laboratory (Phys271):	25%
<b>*Lecture Quiz (extra credit):</b>	<b>maximum 10%</b>

**Letter grades:** Letter grades are based upon the distribution of class scores rather than an absolute scale, with ~ 15% earning A, 35% earning B, 35% earning C and 15% earning D. Anyone who does not take the final exam or who does not complete all of the labs will receive an F.

### ► Tips for Doing Well

- Practicing, practicing and practicing. Solving all the homework and quizzes problems on a weekly basis will be crucial in order to perform well in the exams.
- Read the material in the text book both before and after the material is covered in lecture.
- Physics is naturally a cumulative subject; the knowledge learned at each stage builds upon previous knowledge. If you find yourself in trouble, please seek help soon instead of waiting until just before the exam.
- Slawsky Clinic (1214 Physics) – additional help with problem solving strategies can also be available in the [Slawsky clinic](#). Free tutoring for Physics 270 times are M-F 10am-3pm.

- Instructor and TA's office hours – if you cannot make the office hours, phone or email the TA or instructor and make an appointment.