

Syllabus For Physics 270, Fall 2012  
Prof. Rabi Mohapatra

**Lecture hours: MWF 12:00 pm-12:50 pm; Room: Phys. 1410**

**Office hours: W: 2-3 pm, F:2-3; plus any other time by appointment, if these times do not suit you. I am always available to help you if I am free. Do take advantage of the office hours starting early in the semester. The TAs will not have office hours. Contact and office : Rm 4124, Physics bldg; X56022; e-mail: rmohapat@umd.edu**

Physics 270 is the third of a three semester introductory course on physics for engineers. The text book for the course is: **“Physics for Scientists and Engineers” by Randall Knight, second edition (Addison-Wesley)**. The course will consist of three regular hourly classes to be conducted by me and one hour-long discussion class for each section to be conducted by the TA plus a lab . The final grade for the course will be based on the lab scores, home works, class quizzes, three midterms and a final. Lab is an important part of this course. If you do not pass the lab separately, you will not pass the course and have to retake the whole course again. So please pay special attention to the lab. Below is a detailed description of the organization of the course.

**co-requisite:** Math 241 ; If you do not follow any math step discussed in the class, I can clear up in the office hours or ask the TA in the discussion class.

**Discussion session:** In addition to regular classes MWF 1-1:50, there will be a one hour discussion session every week. Please check the schedule of discussion classes for your section. Purpose of this session is to discuss the material that you went over in the class, solve problems (other than the ones assigned as homework) and clear up difficulties with concepts and math steps etc. Please attend these classes regularly and make good use of them.

**Teaching Assistants:** Your teaching assistant will take the discussion classes, grade midterms and quizzes. The TA will not have any office hours. The office hours will be maintained by me. If you have any questions on the grades, home works, quizzes etc, you should talk to me.

**Important dates for Phys. 270 students; midterm dates are tentative.**

First day of classes	Aug. 29
Midterm I	friday, Oct. 5
Midterm II	Friday, Nov. 2
Midterm III	Monday, Dec. 3
Final Exam.	Saturday, Dec. 15, 6:30-8:30 PM

## Homeworks, Quizzes, Midterms and Grading

There will be one weekly 15 minute quiz in the class, on one of the three class days. The day of the quiz will be random depending on a suitable breakpoint between chapters and it will cover material covered up to the preceding week. The quiz will be graded and will count towards your final grade.

There will be weekly online homework assignments; they will be graded and will count towards your final grade.

### **Online home works**

The online homework assignments will be from the web site of the book [masteringphysics.com](http://masteringphysics.com).

You need to register for this using the course ID below:

**MPMOHAPATRA88656.**

Registering in mastering physics should be done before the first day of class or at the latest before the end of the first week of classes. Talk to me if you need help with this during the first week of classes . There are time limits on the assignments and if you miss them once there is no way to correct for this later on.

When solving problems, read the instructions carefully before you start working since there are only few chances to click on the answer button. Any technical problems with masteringphysics website should be resolved by sending a message to [support@masteringphysics.com](mailto:support@masteringphysics.com).

### **Midterms**

There will be three midterm exams and all of them will count towards the final grade. The final exam will cover material covered in the whole semester.

The **final grade** will be decided as follows:

Home works	50
Quizzes	50
Midterms; $3 \times 50$	150
Final	150
Laboratory	100
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Total	500

**Missing an Exam:** You must have a valid, written, medical excuse acceptable by the rules of the university to make up if you miss any of the midterms or the final exam. The excuse must be presented to the Professor and not the TA at the first opportunity. How the missed exam will be made up will be decided by the professor at that time, assuming the excuse is acceptable. Under very special circumstance, an incomplete grade may be issued- see the specific University rules for this and how an incomplete grade can be changed to a regular grade.

**Responsibility:** You are responsible for everything in every covered chapter, regardless of whether the material was specifically mentioned in the class. Your goal should be to be proficient in the subject matter of the course and to acquire the ability to solve problems using the course material. Please attend every class and try to read up the class material before coming to the class. This always makes it easier to understand the material.

**HELP AVAILABLE:** If you have any difficulty at all understanding the material, please clear it up as soon as possible. If a difficulty is not cleared up right away, it generally leads to more trouble later on till it grinds your physics progress to a complete halt. It may then be too late. So (*let me repeat again*), clear up your difficulties as soon as they arise without any delay. **THIS IS VERY IMPORTANT!!**

*Please take advantage of my office hours which are given above. If the announced hours are not convenient for some reason, I will also be available at times other than the announced office hours; send me a e-mail the day before you can come (rmohapat@umd.edu) to set up an appointment. If I am free, I will be happy to have you come in. lecture. This can earn you participation points which may be used as extra credit in determining your final grade, should you be on the border between two grades.*

**Always remember: key to really learning physics is to solve as many problems as possible and not necessarily the ones assigned in the class.** Physics involves new ideas and new equations which are not part of your daily thinking. The more problems you solve, the more familiar you feel with the the ideas and equations and easier it becomes to use them for problem solving. Some suggestions to improve your understanding of the material:

- Read the chapter being covered before coming to the class- so that you have some familiarity with the material- it is then a lot easier to stay focussed in the class.
- Try to solve at least four or five physics problems every evening or early morning in addition to assigned homework problems.
- A useful technique is to first form a visual image of the problem before you attempt to solve it. Draw diagrams for every problem. You will learn in the

class how to do this in various cases. You can come to my office for help with this also.

### Chapters from Randall Knight book Covered

A tentative schedule is as follows:

	<b>Date</b>	<b>Topics covered</b>	<b>chapter</b>
Wk 1	08/29-08/31	Magnetic Field	Ch. 33
Wk 2	09/03- 09/07	Magnetic forces	Ch. 33
Wk 3	09/10-09/14	Electromagnetic Induction	Ch. 34
Wk 4	09/17-09/21	Electromagnetic fields	Ch. 35
Wk 5	09/24-10/01	Electromagnetic fields	Ch. 35
Wk 6	10/03	Review	Ch. 33-35
Wk 6	10/05	<b>Midterm 1</b>	Ch 33-35
Wk6+7	10/08-10/12	AC Circuits	Ch. 36
Wk 8	10/15-10/19	Ray Optics	Ch. 23
Wk 9	10/22-10/26	Wave optics	Ch. 22
Wk 10	10/31	Review	Ch. 36,22,23
Wk 10	11/02	<b>Midterm II</b>	Ch. 36, 22,23
Wk 10+11	11/02-11/09	End of Classical Physics	Ch. 38
Wk 12	11/12-11/16	Quantization	Ch. 39
Wk 13	11/19-11/21	Wave functions	Ch. 40
Wk 14	11/26-11/30	Quantum Mechanics	Ch. 41
Wk 14	12/03	<b>Midterm III</b>	Ch. 38, 39, 40
Wk 14+15	12/05-12/10	Quantum Mech and Review.	Ch. 41
Final	Dec. 15, Saturday	includes the whole semester work	