

Syllabus For Physics 270, Fall 2011
Prof. Rabi Mohapatra

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

Office hours: W: 3-4 pm, F:1-2; Rm 4124; X56022; e-mail:rmohapat@umd.edu 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.

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: A strategic approach" by Randall B. Knight; second edition (Addison-Wesley), volumes 3,4 and 5. The course will consist of three regular hourly classes per week to be conducted by me and one hour-long discussion class for each section to be conducted by the TA plus a lab (per week) . The final grade for the course will be based on the lab scores, homeworks, class quizzes, three midterms and a final. To pass the course, you must pass both the lab and the theory part separately but your final grade will combine both. Below is a detailed description of the organization of the course.

Prerequisite: Math 141, Phys 161, Phys260; you are expected to know simple differentiation, integration as well as elementary algebraic manipulations and trigonometric rules. 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: 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 homeworks, the weekly quizzes as well as labs. The TA will not have any office hours. The office hours will be maintained by me. If you have any questions on the grades, homeworks etc, you should talk to me.

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

First day of classes	Aug.31
Midterm I	wednesday, Sept. 28
Midterm II	October, 28
Midterm III	wednesday, Nov. 30
Final Exam.	Saturday; Dec.17, 6:30-8:30 PM

Homeworks, Quizzes, Midterms and Grading

There will 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 upto 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 homeworks

The online homework assignments will be from the website of the book masteringphysics.com.

You need to register for this. The course ID is:

MPMOHAPATRA19575.

You should register with the masteringphysics before the first class or at the latest before the end of 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. Read the instructions carefully before you start working since there are only few chances to click in the answer.

Midterms

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

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

Homeworks	50
Quizzes	50
Midterms; 3×50	150
Final	125
Laboratory	125 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 or if for some reason, you cannot come during an office hour, 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.

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. So 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 Covered

Chapters 33, 34, 35, 36, ; 22, 23, 25, 38, 39, 40, 41 of Knight book will be covered. A tentative schedule is as follows: (This is a tentative schedule since it is not easy to judge the detailed pace of a course before it begins.)

	Date	Topics covered	Knight chapter
Wk 1	08/31-09/02	Magnetic Field	Ch. 33
Wk 2	09/07- 09/09	Magnetic forces	Ch. 33
Wk 3	09/12-09/16	Electromagnetic Induction	Ch. 34
Wk 4	09/19-09/26	Electromagnetic fields	Ch. 35
Wk 5	09/28	Midterm I	Ch. 33-35
Wk 5+6	09/30-10/5	AC Circuits	Ch. 36
Wk 6 +7	10/07-10/12	Ray Optics	Ch. 23
Wk 7+ 8	10/14-10/19	Wave optics	Ch. 22
Wk 8+9	10/21	Review	
Wk 9	10/24	Midterm II	Ch. 36,22,23
Wk 9 and 10	10/26-11/07	Beginning of quantum physics	Ch. 37 and 38
Wk 11	11/09-11/16	Quantization	Ch. 39
Wk 12	11/18-11/23	Wave functions	Ch. 40
Wk 13	11/28	review	Ch. 37-40
wk 13	11/30	midterm III	Ch. 37-40
wk 14 and 15	12/01-12/09	Quantum Mechanics	Ch. 41
Wk 16	12/12	Review	
wk 16	12/17	Final exam	