

Physics 420

Principles of Modern Physics

Fall 2008 — Professor Abazajian

Course topics: This is a Modern Physics course geared primarily towards engineering students. There are more topics in the text than time allows for a one semester course. The lectures will cover selected material from the text, according to the schedule below.

Lectures: Mondays, Wednesdays from 4:00 to 5:15 pm in room 0405 of the Physics Building. See the Course Schedule for the planned topic(s) for each lecture. In order to follow the lecture and discussion Read the material in the text prior to the lecture. The schedule may shift around by a day or so if some topics take more or less time than expected.

Required textbook: “Modern Physics” by Serway, Moses and Moyer, 3rd Edition, Thomson, Brooks, Cole 2005. ISBN 0-534-49339-4. Material for Chapter 16, cosmology, is available online at <http://physics.brookscole.com/>

Homework will be assigned about once per week and must be turned in at the beginning of class on the specified date (or earlier). Don’t wait until the last day to get started! Please do all of the homework and turn it in on time, unless you have a valid excuse (i.e. illness, a religious observance, or some other compelling reason).

Exams: Exams will be based on material in the text as well as *material presented in class*. Exams are *cumulative*. There will be two exams during the semester plus a final exam. The exams will be given in class, on paper, and will be closed book. I do not expect you to memorize equations and constants. You may bring one index card with equations for the first exam and two index cards for the second exam, and one full sheet of paper for the final exam. Any needed physical constants or data will be provided. You will need a calculator with standard trigonometry functions, etc. Exams must be taken on the scheduled days unless you have a valid excuse. If you know in advance that you will have to miss an exam, please inform me as soon as possible.

Up-to-date course information and your scores on assignments will be available on the ELMS (Blackboard) system. If you go to <http://elms.umd.edu> and log in with your username (which is your campus “Directory ID”) and password, you should see the course listed in the “My Courses” panel.

Course grade:

20%	Homework
25%	Exam 1
25%	Exam 2
30%	Final exam

How to do well in this course:

Read the textbook before the material is presented and discussed in class. Come to the lectures. Do all the homework. Ask for help (your teacher, TA, or a classmate) whenever there is something you don’t understand. We’re here to help with the material, not make it harder! Review your notes and past homework assignments before each exam.

Contact Information:

Prof. Kevork ABAZAJIAN, 4101 Physics Building, 301-405-6009, kev@umd.edu

Usual office hours: Tuesdays 2:00-3:00pm and Thursdays 2:00-3:00pm in room 4101

TA/Grader: LEE Ming-Jer, leemj@umd.edu,

Office hours: By Appointment

*** NOTE: Office hours are subject to change – watch for announcements

If you are unable to come during regular office hours, please contact us by email or phone to ask a question and/or arrange a time to meet.

Honor Code:

The University of Maryland, College Park has a nationally recognized Code of Academic Integrity, administered by the Student Honor Council. This Code sets standards for academic integrity at Maryland for all undergraduate and graduate students. As a student you are responsible for upholding these standards for this course. It is very important for you to be aware of the consequences of cheating, fabrication, facilitation, and plagiarism. For more information on the Code of Academic Integrity or the Student Honor Council, please visit <http://www.studenthonorcouncil.umd.edu/whatis.html> .

Students with disabilities:

Accommodations will be provided to enable students with disabilities to participate fully in the course. Please discuss any needs with your instructor at the beginning of the semester so that appropriate arrangements can be made.

Weather and emergency closures:

If the University is closed due to weather or some emergency situation on a day when homework is due, then that homework must be turned in at the beginning of the next class when the University is open. If the University is closed on the scheduled date of an exam, then the exam will be given during the next class period when the University is open. If the University is closed on any non-exam day, including a review session (the class immediately before an exam), then the exam will still be given according to the original schedule. In these or other exceptional circumstances, we will attempt to communicate with students by email.

Physics 420 Course Schedule Fall 2008 — Professor Abazajian

	M	W	
Sept		3	Chapter 1: Relativity, Lorentz transformations, spacetime
	8		Chapter 1 Relativity, continued...
		10	LHC Startup: Documentary "The Six Billion Dollar Experiment"
	15	17	Chapter 2: Relativistic energy and momentum
	22	24	Chapter 3: Quantum theory of light, blackbody radiation, compton scattering, photoelectric effect...
		1-	
	29	Oct	Chapter 4: Particles
Oct	6	8	Chapter 5: wave particle duality and a review of wave phenomena
	13		Exam 1: Chapters 1-4 (date is tentative)
		15	Chapter 5: waves continued...
	20	22	Chapter 6: Quantum mechanics in one dimension, QM oscillators and the particle in a box
	27		Chapter 6: Continued
		29	Chapter 7: Tunneling and reflection
Nov	3	5	Chapter 7 continued
	10	12	Chapter 8 The two dimensional particle in a box and the hydrogen atom
	17		Exam 2: Chapters 5-7 (date is tentative)
		19	Chapter 9: Atomic structure
	24		Chapter 9: Atomic structure, continued...
		26	class cancelled for Thanksgiving holiday
Dec	1	3	Chapter 10: Quantum statistics
	8	10	Chapter 16 (on web): Cosmology
Date/time TBA			Final exam