Physics 420
Principles of Modern Physics
Fall 2009 — 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.

Office Hours & 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 and by appointment
Grader: Prof. H. H. Chen, chenhh@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.

Course Evaluations:
Your participation in the evaluation of courses through CourseEvalUM is a responsibility you hold as a student member of our academic community. (www.courseevalum.umd.edu) Your feedback is confidential and important to the improvement of teaching and learning at the University as well as to the tenure and promotion process. CourseEvalUM will be open for you to complete your evaluations for fall semester courses between Tuesday, December 1 and Sunday, December 13. Please go directly to the website (www.courseevalum.umd.edu) to complete your evaluations starting December 1. By completing all of your evaluations each semester, you will have the privilege of accessing online, at Testudo, the evaluation reports for the thousands of courses for which 70% or more students submitted their evaluations.

Final Exam: ***Date & Time To Be Announced***

Physics 420 Course Schedule – Fall 2009, Prof. Abazajian

	Date	Lecture topic(s)	Reading assignment
Mon	31-Aug	Relativity, Lorentz Transformations, Spacetime	Chapter 1
Wed	2-Sep	Relativity, Lorentz Transformations, Spacetime	Chapter 1
Mon	7-Sep	*Labor Day Holiday*	
Wed	9-Sep	LHC Startup: Documentary "The Six Billion Dollar Experiment"	
Mon	14-Sep	Relativistic Energy and Momentum	Chapter 2
Wed	16-Sep	Relativistic Energy and Momentum	Chapter 2
Mon	21-Sep	Quantum theory of light, blackbody radiation	Chapter 3
Wed	23-Sep	Compton scattering, photoelectric effect	Chapter 3
Mon	28-Sep	Particles	Chapter 4
Wed	30-Sep	Particles	Chapter 4
Mon	5-Oct	Review of Wave Phenomena	Chapter 5
Wed	7-Oct	Wave/Particle Duality	Chapter 5
Mon	12-Oct	**Exam 1: Chapters 1-4 (date is tentative)**	
Wed	14-Oct	Wave/Particle Duality	Chapter 5
Mon	19-Oct	Quantum mechanics in one dimension	Chapter 6
Wed	21-Oct	QM Oscillators, Particle in a Box	Chapter 6
Mon	26-Oct	Quantum mechanics in one dimension	Chapter 6
Wed	28-Oct	Tunneling and Reflection	Chapter 7
Mon	2-Nov	Tunneling and Reflection	Chapter 7
Wed	4-Nov	Tunneling and Reflection	Chapter 7
Mon	9-Nov	The two dimensional particle in a box	Chapter 8
Wed	11-Nov	The hydrogen atom	Chapter 8
Mon	16-Nov	**Exam 2: Chapters 5-7 (date is tentative)**	
Wed	18-Nov	Atomic Structure	Chapter 9
Mon	23-Nov	Atomic Structure	Chapter 9
Wed	25-Nov	*No Lecture - Thanksgiving Holiday*	
Mon	30-Nov	Quantum Statistics	Chapter 10
Wed	2-Dec	Quantum Statistics	Chapter 10
Mon	7-Dec	Cosmology	Chapter 16
Wed	9-Dec	Cosmology	Chapter 16