Introduction to Modern Physics
PHYS 3305 (Fall 2007) Syllabus
http://www.physics.smu.edu/~kehoe/3305_07f

Instructor: Professor Bob Kehoe   **Office:**   Fondren Science 113
e-mail: kehoe@physics.smu.edu   **Phone:**   (214) 768-1793
                                         Fax: (214) 768-4095

Texts: *"Modern Physics for Scientists and Engineers"*, 3rd edition,
         Authors: Thornton & Rex
Prerequisite: differential and integral calculus, scientific calculator
Class Coordinates: Tues. & Thurs. 12:30a.m – 1:50p.m. in Rm 155 Fondren Science
Office hours: 12:00noon-2:00pm Friday, or by appointment

Course Objectives: To provide an overview of the physics of the 20th century. Students will familiarize themselves with special relativity and quantum mechanics. They will also study the physics of nuclei, atoms and semiconductors. Modern applications will be discussed. Problem solving skill development will also be an emphasis of the class.

Method of Instruction: The class will consist of lectures. Help sessions with Ana Firan are Thursday 9:00am to 12noon in Fondren 60. Homework is the foundation of your effort to acquire skill in using the material in the course. It will be due on each Tuesday following the week the material is covered and will be worth 20% of the course grade. No late homework is accepted. Solutions will be posted on the course website.

Quizzes and Tests: There will be 2 primary tests during the semester, aside from the final exam. Tests will make up 25% of the class grade. Each test covers material since the previous one. The final is cumulative over the whole course and counts for 25% of the grade. There will be weekly 15 minute quizzes during the semester scheduled Tuesdays of non-test weeks. These will provide 20% of your grade. The lowest two quiz grades will be dropped. Each quiz covers material since the last test or quiz. Tests and quizzes are closed book. You may bring a single 8.5"x11" sheet with important formulas and constants relevant for the material on each test and quiz. A presentation on a special topic at the end of the semester will count for 10% of the course grade.

Grading and Attendance Policy: In general, it is *crucial* to show your work to get credit for solutions to physics problems. Regrading requests must be well-justified in writing, and as delineated on the course web-page. Anticipated absences resulting from religious observance or officially sanctioned extracurricular activity must be brought to the instructor's attention at least 2 weeks in advance. Upon request, missed lectures will be recorded as an audio podcast with a copy of lecture notes. Affected quizzes or tests will be given prior to the rest of the class. No other make-up quizzes or tests will be granted.

Physics 3305 Schedule, Fall 2007

Date	Reading, Tests, Quizzes	Homework Problems Assigned:
Aug 23 Th	handout, Scientific Paradigms	
Aug 28 T	Ch 2 (to 2.7): Special Relativity	Ch 2: 6,7,19,21,22,26,32,35; 42,48,58,66,68,83
Sep 4 T	Ch 2.8 onward: Relativistic Dynamics HW Ch 2a due; Quiz #1	
Sep 11 T	Ch 3: Experiment & Quantum Th. HW Ch 2b due; Quiz #2	Ch 3: 3,5,12,19,26,32,42,50
Sep 18 T	Ch 3: Experiment & Quantum	
Sep 20 Th	Ch 4: Structure of the Atom	Ch 4: 11,22,31,39,47,48,50
Sep 25 T	HW Ch 3 due; Test #1 (Ch 2-3)	
Sep 27 Th	Ch 4: Structure of the Atom	
Oct 2 T	Ch 5: Wave Properties of Matter HW Ch 4 due; Quiz #3	Ch 5: 2,12,19,22,31,34,40,58
Oct 9 T	Ch 6 (to 6.4): Quantum Theory HW Ch 5 due; Quiz #4	Ch 6: 10,12,22; 26,32,37,38,40
Oct 16 T	Ch 6.5 onward: Quantum Theory HW Ch 6a due; Quiz #5	
Oct 23 T	HW Ch 6b due; Test #2 (Ch 4-6)	
Oct 25 Th	Ch 7: Hydrogen Atom	Ch 7: 1,7,11,20,31,34,38,44
Oct 30 T	Ch 7: Hydrogen Atom	
Nov 5 M	*last drop date	
Nov 6 T	Ch 7: Hydrogen Atom HW Ch 7 due; Quiz #6	
Nov 8 Th	Ch 8: Many Electron Atoms	Ch 8: 1,10
Nov 13 T	Ch 11: Semiconductors HW Ch 8 due, Quiz #7	Ch 11: 5,10,12,13,14,22,31
Nov 20 T	*Fall Break/Thanksgiving, no class	
Nov 27 T	Ch 12/13: Nuclear Physics HW Ch 11 due; Quiz #8	Ch 12: 6,17,29,51; Ch 13: 3,5,26,49
Dec 4 T	Supplemental Material, Ch 12/13 HW due	
Dec 13 Th	Final Exam 8am-11am	