Course Information for PHY 2180/2185, Fall 2011

Required Text Book: UNIVERSITY PHYSICS, Volume 2, CHAPTERS 21- 40
Buy the edition that includes WebAssign.

Authors: Wolfgang Bauer and Gary D. Westfall
Edition: 1st
Publisher: MCG
ISBN: 9780077354794

Quiz Sections:

During the quiz session, you will clarify concepts, learn problem solving skill, and discuss questions and problems of the chapters. It is very important that you attend these quiz sessions, it will certainly help improving your grade**. Nine quizzes** will be given during the course and out of which **8 best quizzes will be considered for the final**. The question will be assigned by me but graded by the quiz instructors. A question will be given at the end of the quiz session and you will have 10 minutes to answer the question. At the end of the semester, quiz instructor will send me your final scores.

Quizzes days and time

Section 006 : Thursday, 05:00PM - 05:55PM**, Location** 1163 MAIN
Section 007: Thursday, 07:30PM - 08:25PM**, Location** 0105 MAIN

Problems discussion

On Tuesdays' lecture, in the last 50 minutes, we will discuss problems to clarify the concepts covered during the previous week.

Pre-requisites and Co-requisites: This course requires MAT2010. MAT2020 is a co-requisite. PHY2170 must normally be taken concurrently with PHY 2171.

Homework:

1. Try to do all those problems in each chapter whose worked-out solutions are available in the student solutions manual. Although they will not be graded, it is strongly recommended that you try to work with these problems and solve them. **Some of the questions in your exams will come from these problems.** You are highly encouraged to work through the other problems as well.

2. Online WebAssign (**14%**): Posted on WebAssign online website (http://www.webassign.net) and graded automatically. A total 14 webassignments one for each chapter and each worth 1% of the total score will be given to you during the course. You will have one week time to work on the assignment and submit it. **Late submission after the schedule time will reduce the score to 0.5%.** WebAssign access card valid for one or two semesters may be included in the textbook package; or you could purchase the access online. Please consult the Student Guide on WebAssign website for more information.

Exams

There will be three in-class exams each 50 minutes in addition to the cumulative final at the end of the semester. All of the exams will be closed book. The in-class exams will focus on selected chapters covered during that period (see the syllabus), although you may be required to apply concepts from earlier chapters as well. **There is no make-up exam unless an official evidence proving your inability to attend the exam is provided.**

You MUST bring your Wayne State ID to the exam and present it to a proctor when handing in the exam. No electronic devices (other than a calculator) are allowed.

Exams will consists of 3 parts

- Conceptual questions (True/False and Multiple Choice); 20%
- Short Numerical Questions (multiple choice, No Partial Credit); 60%
- Derivation based numerical questions (Partial Credit if work shown is reasonable and valid); 20%

Scores distribution among the exams:

	Exam1	15%
	Exam2	15%
	Exam3	15%
	Exam-Final	25%
	Quizzes	16%
	WebAssign	14%
Bonus scores	Planetarium shows	2%

Grade Determination:

Final grades letters will be attributed according to the following table.

A	**90 – 100%**	**B-**	**70 – 74%**	**D+**	**50 – 54%**
A-	**85 – 89%**	**C+**	**65 – 69%**	**D**	**45 – 49%**
B+	**80 – 84%**	**C**	**60 – 64%**	**D-**	**40 – 44%**
B	**75 – 79%**	**C-**	**55 – 59%**	**F**	**0 – 39%**

After your final exam is over, there will not be any mechanism—make-up exam or homework assignment -- to improve your grade.

In-Class Policies

Out of consideration to other students during the lecture please abide by the following rules of conduct:

- Pease turn off your cell phone while in the lecture hall
- Please arrive on time for lecture and do not leave early
- Please be mindful and considerate of your classmates

Planetarium show

You can obtain up to 2% extra-credit by attending a show at the Wayne State Planetarium. Seeing planetarium shows are an enjoyable and enlightening experience. The planetarium staff will have each of the visiting students fill out a simple form (name, instructor, comments, etc.) at the end of the show, so that we know which students are attending. At the end of the semester, the names of attending students to their respective instructors are sent by a planetarium staff, so the students can receive an extra credit. Interested students can click on "planetarium" at the physics web site or go directly to http://physics.wayne.edu/~planetarium

Additional Resources and Help:

Physics Resource Center, located in Room 172 of Physics Research Building. The scheduled time can be found from the physics department main office. This is a Help Center for students taking undergraduate physics; from there you can get assistance with your homework, lab work, and other issues related to this course.

Student Disability Services: If you have a documented disability that requires accommodations, you will need to register with **Student Disability Services (SDS)** for coordination of your academic accommodations. SDS office is located at 1600 David Adamany Undergraduate Library in the Student Academic Success Services department. SDS telephone number is 313-577-1851 or 313-577-3365 (TDD only). Once you have your accommodations in place, I will be glad to meet with you privately during my office hours to discuss your special needs. Please be aware that a delay in getting SDS accommodation letters for the current semester may hinder the availability or facilitation of those accommodations in a timely manner. Therefore, it is in your best interest to get your accommodation letters as early in the semester as possible.

Syllabus, Teaching, Quizzes and Exams Schedule

Required Text book: UNIVERSITY PHYSICS, V.2 CHAPTERS 21 - 40
Authors: Wolfgang Bauer and Gary D. Westfall

Week and Date	Lecture Topics	Sections
Week-1 9/1	Electromagnetism, Electric charge, Insulators, Conductors, Semiconductors, Superconductors, Electrostatic charging, Electrostatic force -- Coulomb's law	**21.1-23.5**
Week-2 (9/6, 9/8)	Newton's law of gravitation Electric field and electric field lines, Electric field due to point charge and dipole, General charge distribution, Force due to electric field, Electric flux	**21.6** **22.1 - 22.7**
Week-3 (9/13, 9/15)	Gauss's law, Special symmetry, Electric potential energy, Electric potential, Equipotential surfaces and lines, Electric potential of various charge distributions, Electric potential from electric field	**22.8, 22.9,** **23.1 - 23.5**
Week-3, 9/15	**Quiz-1**	**21- 22.5**
Week-4 (9/20, 9/22)	Potential energy of a system of point charges, Capacitance, Circuits, parallel plate capacitor, cylindrical capacitor, spherical capacitor, capacitors in circuits,	**23.6,** **24.1 - 24.6**
Week-4, 9/22	**Quiz-2**	**22.6-22.9, 23**
Week-5 9/27	**Exam-1, 50 minutes duration**	**Chapters included 21 to 24.6**
Week -5 (9/27, 9/29)	Energy stored in capacitors, capacitors with dielectrics, Microscopic perspective on dielectrics Electrical current, Current density, resistivity and resistance, electromotive force and Ohm's law, resistors in series, resistors in parallel,	**24.7- 24.9** **25.1 - 25.6**
Week-6, 10/6	**Quiz-3**	**24-25.4**
Week-6 (10/4,10/6)	energy and power in electrical circuits, Diode: one way street in circuits Kirchhoff's rules, single-loop circuits, Ammeters and Voltmeters, RC circuits	**25.7-25.8** **26.1-26.5**
Week-7, 10/13	**Quiz-4**	**25.5-25.8, 26**
Week-7 (10/11,10/13)	Permanent magnets, magnetic force, motion of charge particles in a magnetic field, magnetic force on current carrying wire, torque on current carrying wire, magnetic dipole moment, Hall-effect	**27.1 - 27.7**
Week-8 (10/18)	**Exam-2, 50 minutes duration**	**Chapters included 24.7 to 27**
Week-8 (10/18,10/20)	Biot-Savart Law, magnetic field due to current distributions, Ampere's law, magnetic fields of solenoids and toroids	**28.1 – 28.7**

Week-8, 10/20	**Quiz-5**	**27-28.4**
Week-9 (10/25,10/27)	Faraday's experiments, Faraday's law of Induction, Lenz's law, generators and Motors, Induced electric fields, Inductance of a solenoid, self-inductance and mutual inductance, RL circuits, energy and energy density of a magnetic field, application to information technology	**29.1- 29.10**
Week-10, 11/3	**Quiz-6**	**28.5-28-7, 29**
Week-10 (11/1, 11/3)	LC circuits, analysis of LC oscillations, damped oscillations in RLC circuit Driven AC circuit, Series RLC circuit, Energy and power in AC circuits, Transformers , rectifiers	**30.1 – 30.8**
Week -11 (11/8,11/10)	Induced magnetic fields, displacement current, Maxwell's equations, Wave solutions to Maxwell's equations,	**31.1 – 31.4**
Week-12 (11/15)	**Exam-3, 50 minutes duration,**	**Chapters included 28 to 31.4**
Week-12 11/15, 11/17	speed of light, The electromagnetic spectrum, traveling electromagnetic waves, Poynting vector and energy transport, radiation pressure, polarization, derivation of wave equation,	**31.5 – 31.11**
Week-13, 11/17	**Quiz-7**	**30-31.5**
Week-13 11/22	Light rays and shadows, reflection and plane mirrors, curved mirrors,	**32.1 – 32.3**
Week-14 11/29, 12/1	Refraction and Snell's law Lenses, Magnifiers, Systems of two or more optical elements, Human eye, Camera, telescope, laser tweezers Light waves, Interference, Double slit interference	**32.4** **33.1-33.8** **34.1 – 34.3**
Week-14, 12/1	**Quiz-8**	**31.5-31.11,32**
Week-15 (12/6, 12/8)	Thin-film interference and Newton's rings, Interferometer, diffraction, single-slit diffraction, diffraction by circular opening, double slit diffraction, gratings, X-ray diffraction and crystal structure	**34.4-34.11**
Week-15, 12/8	**Quiz-9**	**33-34**
Week-16	**Final , 2 hours duration**	**Chapters 21-34**