

KING FAHD UNIVERSITY OF PETROLEUM AND MINERALS
DEPARTMENT OF PHYSICS

Physics 201 - General Physics III
Fall 2005 (Term 051)

Course Description:

A continuation of PHYS 101 and 102. Topics covered include: inductance; magnetic properties of matter; electromagnetic oscillations and waves; geometrical and physical optics; relativity, introduction to quantum mechanics; atomic and molecular physics; nuclear physics, particle physics and cosmology.

Co-requisite: PHYS 102 and MATH 102

Textbook:

"Fundamentals of Physics", by Halliday, Resnick and Walker, sixth Edition, John Wiley & Sons, Inc (2001).

Teaching Method:

The course material will be presented in *lectures* (3 hrs. per week). Problem solving techniques will be shown in *recitations* (1 hr. per week). The understanding of concepts learned in the lectures will be strengthened by *laboratory work* (3 hrs. per week). **Lab sessions will start during the second week of the semester.** Solutions to the homework problems will be posted on the Physics 201 WebCT.

Attendance:

Attendance in lectures, recitations and labs is compulsory. It will be enforced and evaluated according to the current university regulations. A **DN** grade shall be given to the student who has 3 absences in labs or 12 unexcused absences in (lectures + recitations) or the combination of both. Student who has valid excuse for his absence must present officially authorized document to his instructor no later than one week following his resumption to the classes. Only those students who have less than 6 absences in the whole semester shall be promoted to upper grade if they reach the borderline between two grades (for example F to D or B to B+ etc.).

Grading Policy:

Class work	10%	<u>Grades:</u>	$A^+ \geq 80$	$53 \leq C < 60$
Lab work	20%		$77 \leq A < 80$	$47 \leq D^+ < 53$
Major Exam I	20%		$73 \leq B^+ < 77$	$41 \leq D < 47$
Major Exam II	20%		$67 \leq B < 73$	$F < 41$
Final Exam	30%		$60 \leq C^+ < 67$	
<hr/> <i>Total</i>	<hr/> <i>100%</i>			

(a) **Class work (with average score 60/100):**

The class score shall be derived from student's performance in quizzes/class test. The quizzes/class test will be of problem solving type. Home works will not be collected. However, the quizzes may contain problems similar to Home work problems.

(b) **Lab work (with average score 140/200):**

The lab score shall be derived from a combination of lab reports/quizzes, and lab final exam.

(c) **Exams:**

All exams will be of solving type. A sheet of important formulae (not definitions) will be provided in all exams.

Make-up Exam Policy:

Students who have missed an exam with valid excuses must present officially authorized documents to the course instructor within 3 days after the exam for a make-up. If not, the score for that exam will be zero. Personal excuses are not accepted.

Fall 2005 (Term 051)

Week	Date	Topics	Chapter	Sections	Homework
1	10 Sept. 2005	Induction and inductance	31	1-4	3,8
	12	Induced Electric Fields, Inductors and inductance	31	5-7	27,39,
	14	Self-Induction, RL circuits, Energy Stored	31	8-10	53,59
2	17 Sept.	Energy Density, Mutual Induction	31	11-12	66,69
	19	Magnetism and Matter , Gauss' Law	32	1-4	3,9
	21	Diamagnetism, Paramagnetism and Ferromagnetism	32	5-8	19,23
Tuesday – 20 Sept. 2005 - Last day for dropping courses without permanent record					
3	24 Sept.	National Holiday	-		
	26	Induced magnetic Fields, Displacement current	32	9-11	27,35
	28	EM oscillations and AC current	33	1-3	5,7
4	01 Oct.	LC oscillations, RLC circuits, AC currents	33	4-6	13,27
	03	Forced oscillations, Series RLC circuit	33	7-9	31,45
	05	Power in AC circuits, Transformers	33	10-11	55,63
5	08 Oct	Electromagnetic waves	34	1,2	3,7
	10	Traveling EM waves, Energy and Pressure	34	3-5	9,29
	12	Polarization, Reflection and Refraction	34	6-9	33,55
6	15 Oct.	Images	35	1-3	5
	17	Spherical mirrors, Spherical refracting surfaces	35	4-5	12,13
	19	Thin Lenses, Optical Instruments	35	6-7	27,33
Saturday – 22 Oct. 2005 – First Major Exam (Chapters 31 – 35) 6:00 – 8:00 PM					
7	22 Oct.	Interference	36	1-3	6
	24	Young's Experiment, Coherence, Intensity	36	4-6	15,21
	26	Interference in thin films, Michelson's interferometer	36	7-8	31,41
Tuesday – 25 Oct. 2005 - Last day for dropping courses with grade of W Eid Al-Fitr Vacation (27 Oct – 11 Nov 2005)					
8	12 Nov	Diffraction	37	1-3	5
	14	Diffraction by single and double-slit, circular aperture	37	4-6	15,31
	16	Relativity	38	1-4	
9	19 Nov	Relativity of Time, and Length	38	5-6	5,11
	21	Lorentz Transformation	38	7-9	19,25
	23	Doppler effect of light, Energy in Relativity	38	10-12	38,43
10	26 Nov.	Photons and Matter Waves	39	1-3	11,19
	28	Momentum of Photons, Light as a wave	39	4-5	31,43
	30	Electrons and matter waves, Schrodinger's equation	39	6-7	53,63
11	03 Dec	Uncertainty Principle, Barrier Tunneling	39	8-9	75,79
	05	More About Matter Waves	40	1-3	11
	07	Wave Functions of Electrons	40	4-5	1719
12	10 Dec	Electron Traps, The Hydrogen Atom	40	6-8	35,39
	12	All About Atoms	41	1-4	5,12
	14	Stern-Gerlach Experiment, Magnetic Resonance	41	5-7	18
Saturday – 17 Dec 2004 – Second Major Exam (Chapters 36 – 40) 6:00 – 8:00 PM					
13	17 Dec	Periodic table, x-rays, lasers	41	8-12	33,42
	19	Conduction of electricity in solids	42	1-3	
	21	Insulators, metals and semiconductors	42	4-6	1,9,13
14	24 Dec	Semiconductors, diodes and the transistors	42	7-11	
	26	Nuclear Physics	43	1-2	3,15
	28	Radioactive decay	43	3-6	37,48,53
Wednesday – 28 Dec 2005 - Last day for withdrawal from all courses with grade of "WP/WF"					
15	31 Dec	Energy from the Nucleus	44	1-3	3,12
	02 Jan 2006	The nuclear reactor	44	4-6	15,29
	04	Quarks, Leptons and Big Bang	45	1-14	
Id al-Adha Vacation 05-20 Jan 2006					
	21 Jan	Review	--		
Final Exam (Chapters 31-45)					

PHYS 201 LAB Schedule

Fall Semester 2005/2006 (051)

Week	Date	Experiment Title
1	12 Sept. 2005	No Lab
2	19 Sept. 2005	Error Analysis
3	26 Sept. 2005	Current Balance
4	3 Oct. 2005	RC circuits
5	10 Oct. 2005	RLC Circuits
6	17 Oct. 2005	Thin Films and Spherical Mirrors
7	24 Oct. 2005	Polarization of Light
8	14 Nov. 2005	Michelson Interferometer
9	21 Nov. 2005	Diffraction of Light
10	28 Nov. 2005	Refractive Index and Color
11	05 Dec. 2005	No Lab
112	12 Dec. 2005	Atomic Constants
13	19 Dec. 2005	Radiation Detection
14	26 Dec. 2005	Lab Final
15	02 Jan 2006	No Lab

Dr. Abdullah Al Sunaidi
PHYS 201 Instructor