UNIVERSITI TEKNOLOGI MARA
PULAU PINANG

JABATAN SAINS GUNAAN

COURSE OUTLINE
PHYSICS I
Phy193
Sem Dis 2007 – Apr 2008

INSTRUCTOR'S INFORMATION

Name : MOHD NOOR BIN MOHD ALI
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COURSE INFORMATION

Course Name : Basic Physics For Engineers 2
Course Code : PHY 193
Programmes :
1. Diploma In Electrical Engineering - Electronic (EE111)
2. Diploma In Electrical Engineering – Power (EE112)
3. Diploma In Electrical Engineering - Instrumentation (EE113)
4. Diploma In Mechanical Engineering

Credit Hours : 3
Contact Hours : Lecture (3hrs/week)
: Laboratory (2hrs/week)
Status : Core Subject
Prerequisite : None

Synopsis : This course deals with the second part of the Physics syllabus. It introduces, describes and explains the basic concepts and applications of topics in Electricity, Magnetism and Optics.

Objectives : Upon completing the course students will be able to:

1. Know and understand the fundamental concepts of physics and gain insight in everyday phenomena.
2. Solve quantitative problems by applying physical principles using idealized models to represent physical systems.
3. Develop problem solving skills that may be applied to engineering and technology.
4. Develop a creative mind such as asking appropriate questions, design experiments, answer questions and draw right conclusions from results.

References

1. Giancoli, D. C. (2000). Physics for Scientists & Engineers with Modern Physics. 3rd Edition. Prentice Hall International Inc.
2. Halliday, D., Resnick, R., & Walker J. (2001). Fundamentals of Physics. 6th Edition. John Wiley and Sons Inc.
3. Serway, R.A.., & Jewett J.W.(2004). Physics for Scientists and Engineers with Modern Physics. Thomson Learning.
4. Wilson, J.D. and Buffa, A. J., (2003). College Physics, 5Th Edition. Prentice Hall.
5. Hewit, P. G., (1993) Conceptual physics. 7Th edition. Harper Collins College Publishers.
6. Young, H. D and Freedman, R. A. (2000). University Physics. 10th Edition, Addison Wesley Longman.

LESSON PLAN

Week	Dates	Total Hours	Contents	Comment
1.	31 Dis 2007 – 4 Jan 2008 *Thn Baru – 1 Jan*	2 1	<u>Electric Field.(5hr)</u> Coulomb's Law Electrostatic Force of three point charges located at the vertices of a triangle. Electric Field Line	
2.	7 Jan -11 Jan 2008 *Awal Muharram – 10 Jan*	2 1	Electric Field due to a point charge Electric Field due to two point charges at arbitrary position Electric Flux. Gauss's Law. Apply to spherical shell conductor Long uniform line of charge Infinite plane of charge Conducting surface <u>Electric Potential (6hr)</u> Electric Potential Energy. Relation between Electric Potential and Electric Field.	Laboratory 1
3.	14 Jan – 18 Jan 2008	2 1	Electric Potential due to a point charge and several charges. Equipotential Surfaces Capacitance of a parallel plate capacitor	
4.	21 Jan – 25 Jan 2008 *Taipusam – 23 Jan*	2 1	Energy stored in an a charged capacitor, dW = Vdq. Capacitors in series and in parallel <u>Current and Resistance (3hr)</u> Electric Current Resistance and Resistivity	Laboratory 2
5.	28 Jan – 1 Feb 2008	1 2	***Test 1*** Resistors in Series and Parallel Ohm's Law Power in electric circuit	
6.	2 Feb – 10 Feb 2008 Thn Baru Cina – 7 & 8 Feb		***Mid Semester Break***	
7.	11 Feb – 15 Feb 2008	2 1	<u>Circuits (4hr)</u> Calculating Current Single Loop Circuit Kirchhoff's First and Second Rule	Laboratory 3
8.	18 Feb – 22 Feb 2008	1 2	Ammeter and Voltmeter RC Circuit <u>Magnetism (4hr)</u> Magnetic Field The definition of Magnetic field, **B** Magnetic Force on an Electric Charge Magnetic force on a current-Carrying Wire Torque on a current Loop	

9.	25 Feb – 29 Feb 2008	2 1	Magnetic Fields due to Currents Force between two parallel wires: parallel & antiparallel currents. Ampere's Law Solenoid and Toroid <u>Inductance(4hr)</u> Faraday's Law Lenz's Law	Laboratory 4
10.	3 Mac -7 Mac 2008	1 2	***Test 2*** Mutual Inductance Self-Inductance	
11.	10 Mac – 14 Mac 2008	1 2	Energy stored in a Magnetic Field RL circuit. <u>Alternating Current(3hr)</u> AC Circuit containing only Resistance R AC Circuit containing only Inductance L AC Circuit containing only Capacitance C LR, LC and LRC Series Circuit Alternating Current Circuit	Laboratory 5
12.	17 Mac – 21 Mac 2008 Maulidur Rasul – 20 Mac	1 1 1	Resonance in AC Circuits Power Applications <u>Electromagnetic Waves(1hr)</u> Electromagnetic Spectrum Production of Electromagnetic waves Speed of EM Waves <u>Geometrical Optics (6 hr)</u> Plane Mirror: Image formation by Plane Mirror	
13.	24 Mac – 28 Mac 2008	2 1	Spherical Mirrors: Image formation by Concave and Convex Mirrors. Refraction: Snell's Law Total Internal Reflection .	Laboratory 6
14.	31 Mac – 4 Apr 2008	2 1	Thin Lenses: Convex and Concave Lens Equation Combination of Lenses: Two-Lens system Magnifying power of Optical Instruments: Magnifying Glass, Telescopes and Compound Microscope. <u>Physical Optics (3hr)</u> Diffraction	
15.	7 Apr – 11 Apr 2008	1 2	***Test 3*** Constructive and Destructive Interference Young's Double Slit Experiment.	
16.	*12 Apr – 20 Apr 2008*		*Study Week*	
	21 Apr – 11 Mei 2008 *Labor Day – 1 May*		**FINAL EXAMINATION**	
			Semester Break	

ASSESSMENT

Quizzes	3	10
Tests	3	40
Lab	7	10
Final Exam	1	40
Course Total		**100**

A Grade of C is 50% of the total possible points.

TEACHING METHODOLOGY

This course consists of three hour lectures per week and a two hour Practical conducted fortnightly. The practical report is to be submitted individually

HOMEWORK/ TUTORIALS:

You will be assigned homework problems to solve. The homework will be collected at the **beginning** of tutorial session before being discussed. Quizzes/pop quizzes may also be given during tutorial session. You are also advised to try relevant selected problems at the end of each relevant chapters in the reference text and also the previous semesters Final Examination Questions available in the library.

RULES AND REGULATIONS:

Rules and regulation of Peraturan Akademik UiTM (latest edition) will be in effect.

Attendance is a requirement and will be taken at every class session. (2.4.3)
Disciplinary action will be taken against students who missed classes without valid reasons.
MC is only valid if the lecturer is notified within 48 hrs after the student returns to class.
A photocopy of the MC must be given to the lecturer.

Any disruption in the classroom will be not be tolerated. (No Handphones, No latecomers)

Makeup test will not be given without valid and verifiable reasons and only will be given within 2 weeks of the missed test.

IT IS YOUR RESPONSIBILITY TO NOTIFY THE LECTURER OF ANY DIFFICULTIES, ABSENTISM, ETC

Study Tips

Students are advised to maintain good study skills to excel in this course.
Maintain an organized notebook.
Complete all given work on time. (Tutorials, Assignments)
Get help as soon as possible. (Friends, Reference book, Lecturer)

REMEMBER : YOU ARE RESPONSIBLE FOR YOUR STUDY.

The day you begin taking full responsibilities, the day you stop making excuses, is the day you begin moving to the top.