



UNIVERSITI TEKNOLOGI MARA

PHY082: PHYSICS II

Course Name (English)	PHYSICS II APPROVED
Course Code	PHY082
MQF Credit	4
Course Description	no description provided
Transferable Skills	confident
Teaching Methodologies	Lectures, Lab Work, Tutorial
CLO	CLO1 Solve qualitative and quantitative problems in measurement, vectors, kinematics, dynamics, matter, optics, electricity and electromagnetism. CLO2 Respond to the observation and complete the laboratory datasheet in experiments involving selected areas from the topics in measurement, vectors, kinematics, dynamics, matter, optics and electricity. CLO3 Demonstrate management and/or entrepreneurship capabilities in a given task/project of related area from the topics in measurement, vectors, kinematics, dynamics, matter, optics and electricity.
Pre-Requisite Courses	No course recommendations
Topics	
1. Measurement 1.1) 1.1 Error analysis 1.2) 1.1.1 Consistency, Accuracy and sensitivity of measurement apparatus 1.3) (Metre ruler, Vernier callipers and Micrometer screw gauge) 1.4) 1.1.2 Systematic errors, Random errors 1.5) 1.2 Linear Equation and Graph 1.6) 1.2.1 Data table 1.7) 1.2.2 Manipulation of data 1.8) 1.2.3 Guidelines to draw graph	
2. Vectors 2.1) 2.1 Representation and labelling of vectors 2.2) 2.2 Addition of vectors – Graphical method 2.3) 2.2.1 Tail-to-tip method 2.4) 2.2.2 Parallelogram method 2.5) 2.3 Addition of vectors by components – $i j k$ notation 2.6) 2.4 Subtraction of vectors	
3. Kinematics 3.1) 3.1 Understanding Gravity 3.2) 3.1.1 Acceleration due to gravity 3.3) 3.1.2 Solving problems due to gravity	
4. Dynamics 4.1) 4.1 Linear Momentum and Newton's Second Law of Motion 4.2) 4.2 Conservation of momentum 4.3) 4.2.1 Impulse and impulsive force 4.4) 4.2.2 Elastic and inelastic collisions, and explosions 4.5) 4.2.3 Problem solving involving kinetic energy in collisions	

5. Matter

- 5.1) 5.1 Elasticity - Concept and definition
- 5.2) 5.2 Hooke's law
- 5.3) 5.2.1 Definition
- 5.4) 5.2.2 Force – Extension Graph
- 5.5) 5.2.3 Work done and elastic potential energy
- 5.6) 5.3 Buoyancy in fluid
- 5.7) 5.3.1 Archimedes' Principle
- 5.8) 5.3.2 Problem solving involving buoyant force
- 5.9) 5.3.3 Bernoulli's Principle and applications

6. Optics

- 6.1) 6.1 Lenses
- 6.2) 6.1.1 Characteristics of thin lenses: convex and concave lens
- 6.3) 6.1.2 Lens equation and linear magnification
- 6.4) 6.1.3 Ray diagram
- 6.5) 6.1.4 Problem solving involving a single lens only
- 6.6) 6.1.5 Two lenses system – Telescope and Microscope (No numerical problems)

7. Electricity

- 7.1) 7.1 Electric Circuit
- 7.2) 7.1.1 Ohm's law
- 7.3) 7.1.2 Internal resistance
- 7.4) 7.1.3 Resistors in series and parallel
- 7.5) 7.1.4 Problem solving involving single voltage source and resistors reducible to a single equivalent resistor
- 7.6) 7.2 Analyzing electrical energy and power
- 7.7) 7.2.1 Definition of Electrical Energy
- 7.8) 7.2.2 Definition of Electrical Power
- 7.9) 7.2.3 Problems involving Electrical Energy and Power

8. Electromagnetism

- 8.1) 8.1 Electromagnetic induction
- 8.2) 8.2.1 Faraday's Law and Lenz's Law
- 8.3) 8.2.2 Electromotive Force and Direction of Induced current in Straight Wire and Solenoid (No numerical problems)
- 8.4) 8.2 Transformer
- 8.5) 8.2.1 Concept and problem solving
- 8.6) 8.3 Generation and Transmission of Electricity in Malaysia.

Assessment Breakdown	%
Continuous Assessment	60.00%
Final Assessment	40.00%

Details of Continuous Assessment	Assessment Type	Assessment Description	% of Total Mark	CLO
	Group Project	Doing a project that relate with the concepts of physics.	10%	CLO3
	Lab Exercise	Practical skill	10%	CLO1 , CLO2
	Quiz	5 Quizzes	10%	CLO1
	Test	Test 1	10%	CLO1
	Test	Test 2	10%	CLO1
	Written Report	5 lab report	10%	CLO2

Reading List	Recommended Text	<ul style="list-style-type: none"> Mohd Isa M. Y., Abu Hassan H., Aniszawati A., Ho B. H., Syawe I. S. L., Wan Kamariah W. A.R., 2006, <i>Basic Physics Pre-Science Series</i>, ACE edition Ed., McGraw Hill
	Reference Book Resources	<ul style="list-style-type: none"> Halliday, D., Resnick, R. and Walker, J, 2001, <i>Fundamentals of Physics</i>, 6th edition Ed., John Wiley and Sons Singapore Serway, R.A. and Faughn, J.S, 2006, <i>College Physics</i>, 8th edition Ed., Saunders College Publishing New York Giancoli, D.C., 2005, <i>Physics</i>, 6th edition Ed., Prentice Hall New Jersey <i>FIZIK KBSM Form 4 and 5 textbooks</i>
Article/Paper List	This Course does not have any article/paper resources	
Other References	This Course does not have any other resources	