هيئة تقويم التعليم والتدريب
Education & Training Evaluation Commission

Course Specifications

Course Title:	**General Physics II**
Course Code:	**PHYS 217**
Program:	**Computer Science (CS)**
Department:	**Physics**
College:	**College of Science**
Institution:	**Majmaah University**

Table of Contents

A. Course Identification

1. Credit hours: 3 (2+0+1)
2. Course type **a.** University ☐ College ☐ Department ☐ Others ☐ **b.** Required ☑ Elective ☐
3. Level/year at which this course is offered: 3rd level
4. Pre-requisites for this course (if any)**:** General Physics 1
5. Co-requisites for this course (if any)**:** NIL

6. Mode of Instruction (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	**Traditional classroom**	--	-
2	**Blended**	-	-
3	**E-learning**	14	20 %
4	**Distance learning**	32	60%
5	**Other**	14	20 %

7. Contact Hours (based on academic semester)

No	Activity	Contact Hours
1	**Lecture**	60
2	**Laboratory/Studio**	-
3	**Tutorial**	28
4	**Others** (specify)	-
	Total	88

B. Course Objectives and Learning Outcomes

1. Course Description

The course describes the fundamentals of Physics. It covers the basic laws of electrostatics, current electricity, and magnetic effect of current, electromagnetic induction, alternating current, sound and optics. It also covers the different approaches to understand how the different components of the motherboard work.

2. Course Main Objective

By the end of this course, the student will be able to:

1. Develop a clear understanding of the basic concepts in electricity.
2. Explain the physical principals underlying electric charge, dipoles and principals of electrostatic charges.
3. Acquire knowledge of AC current and the concerned electrical circuits.
4. Be familiar with the different types and forms of resistors, condensers, coils and batteries.

3. Course Learning Outcomes

	CLOs	Aligned PLOs
1	**Knowledge and Understanding**	
1.1	Describe the basic laws of electrostatics, current electricity, and magnetic effect of current, electromagnetic induction, alternating current.	a1
1.2	Define Coulomb's law to calculate electro-static force and Gauss's law to calculate electric field.	a1
1.3	Define Ohm's law to measure voltage, current and resistance.	a2
2	**Skills :**	
2.1	Apply the gained mathematical and experimental knowledge in any physical phenomena to understand its behavior.	b2
2.2	Solve the numerical problems with confidence.	b2
2.3	Calculate the values of the different studied physical parameters.	b2
3	**Values:**	
3.1	Students should have the ethics of their own learning that is required for dealing with the experimental values acquired from the Lab.	C2
3.2	Students should own the abilities to find new data and create more innovations.	C2
3.3	Present a short report in a written form and orally using suitable scientific language.	C2
3.4	Present scientific slides with self-confidence.	C2

C. Course Content

No	List of Topics	Contact Hours
1	Electric charge, Insulators and conductors, Coulomb's law, The electric field, Electric field of multiple point charges, Motion of point Charge in Electric field, Electric dipole	2
2	Electric flux, Gauss's law, Conductor in electrostatic equilibrium, Electric potential, The potential of point charge, The electric potential of many charges	2
3	The electric current, Current density, Ohm's law, Conductivity and resistivity, Electrical Power, Capacitance and Capacitors, Energy stored in Capacitors.	2
4	Fundamental circuits, Series resistors, Parallel resistors, Series Capacitors, Parallel Capacitors, Kirchhoff's laws, RC circuits.	2
5	Mid-Term Exam 1	1
6	Magnetism and magnetic force, source of magnetic fields, Magnetic field of current (Ampere's law), magnetic field of solenoids, Magnetic dipoles.	2
7	Magnetic flux, Faraday's law, Lenz's law, Induced fields and EM waves, inductors, DC circuits: (L circuit, LC circuits, LR circuits, LRC circuits)	4
8	AC circuits: (R circuit, LC circuits, LR circuits, AC circuits, LRC circuits), Power in AC circuits, RC filter circuits.	4
9	The magnetic force on a moving charge, the magnetic force on a current-carrying wire, Motional emf.	2
10	Mid-Term Exam 2	1
11	Review of the lectures	2
Total		24

D. Teaching and Assessment

1. Alignment of Course Learning Outcomes with Teaching Strategies and Assessment Methods

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
1.0	**Knowledge and Understanding**		
1.1	Describe the basic laws of electrostatics, current electricity, and magnetic effect of current, electromagnetic induction, alternating current.	- Lectures - Team Work - Discussion sessions	- Graded homework - Mideterms - Final Exam
1.2	Define Coulomb's law to calculate electro-static force and Gauss's law to calculate electric field.		
1.3	Define Ohm's law to measure voltage, current and resistance.		
2.0	**Skills**		
2.1	Apply the gained mathematical and experimental knowledge in any physical phenomena to understand its behavior.	- Problem solving - Class discussion	- Class participation. - Graded homework - Midterms - Final Exam
2.2	Solve the numerical problems with confidence.		
2.3	Calculate the values of the different studied physical parameters.		
3.0	**Values**		
3.1	Students should be have the ethics of their own learning that is required for dealing with the experimental values acquired from the Lab.	Making students aware about time management in completing their assignments and projects. Counsel students how to make a good presentation in English	- Showing active class participation. - Helping the other students to understand tasks in the class. - Interactions of students in the Lab.
3.2	Students should own the abilities to find new data and create more innovations.		
3.3	Present a short report in a written form and orally using suitable scientific language.		
3.4	Present scientific slides with self-confidence.		

2. Assessment Tasks for Students

#	Assessment task*	Week Due	Percentage of Total Assessment Score
1	First exam	6th	10%
2	Second exam	11th	10%
3	Lab. Work	Every Week	10%
4	Homework	Every Week	10%
5	Lab. Exam	13th	20%
6	Final exam	End of the semester	40%

***Assessment task** (i.e., written test, oral test, oral presentation, group project, essay, etc.)

E. Student Academic Counseling and Support

Arrangements for availability of faculty and teaching staff for individual student consultations and academic advice :

3 office hours per week

Contact by E-mail

F. Learning Resources and Facilities

1.Learning Resources

Required Textbooks	**Physics for scientists and engineers**; Raymond A. Serway and John W. Jewett; Cengage Learning; 9th edition; (2013).
Essential References Materials	**College Physics**; Raymond A. Serway and Chris Vuille; Cengage Learning; 9th edition; (2011).
Electronic Materials	• http://demonstrations.wolfram.com • http://askthephysicist.com • http://faculty.mu.edu.sa/y.mohamed
Other Learning Materials	• Excel software for drawing graphs. MS Office for writing reports and presentations.

2. Facilities Required

Item	Resources
Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.)	Lecture room, a smart board to write on and computer, white board, General Physics II lab.
Technology Resources (AV, data show, Smart Board, software, etc.)	Computer and internet lab
Other Resources (Specify, e.g. if specific laboratory equipment is required, list requirements or attach a list)	Library, Seminar Room, and Wi-Fi internet connections.

G. Course Quality Evaluation

Evaluation Areas/Issues	Evaluators	Evaluation Methods
Students' evaluation electronically organized by the University. Survey	Course coordinator	Assignments
Efficiency of course will be reflected on the results of the class, which reviewed by members of the teaching staff in addition with other duties such as discussing ideas and ways of teaching and learning.	Course coordinator	
The course should be developed periodically to ensure that it contains latest developments in the field of study.	Course coordinator	Mid1 & Mid2 exam
The developments could be put as an objective in the report of the course to be achieved in each semester.	Quality coordinator	Questionnaire
Prepare a questionnaire which should be filled by the students at the end of the semester. The questionnaire should be after that analyzed and carefully studied	Quality coordinator	Questionnaire

Evaluation areas (e.g., Effectiveness of teaching and assessment, Extent of achievement of course learning outcomes, Quality of learning resources, etc.)
Evaluators (Students, Faculty, Program Leaders, Peer Reviewer, Others (specify)
Assessment Methods (Direct, Indirect)

H. Specification Approval Data

Council / Committee	
Reference No.	
Date