هيئة تقويم التعليم والتدريب
Education & Training Evaluation Commission

Course Specifications

Course Title:	General Physics
Course Code:	**101PHYS**
Program:	**Physics**
Department:	**Physics**
College:	**Science**
Institution:	**Jazan University**

Table of Contents

A. Course Identification

1. Credit hours: 4
2. Course type **a.** University ☐ College ☑ Department ☐ Others ☐ **b.** Required ☑ Elective ☐
3. Level/year at which this course is offered: 2nd level/1st year
4. Pre-requisites for this course (if any)**: NIL**
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**	**45**	**% 60**
2	**Blended**		
3	**E-learning**		
4	**Distance learning**		
5	**Other (lab)**	**30**	**% 40**

7. Contact Hours (based on academic semester)

No	Activity	Contact Hours
1	**Lecture**	**45**
2	**Laboratory/Studio**	**30**
3	**Tutorial**	**-----**
4	**Others** (specify)	**----**
	Total	**75**

B. Course Objectives and Learning Outcomes

1. Course Description

The course provides Principles of dimensions and units, vectors, motion in one dimension, projectile motion, Newton's laws of motion, work, power and energy. The course covers concepts of linear momentum, collisions, pressure, buoyant force, Archimedes' principle, electric current, resistance, Ohm's law, speed of sound and Doppler Effect. Some practical experiments are included to demonstrate the principles involved.

2. Course Main Objective

This course is designed to provide students with:

- Principles of dimensions and units, vectors, motion in one dimension, projectile motion, work, power and energy.
- Concepts of linear momentum and collisions, pressure, buoyant force, electric current, and resistivity, speed of sound and Doppler Effect.
- Applications of Newton's laws of motion, Archimedes' principle and Ohm's law.
- Skills to solve problems regarding the physical principles.
- Physical experiments to be performed and analyzed.

3. Course Learning Outcomes

	CLOs	Aligned PLOs
1	**Knowledge and Understanding**	
1.1	**State** units of physical quantities, vector quantity, scalar quantity, Newton laws, conservation law of mechanical energy, conservation law of linear momentum. Pascal law, Archimedes's principal, Ohm's law, Doppler effect.	**PLO 1.1**
1.2	**Define** vector quantity, scalar quantity, meter, kilogram, second, position, displacement, distance, velocity, acceleration, force, mass, weight, work, kinetic energy, potential energy, mechanical energy, power, momentum, pressure, density, buoyant force, electric current, current density, resistivity, audible wave, infrasonic wave, ultrasonic wave.	**PLO 1.2**
2	**Skills :**	
2.1	**Calculate** dimension of physical quantity, velocity, acceleration, maximum height, range, force, weight, work, energy, power, momentum, pressure, density, appearance weight, resistance, current, potential difference, speed of sound, sound frequency.	**PLO 2.1**
2.2	**Perform** experiments using different analog and digital devices and plot the characteristics of different types of devices	**PLO2.3**
2.3	**Develop** communication competencies during interactive discussion, group assignments.	**PLO 2.4**
3	**Values:**	
3.1	**Demonstrate** abilities to work in groups and bear individual responsibility during lab work, interactive discussion and group assignments	**PLO3.1**
3.2	**Show** awareness of safety for own and others when dealing with lab equipment's	**PLO3.3**

C. Course Content

Theoretical Part

No	List of Topics	Contact Hours
1	Dimensions and units (dimensional analysis and conversion of units).	4.5
2	Vectors (addition, subtraction, multiplication and components of a vector).	4.5
3	Motion in one dimension (one dimensional motion with constant acceleration).	4.5
4	Newton's laws of motion and solve problems regarding their applications.	4.5
5	Motion in two dimensions (projectile motion).	1.5
6	The work, the power and the energy.	4.5
7	Linear momentum and collisions.	4.5
8	Pressure, buoyant force and Archimedes' principle.	4.5
9	Electric current, Ohm's law and specific resistance.	4.5
10	Speed of sound in solids, speed of sound in fluids and Doppler's effect.	4.5
Total		42

Experimental Part:

No	List of Topics	Contact Hours
1	Density of shaped regular solids by accurate measurements	**2**
2	Composition of Forces.	**2**
3	Force and Acceleration –Newton's second law.	**2**
4	Projectile Motion.	**2**
5	Centripetal force experiment.	**2**
6	Determination of acceleration of gravity by Hooks Law and Simple Pendulum.	**2**
7	Density of water using Archimedes' Principle.	**2**
8	Surface tension of water by using metallic ring and capillary tube.	**2**
9	Viscosity of a liquid	**2**
10	Ohm's Law.	**2**
11	Velocity of Sound in Air.	**2**
Total		**22**

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	**State** units of physical quantities, vector quantity, scalar quantity, Newton laws, conservation law of mechanical energy, conservation law of linear momentum. Pascal law, Archimedes's principal, Ohm's law, Doppler effect.	Lectures, blackboard and visualization, group and interactive guided discussion, Interactive discussion	**Direct** (formative and summative): In class interactive questioning, quizzes, written exams **Indirect**: student survey
1.2	**Define** vector quantity, scalar quantity, meter, kilogram, second, position, displacement, distance, velocity, acceleration, force, mass, weight, work, kinetic energy, potential energy, mechanical energy, power, momentum, pressure, density, buoyant force, electric current, current density, resistivity, audible wave, infrasonic wave, ultrasonic wave.	Lectures, blackboard and diagram illustration, group discussion, Interactive illustrations- Student contribution	**Direct** (formative and summative): In class interactive questioning, quizzes, written exams **Indirect**: student survey
2.0	**Skills**		
2.1	**Calculate** dimension of physical quantity, velocity, acceleration, maximum height, range, force, weight, work, energy, power, momentum, pressure, density, appearance weight,	Lectures, blackboard and visualization, brain storming, group and interactive discussion, Interactive	**Direct** (formative and summative): In class interactive questioning, quizzes, written exams

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
	resistance, current, potential difference, speed of sound, sound frequency.	illustration – Problem based learning	**Indirect**: student survey
2.2	**Perform** experiments using different analog and digital devices and plot the characteristics of different types of devices	Hands on lab demonstrations-guided discussion – guided discovery	**Direct** (formative and summative):Evaluation of assignments, Step-by-step checkpoint assessment of experiment, In lab interactive questioning, quizzes, written exams **Indirect:** student survey
2.3	**Develop** competencies in critical thinking, communication and writing lab reports.	Lectures, blackboard and visualization, brain storming, group and interactive discussion, Interactive illustration – Problem based learning	**Direct** (formative and summative): In class interactive questioning, quizzes, written exams **Indirect:** student survey
3.0	**Values**		
3.1	**Demonstrate** abilities to work in groups and bear individual responsibility during lab work, interactive discussion and group assignments	Interactive and Group discussion, expository and discovery teaching	**Direct** (formative and summative): In lab interactive questioning **Indirect**: student survey
3.2	**Show** awareness of safety for own and others when dealing with lab equipment	Case study-interactive demonstration-guided discussion	**Direct** (formative and summative): In lab interactive questioning **Indirect**: student survey

2. Assessment Tasks for Students

#	Assessment task*	Week Due	Percentage of Total Assessment Score
1	Home work	2	2.5
2	Written test	3	2.5
3	Mid-term exam	6	10
4	Home work	8	2.5
5	Written test	9	2.5
6	Mid-term exam	12	10
7	Final practical exam	14	20
8	Final exam	15	50

***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 : At least 16 office hours for each teacher available for student consultations and academic advice

F. Learning Resources and Facilities

1.Learning Resources

Required Textbooks	**Physics for Scientists& Engineers with Modern Physics; 7th edition, Serway, Saunders Golden Sunburst Series, 2007.**
Essential References Materials	**1-University Physics; H. Young and R. Freedman, Addison-Wesley Publishing Company, Inc., 11th edition, 2004.** 2- **Fundamentals of Physics; Halliday, Resnik and Walker, John Wiley and Sons Inc., 2007.**
Electronic Materials	**http://www.wikipedia.org/** **https://spie.org/** **http://hyperphysics.phy-astr.gsu.edu/**
Other Learning Materials	

2. Facilities Required

Item	Resources
Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.)	Classrooms and laboratories
Technology Resources (AV, data show, Smart Board, software, etc.)	Smart board
Other Resources (Specify, e.g. if specific laboratory equipment is required, list requirements or attach a list)	None

G. Course Quality Evaluation

Evaluation Areas/Issues	Evaluators	Evaluation Methods
Effectiveness of teaching	Students, Peer and program leader	Indirect (CES)- Indirect peer evaluation
Assessment	Students, Program assessment committee	Direct/ Indirect
Extent of achievement of course learning outcomes	Instructor	Direct/Indirect
Quality of learning resources	Students, Faculty members	Indirect

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	Department council
Reference No.	8
Date	16/4/1442