



Course Specifications

Course Title:	General Physics (1)
Course Code:	2031204- 4
Program:	Bachelor in Physics
Department:	Physics Department
College:	College of Science
Institution:	Taif University

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A. Course Identification

1. Credit hours: 4
2. Course type
a. University <input type="checkbox"/> College <input type="checkbox"/> Department <input checked="" type="checkbox"/> Others <input type="checkbox"/>
b. Required <input checked="" type="checkbox"/> Elective <input type="checkbox"/>
3. Level/year at which this course is offered: 2 nd Level/ 1 st Year
4. Pre-requisites for this course (if any): None
5. Co-requisites for this course (if any): None

6. Mode of Instruction (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	Traditional classroom	7	100%
2	Blended		
3	E-learning		
4	Distance learning		
5	Other		

7. Contact Hours (based on academic semester)

No	Activity	Contact Hours
1	Lecture	50
2	Laboratory/Studio	20
3	Tutorial	
4	Others (specify)	
	Total	70

B. Course Objectives and Learning Outcomes

1. Course Description

General Physics covers fundamental topics in different broad subject areas in physics. The first subject focuses on the MEASUREMENTS and conversion of units. The course will give knowledge about MECHANICS which contains vectors and scalars quantities, motion in one dimension, the laws of motion, kinematics, energy of the system. In third part, the course provide the knowledge of some basic concept of the THERMODYNAMICS. Next, the course will deliver knowledge about the most important concepts of ELECTRICITY. Finally, the course will introduce about the LIGHT and OPTICS.

2. Course Main Objective

- Introduces main topics such as vector and scalar quantities, motion in one dimension, newton's laws of motion, work and energy.
- Establishes a foundation in thermodynamics in preparation for more advanced courses.
- Establishes a foundation in electricity and magnetism in preparation for more advanced courses.
- Introduces main topics such as electric field and flux, capacitors, electromotive force, Kirchhoff's laws, electric circuits, magnetic fields and the magnetic forces, Faraday's law and AC circuits, electromagnetism, and its applications.
- Recognizes the connection between electricity and magnetism and its applications.
- Establishes a foundation in geometrical optics in preparation for more advanced courses.

- Gives an overview and understanding of basic physics, with moderate use of mathematical formalism.

3. Course Learning Outcomes

CLOs		Aligned PLOs
1	Knowledge and Understanding	
1.1	State and define the basic concepts of vectors and scalar, the work and energy, the temperature, the electricity, and the light.	K2
1.2	Identify the basic concepts and theories of vectors and scalars, distance and displacement, speed and velocity, electric field, temperature scales.	K2
2	Skills :	
2.1	Apply the main fundamental laws and theories to solve the problems of vectors, energy, electricity, and light.	S1
2.2	Develop a skill versatility in solving problems in vectors, energy, electricity, and light.	S2
2.3	Analyze qualitatively and quantitatively experimental data of electric circuits.	
3	Values:	
3.1	Work effectively within a group when performing activities and experiments.	V2
3.2	Act responsibly and be able to prepare a written scientific report	V3

C. Course Content

No	List of Topics	Contact Hours
1	Unit1: PHYSICS AND MEASUREMENTS <ul style="list-style-type: none"> ▪ Introduction ▪ International system units ▪ Conversion of units 	3
2	Unit2: VECTORS <ul style="list-style-type: none"> ▪ Coordinate Systems ▪ Vector and Scalar Quantities ▪ Some Properties of Vectors <ul style="list-style-type: none"> ➢ Sum of vectors ➢ Negative vectors ➢ Graphical method ➢ Analytical method ▪ Components of a Vector ▪ Unit Vectors 	3
3	Unit3: MOTION IN ONE DIMENSION <ul style="list-style-type: none"> ▪ Position, Velocity, and Speed ▪ Acceleration ▪ Motion with constant acceleration (Kinematic Equations) ▪ Freely Falling Objects 	5
4	Unit4: THE LAWS OF MOTION <ul style="list-style-type: none"> ▪ The Concept of Force ▪ Newton's First Law and Inertial Frames ▪ Mass ▪ Newton's Second Law ▪ The Gravitational Force and Weight ▪ Newton's Third Law ▪ Some applications of Newton's Laws ▪ Forces of Friction 	6
5	Unit5: ENERGY OF THE SYSTEM <ul style="list-style-type: none"> ▪ Work Done by a Constant Force ▪ Work Done by a Varying Force ▪ Work Done by a Spring (Hook's law) ▪ Kinetic Energy (KE) and the Work–Kinetic Energy Theorem ▪ Gravitational Potential Energy (GPE) ▪ Power 	6
6	Unit6: THERMODYNAMICS <ul style="list-style-type: none"> ▪ Temperature and the Zeroth Law of Thermodynamics ▪ Thermometers ▪ The Celsius, Fahrenheit, and Kelvin Temperature Scales ▪ Linear of Thermal expansion of solid 	5

7	Unit7: ELECTRIC FIELDS <ul style="list-style-type: none"> ▪ Properties of Electric Charges ▪ Charging Objects by Induction ▪ Coulomb's Law ▪ Electric Field Lines ▪ Motion of a Charged Particle in a Uniform Electric Field 	6
8	Unit8: ELECTRIC POTENTIAL <ul style="list-style-type: none"> ▪ Electric Potential and Potential Difference ▪ Potential Difference in a Uniform Electric Field ▪ Electric Potential and Potential Energy Due to Point Charges 	3
9	Unit9: ELECTRIC CIRCUITS <ul style="list-style-type: none"> ▪ Electric Current ▪ Resistance (Ohm's law) ▪ Resistors in Series and Parallel 	3
10	Unit10: LIGHT AND OPTICS <ul style="list-style-type: none"> ▪ The Nature of Light ▪ Internal Reflection ▪ Images Formed by Flat Mirrors ▪ Images Formed by Spherical Mirrors ▪ Images Formed by Refraction ▪ Images Formed by Thin Lenses 	7
11	Revision	3
Part2		
1	Experiment 1: Vectors: Force Table	2
2	Experiment 2: Simple Pendulum	2
3	Experiment 3: Hook's Law	2
4	Experiment 4: Ohm's Law	2
5	Experiment 5: Series and Parallel connections of resistors	2
6	Experiment 6: Determination of a resistance using Meter Bridge	2
7	Experiment 7: Convex Lens	2
8	Experiment 8: Concave Mirror	2
9	Experiment 9: Refractive Index of Glass	2
10	Reports evaluation and Practical exam	2
Total		70

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 and define the basic concepts of vectors and scalar, the work and energy, the temperature, the electricity, and the light.	Lecture Discussion	Written exam
1.2	Identify the basic concepts and theories of vectors and scalars, distance and displacement, speed and velocity, electric field, temperature scales.	Lecture Discussion	Written exam
2.0	Skills		
2.1	Apply the main fundamental laws and theories to solve the problems of vectors, energy, electricity, and light.	Problem solving	Written exam Activities
2.2	Develop a skill versatility in solving problems in vectors, energy, electricity, and light.	Problem solving	Written exam Activities
2.3	Analyze qualitatively and quantitatively experimental data of electric circuits.	Practical	Lab reports Lab exam
3.0	Values		
3.1	Work effectively within a group when performing activities and experiments.	Practical	Lab reports Lab exam Activities
3.2	Act responsibly and be able to prepare a written scientific report	Practical Discussion	Lab exam Activities

2. Assessment Tasks for Students

#	Assessment task*	Week Due	Percentage of Total Assessment Score
1	Midterm exam I	6 th	20%
2	Activities (Quiz)	Periodically	10%
3	Lab reports	Weekly/ 10 th	20%
4	Final Lab Exam	10 th	10%
5	Final exam	11 th	40%
6	Total	-	100%

*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 :

- Each faculty member is assigned a group of students for continuous academic advice during six office hours weekly (6 hrs./week).
- Also teaching staff are available for individual student consultations during office hours

F. Learning Resources and Facilities

1. Learning Resources

Required Textbooks	Raymond A. Serway and John W. Jewett, Jr., Physics for Scientists and Engineers with Modern Physics, 9th Edition, Publisher: Brooks/Cole, Print ISBN-13: ISBN: 978-1133954057, (2014).
Essential References Materials	Raymond A. Serway, Chris Vuille, College Physics, 10th Edition, Publisher: Cengage Learning, 978-1285761954, (2014).
Electronic Materials	<ul style="list-style-type: none"> • Khan Academy: https://www.khanacademy.org/science/physics • Free Simulations from Colorado Uni. • https://phet.colorado.edu/en/simulations/category/physics
Other Learning Materials	<ul style="list-style-type: none"> • CD associated with the text books (when available). • Short videos (YouTube videos). • Workshop. <p>Lecture notes and PowerPoints presentations prepared by the lecturer.</p>

2. Facilities Required

Item	Resources
Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.)	<ul style="list-style-type: none"> • Classrooms • General physics laboratory
Technology Resources (AV, data show, Smart Board, software, etc.)	<ul style="list-style-type: none"> • Data show • Laptop • 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
Student Feedback on Effectiveness of Teaching	<ul style="list-style-type: none"> • Students 	<ul style="list-style-type: none"> • Indirect
Evaluation of Teaching	<ul style="list-style-type: none"> • Peer reviewer • Program coordinator • Departmental council • Faculty council 	<ul style="list-style-type: none"> • Indirect

Evaluation Areas/Issues	Evaluators	Evaluation Methods
Improvement of Teaching	<ul style="list-style-type: none"> • Program coordinator • Relevant committee 	<ul style="list-style-type: none"> • Direct
Quality of learning resources	<ul style="list-style-type: none"> • Students • Instructor • Faculty 	<ul style="list-style-type: none"> • Indirect
Extent of achievement of course learning outcomes,	<ul style="list-style-type: none"> • Program coordinator • Instructor 	<ul style="list-style-type: none"> • Direct
Course effectiveness and planning for improvement	<ul style="list-style-type: none"> • Program coordinator • Instructor 	<ul style="list-style-type: none"> • 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	
Reference No.	
Date	October 2, 2022