هيئة تقويم التعليم والتدريب
Education & Training Evaluation Commission

اعتماد NCAAA T4 2020

Course Specifications

Course Title:	Physics (1)
Course Code:	203206-4
Program:	**Bachelor in Information Technology**
Department:	Department of Physics
College:	**College of Science**
Institution:	**Taif 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: 5/2
4. Pre-requisites for this course (if any)**: NON**
5. Co-requisites for this course (if any)**: NON**

6. Mode of Instruction (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	**Traditional classroom**	80	100%
2	**Blended**	0	0
3	**E-learning**	0	0
4	**Distance learning**	0	0
5	**Other**	0	0

7. Contact Hours (based on academic semester)

No	Activity	Contact Hours
1	**Lecture**	50
2	**Laboratory/Studio**	30
3	**Tutorial**	0
4	**Others** (specify)	0
	Total	80

B. Course Objectives and Learning Outcomes

1. Course Description

Physics (1) 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 provides 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.

- Introduces main topics such as electric field and flux, electromotive force, electric circuits, the electric forces, Colombo's law, 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 the basic concepts of vectors and scalar, the work and energy, the temperature, the electricity, and the light.	K1
1.2	Identify the basic concepts and theories of vectors and scalars, distance and displacement, speed and velocity, electric field, temperature scales.	K1
1.3	Define the general laws of Newtown, motion in 1D, electric force (Coulomb's Law), electric field, electric potential, electric current, electric resistance, work, power.	K1
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.	S1
2.3	Analyze qualitatively and quantitatively experimental data of electric circuits.	S1
3	**Values:**	
3.1	Work effectively and responsibly even in teamwork in performing activities and experiments.	V2
3.2	Act responsibly and ethically in conducting their work.	V1

C. Course Content

No	List of Topics	Contact Hours
1	Unit1: **PHYSICS AND MEASUREMENTS** ▪ Introduction ▪ International system units ▪ Conversion of units	**3**
2	Unit2: **VECTORS** ▪ Coordinate Systems ▪ Vector and Scalar Quantities ▪ Some Properties of Vectors ➢ Sum of vectors ➢ Negative vectors ➢ Graphical method ➢ Analytical method ▪ Components of a Vector ▪ Unit Vectors	**3**

3	Unit3: **MOTION IN ONE DIMENSION** ▪ Position, Velocity, and Speed ▪ Acceleration ▪ Motion with constant acceleration (Kinematic Equations) ▪ Freely Falling Objects	**3**
4	Unit4: **THE LAWS OF MOTION** ▪ 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** ▪ 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** ▪ Temperature and the Zeroth Law of Thermodynamics ▪ Thermometers ▪ The Celsius, Fahrenheit, and Kelvin Temperature Scales ▪ Linear of Thermal expansion of solid	**3**
7	Unit7: **ELECTRIC FIELDS** ▪ Properties of Electric Charges ▪ Charging Objects by Induction ▪ Coulomb's Law ▪ Electric Field Lines ▪ Motion of a Charged Particle in a Uniform Electric Field	**4**
8	Unit8: **ELECTRIC POTENTIALPTER** ▪ 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 CIRCUITSOUTLINE** ▪ Electric Current ▪ Resistance (Ohm's law) ▪ Resistors in Series and Parallel	**3**
10	Unit10: **LIGHT AND OPTICS**	**6**

	▪ 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	
Part2		
1	Introduction	**4**
2	**Experiment 1:** Vectors: Force Table	**4**
3	**Experiment 2:** Simple Pendulum	**4**
4	**Experiment 3:** Hook's Law	**4**
5	**Experiment 4:** Ohm's Law	**4**
6	**Experiment 5:** Series and Parallel connections of resistors	**4**
7	**Experiment 6:** Determination of a resistance using Meter Bridge	**4**
8	**Experiment 7:** Convex Lens	**4**
9	**Experiment 8:** Concave Mirror	**4**
10	**Experiment 9:** Refractive Index of Glass	**4**
Total		**80**

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
1.3	Define the general laws of Newtown, motion in 1D, electric force (Coulomb's Law), electric field, electric potential, electric current, electric resistance, work, power.	Lecture Discussion	Written exam

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
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 and responsibly even in teamwork in performing activities and experiments.	Practical	Lab reports Lab exam Activities
3.2	Act responsibly and ethically in conducting their work.	Practical Discussion	Indirect evaluation

2. Assessment Tasks for Students

#	Assessment task*	Week Due	Percentage of Total Assessment Score
1	Midterm exam I	5th	20%
2	Activities (Quiz)	Periodically	20%
3	Lab reports	Weekly	15%
4	Final Lab Exam	11th	5%
5	Final exam	12th	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:

Academic advising and counseling of students is an important component of teaching; student academic advising is a mandatory requirement of College of Computers and Information Technology (CCIT). Appropriate student advising provides support needed for the student during times of difficulty. In addition, it helps the student to build a close relationship with his/her advisor and to provide student motivation and involvement with the institution.

In addition, since faculty are usually the first to recognize that a student is having difficulty, faculty members play a key role in developing solutions for the students or referring them to appropriate services. Faculty members also participate in the formal student-mentoring program.

Additional counseling is provided by course directors, who provide students with academic reinforcement and assistance and refer “at risk” students to the Vice Dean for Academic Affairs and the Vice Dean for female section.

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	NON
Electronic Materials	NON
Other Learning Materials	NON

2. Facilities Required

Item	Resources
Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.)	• A Lecture room appropriate for maximum 25 students with a personal computer, a data show, and a smart board. • A Lab room appropriate for maximum 15 students with a personal computer, a data show and a smart board.
Technology Resources (AV, data show, Smart Board, software, etc.)	• Lab materials
Other Resources (Specify, e.g. if specific laboratory equipment is required, list requirements or attach a list)	

G. Course Quality Evaluation

Evaluation Areas/Issues	Evaluators	Evaluation Methods
Student Feedback on Effectiveness of Teaching	• Students	• Indirect
Evaluation of Teaching	• Pear reviewer • Program coordinator • Departmental council • Faculty council	• Indirect
Improvement of Teaching	• Program coordinator • Relevant committee	• Direct
Quality of learning resources	• Students • Instructor • Faculty	• Indirect
Extent of achievement of course learning outcomes,	• Program coordinator • Instructor	• Direct

Evaluation Areas/Issues	Evaluators	Evaluation Methods
Course effectiveness and planning for improvement	• Program coordinator • Instructor	• 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	IT Department Council/ Executive program committee
Reference No.	11
Date	23/10/21443