هيئة تقويم التعليم والتدريب
Education & Training Evaluation Commission

2023
TP-153

Course Specification
(Bachelor)

Course Title:	Physics (1)
Course Code:	203206-4
Program:	Bachelor in Computer Science
Department:	Department of Computer Science
College:	College of Computers and Information Technology
Institution:	Taif University
Version:	V1.2024
Last Revision Date:	01/02/2024

Table of Contents

A. General information about the course:

1. Course Identification

1. Credit hours: (4)					
2. Course type					
A.	☐University	☒ College	☐Department	☐Track	☐Others
B.	☒ Required		☐Elective		
3. Level/year at which this course is offered: (3/2)					
4. Course general 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					
5. Pre-requirements for this course (if any)**:**					
None					
6. Pre-requirements for this course (if any)**:**					
None					
7. Course Main Objective(s):					
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.					

2. Teaching mode (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	Traditional classroom	5	100%
2	E-learning	0	0
3	Hybrid • Traditional classroom • E-learning	0	0
4	Distance learning	0	0

3. Contact Hours (based on the academic semester)

No	Activity	Contact Hours
1.	**Lectures**	45
2.	**Laboratory/Studio**	30
3.	**Field**	0
4.	**Tutorial**	0
5.	**Others (specify)**	0
Total		75

B. Course Learning Outcomes (CLOs), Teaching Strategies and Assessment Methods

Code	Course Learning Outcomes	Code of CLOs aligned with program	Teaching Strategies	Assessment Methods
1.0	**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	Lecture Discussion	Written exam
1.2	Identify the basic concepts and theories of vectors and scalars, distance and displacement, speed and velocity, electric	K1	Lecture Discussion	Written exam

Code	Course Learning Outcomes	Code of CLOs aligned with program	Teaching Strategies	Assessment Methods
	field, temperature scales.			
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	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.	S1	Problem solving	Written exam Activities
2.2	Develop a skill versatility in solving problems in vectors, energy, electricity, and light.	S1	Problem solving	Written exam Activities
2.3	Analyze qualitatively and quantitatively experimental data of electric circuits.	S1	Practical	Lab reports Lab exam
3.0	**Values, autonomy, and responsibility**			
3.1	Work effectively and responsibly even in teamwork in	V2	Practical	Lab reports Lab exam Activities

Code	Course Learning Outcomes	Code of CLOs aligned with program	Teaching Strategies	Assessment Methods
	performing activities and experiments.			
3.2	Act responsibly and ethically in conducting their work.	V1	Practical Discussion	Indirect evaluation

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	**3**

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	**3**
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	**3**
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** ▪ 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	**6**
Part2		
12	Indefinite Integrals and the Net Change Theorem. The Substitution Rule	3

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	**3**
10	**Experiment 9:** Refractive Index of Glass	**3**
Total		**75**

D. Students Assessment Activities

No	Assessment Activities *	Assessment timing (in week no)	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	16th	40%

*Assessment Activities (i.e., Written test, oral test, oral presentation, group project, essay, etc.).

E. Learning Resources and Facilities

1. References and Learning Resources

Essential References	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).
Supportive References	NON
Electronic Materials	NON
Other Learning Materials	NON

2. Required Facilities and equipment

Items	Resources
facilities (Classrooms, laboratories, exhibition rooms, simulation rooms, 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 equipment (projector, smart board, software)	• Lab materials
Other equipment (depending on the nature of the specialty)	•

F. Assessment of Course Quality

Assessment Areas/Issues	Assessor	Assessment Methods
Effectiveness of teaching	• Students • Faculty members • Coordinator • Council • Curriculum Committees	• Course exit survey • Feedback from Faculty members • Feedback from Course Coordinator • Feedback from council Feedback from Curriculum Committees
Effectiveness of Students assessment	• Students • Faculty members • Coordinator • Council • Curriculum Committees	• Course exit survey • Feedback from Faculty members • Feedback from Course Coordinator • Feedback from council Feedback from Curriculum Committees
Quality of learning resources	• Students • Faculty members • Coordinator • Council • Curriculum Committees	• Course exit survey • Feedback from Faculty members • Feedback from Course Coordinator

Assessment Areas/Issues	Assessor	Assessment Methods
		• Feedback from council Feedback from Curriculum Committees
The extent to which CLOs have been achieved	• Students • Faculty members • Coordinator • Council • Curriculum Committees	• Course exit survey • Feedback from Faculty members • Feedback from Course Coordinator • Feedback from council • Feedback from Curriculum Committees
Other		

Assessors (Students, Faculty, Program Leaders, Peer Reviewer, Others (specify)

Assessment Methods (Direct, Indirect)

G. Specification Approval

COUNCIL /COMMITTEE	**CS COUNCIL**
REFERENCE NO.	**MEETING #11**
DATE	**07/03/2024**