هيئة تقويم التعليم والتدريب
Education & Training Evaluation Commission

T-104
2022

Course Specification

Course Title:	General Physics 2
Course Code:	PHYS 111
Program:	B.Sc. in Physics
Department:	Department of Physics and astronomy
College:	College of Science
Institution:	King Saud University
Version:	2.0.0
Last Revision Date:	Sep 2023

Table of Contents:

A. General information about the course:

Course Identification					
1. Credit hours:	**4(3+0+2)**				
2. Course type					
a.	University ☐	College ☐	Department☒	Track☐	Others☐
b.	Required ☒	Elective☐			
3. Level/year at which this course is offered:	third level / second year.				
4. Course general Description The course aims to introduce students to the most fundamental concepts, principles and terminology of physics in principles of general physics (electricity and methods of direct Electric Current/Nature of Light and methods of Image Formation/Modern Physics/Nuclear physics).					
5. Pre-requirements for this course (if any): MATH 101					
6. Co- requirements for this course (if any): None					
7. Course Main Objective(s) 1. Use basics concepts of vector analysis to reformulate a static electricity problem. 2. Describe Physical Phenomena related to Electricity, Light, Modern physics and Nuclear physics. 3. Calculate physical quantities related to Electricity, Light, Modern physics and Nuclear physics. 4. The student should be aware of the laws of static electricity, electric current, nature of light, reflection, refraction of light and linear spectra and the nature of the black body and the phenomenon of electromagnetism and the composition of the nucleus and types of radiation and the age of half. 5. Understanding physical phenomena and how to use concepts and physical laws 6. dealing with the basics of physics in daily life. 7. Increasing his physical and structural scientific skills.					

1. Teaching mode (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1.	Traditional classroom	75	100%
2.	E-learning	0	0
3.	Hybrid • Traditional classroom • E-learning	0	0
4.	Distance learning	0	0

2. 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	Define the most fundamental concepts, principles and terminology of physics in principles of general physics (electricity and methods of direct Electric Current/Nature of Light and methods of Image.	K1	• Give extensive examples during lecture. • Give problem sheets to be discussed during lecture..	• Hold Class discussion, tutorial sessions. • Give quizzes, mid-term exam and final exam.
1.2	Memorize the physical laws associated with electricity, light, and modern physics.	K2		
1.3	Recognize appropriate algebraic mathematics along with physical principles to effectively solve problems.	K3		
2.0	Skills			
2.1	Employ the physical laws and analyze/solve the physics-based problems in the fields of general physics.	S1	• Give extensive examples during lecture • Give problem sheets to be discussed during lecture and labs.	• Hold Class discussion, tutorial and lab sessions.
2.2	Perform experiments, data acquisition &	S2		

Code	Course Learning Outcomes	Code of CLOs aligned with program	Teaching Strategies	Assessment Methods
	analysis, and draw results & conclusions.		• assignments. • Discussions in the classes	• Give quizzes, mid-term exam and final exam.
2.3	Construct the method of effectively working whether individually and/ or as in a team.	S3		
3.0	Values, autonomy, and responsibility			
3.1	Present an oral and/or written communication on image formation applications and/or modern physics topics history.	V1	• assignments. • Homework • Preform experiments	Hold Class discussion
3.2	Demonstrate acknowledgment of others' work, mainly in the lab experiments.	V2		

C. Course Content

No	List of Topics	Contact Hours
1.	**Introduction:** Introduction and Objectives of Learning Electricity, Light, Modern physics and Nuclear physics	1
2.	**Light:** nature of light and the principles of ray optics: the nature of light, measurements of the speed of light, the ray approximation in ray optics, analysis model: wave under reflection, analysis model: wave under refraction Image formation: by flat and spherical mirrors, by refraction and thin lenses, lens Aberrations	12
3.	**Electricity:** Electric fields: properties of electric charges, Coulomb's law, analysis Model: particle in a field (electric), electric field lines. Electric potential: electric potential and potential difference, potential energy due to point charges, obtaining the value of the electric fields from the electric potential. Capacitance and Dielectrics: definition and calculating of capacitance, combinations of capacitor, energy stored in a charged capacitor, capacitors with dielectric. Current and Resistance: electric current, resistance and kirchhoff's law. Direct-current circuits: Resistors in series and parallel.	15
4.	**Modern Physics:** Introduction to Quantum physics: blackbody radiation and Planck's Hypothesis, the photoelectric effect, wave properties of particles.	12

	Atomic physics: Atomic spectra of gases, early models of atom, Bohr's Model of the Hydrogen atom, More on Atomic Spectra: visible and x-ray, spontaneous and simulated transitions, lasers.	
5.	**Nuclear Physics:** Nuclear structure: some properties of nuclei, nuclear binding energy, radioactivity and nuclear reactions. Application of nuclear physics: Fission and Fusion	6
Total		45

D. Students Assessment Activities

No	Assessment Activities *	Assessment timing (in week no)	Percentage of Total Assessment Score
1.	First Midterm examination	Approx. 6	15%
2.	Second Midterm examination	Approx. 12	15%
3.	Labs	Weekly	30%
4.	Final examination	From 16 to 18	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	Physics for scientists and engineering 9Th edition, Serway, Brooks/Cole Cengage Learning
Supportive References	الفيزياء العامة في الكهرباء والضوء والفيزياء الحديثة /عبدالله السماري: ، و د. محمد القرعاوي ود. محمد علي آل عيسى
Electronic Materials	None
Other Learning Materials	Internet sites relevant to the course

2. Required Facilities and equipment

Items	Resources
facilities (Classrooms, laboratories, exhibition rooms, simulation rooms, etc.)	A classroom which accommodates 25 students.
Technology equipment (projector, smart board, software)	Whiteboard and Smart board
Other equipment (depending on the nature of the specialty)	Not applicable

F. Assessment of Course Quality

Assessment Areas/Issues	Assessor	Assessment Methods
Effectiveness of teaching	Students\ Peer Reviewer	Indirect \ direct
Effectiveness of students assessment	Students- Faculty	Direct
Quality of learning resources	students	Indirect
The extent to which CLOs have been achieved	Faculty	Indirect
Other	None	None

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

Assessment Methods (Direct, Indirect)

G. Specification Approval Data

COUNCIL /COMMITTEE	Physics Department's council
REFERENCE NO.	4th (1st term/1445)
DATE	11/10/2023