

T-104 2022

Course Specification

Course Title: Modern Physics Lab

Course Code: PHYS 393

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





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A.	A. General information about the course:					
Course Identification						
1.	Credit hours:	2(0+0+4)				
2.	Course type					
a.	University 🗆	College 🗆	Dep	partment⊠	Track□	Others
b.	Required 🖂	Elective				
3. Level/year at which this course is 6th level/3 rd year						
off	ered:					
4. Course general Description Experiments will be performed by the students: Michelson interferometer, Stefan Boltzmann's radiation Law, Electro-optic Kerr-Effect, Magneto- optic Faraday Effect, Photoelectric Effect, Balmer Series and Rydberg Constant, Zeeman Effect. Franck-Hertz experiment, X-ray Diffraction, Characteristics of Microwaves.						
5. Pre-requirements for this course (if any): PHYS 353						
6.	Co- requiremen	ts for this cours	e (if a	any):		
7. Course Main Objective(s)						

- The student should be able to Consolidate the theoretical concepts in the practical application of modern physics
- 2. The student should be able to development his skills in dealing with the experimental devices and the deepening of the spirit of research and discovery.
- 3. The student should be able to develop his/her skills in data analysis.

1. Teaching mode (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1.	Traditional classroom	50	50
2.	E-learning	0	0
3.	HybridTraditional classroomE-learning	0	0
4.	Distance learning	0	0

2. Contact Hours (based on the academic semester)

	1	,
No	Activity	Contact Hours





1.	Lectures	0
2.	Laboratory/Studio	50
3.	Field	0
4.	Tutorial	0
5.	Others (specify)	0
	Total	50

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 understar	ding		
1.1	Explain the enormous variety of electromagnetic phenomena in terms of a few relatively simple laws, and the laws of electromagnetism from our everyday experience and how electromagnetic phenomena manifest themselves	K1	 Experimentation: there are 4 experiments focused on that : X-rays, black body, microwaves and interference Lectures on statistics and 	 reports and theoretical and practical exam theoretical reports. Real- time evaluation of student's
1.2	Develop the ability to use experimental devices and compare between the experimental results and what are already exist in the literatures	K2	statistics and statistical inference . Studying the manuals of devices	performance during session
2.0	Skills			
2.1	Analyze and explain natural phenomena.	S1	Group discussion	Lab report
2.2	Explain the physics behind the experiments	S2	Group discussion	assessment
3.0	Values, autonomy, and re	sponsibility		
3.1	Scientific integrity	V1	Discussions and presentation of results	Peer evaluation

C. Course Content

No List of Topics Contact Hours





1.	Michelson interferometer.	4
2.	Stefan Boltzmann's radiation Law.	4
3.	Electro-optic Kerr-Effect.	4
4.	Magneto-optic Faraday Effect.	4
5.	Zeeman Effect.	4
6.	Photoelectric Effect.	4
7.	Characteristics of Microwaves.	4
8.	Franck-Hertz experiment.	4
9.	Balmer Series and Rydberg Constant.	4
10.	X-ray diffraction.	4
	Total	40

D. Students Assessment Activities

No	Assessment Activities *	Assessment timing (in week no)	Percentage of Total Assessment Score
1.	Reports	Weekly	25%
2.	Midterm exam	From 6 to 7	35%
3.	Final exam	From 13 to 14	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	Experiments in modern physics, by: Dr Al-Aqil Ibrahim - Dr. Mira Ahmed Fuad and Dr. Dugaish Ziad Hussen (1999)
	Note (experiments in modern physics)
Supportivo Deferences	- Experiments in Modern Physics, by Adrian Melissinos Jim
Supportive References	Napolitano, Academic Press, 2003
Electronic Materials	hazemsakeek.com
	http://hyperphysics.phyastr.gsu.edu/hbase/hph.html
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 laboratory which accommodates 12 students.





Items	Resources
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.	6 th (1 st term/1446)
DATE	22/05/1446

