2023
TP-153

Course Specification

(Bachelor)

Course Title:	**Nuclear Physics Lab**
Course Code:	**PHYS26482**
Program:	**Physics**
Department:	**Physics**
College:	**Science**
Institution:	**University of Bisha**
Version:	**3**
Last Revision Date:	25 July 2023

Table of Contents

A. General information about the course:

1. Course Identification

1. Credit hours:	2

2. Course type					
A.	University ☐	College ☐	Department☒	Track☐	Others☐
B.	Required ☒	Elective☐			

3. Level/year at which this course is offered:	7th Level / 4th year

4. Course general Description

This curse explores the basic experiments in nuclear physics, including interaction of radiation with matter, nuclear reactions, radioactive decay processes and radiation detection.

5. Pre-requirements for this course:

NA

6. Co- requirements for this course:

NA

7. Course Main Objective(s)

Analyze and interpret experimental data of nuclear physics.

2. Teaching mode (mark all that apply)

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

3. Contact Hours (based on the academic semester)

No	Activity	Contact Hours
1.	Lectures	
2.	Laboratory/Studio	60
3.	Field	

4.	Tutorial	
5.	Others (specify)	
	Total	60

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	Recognize the theoretical basis for ten experiments related to nuclear physics lab.	K.2	Lectures Solve problems	Written test Reports Homework Quizzes
2.0	Skills			
2.1	Prepare the appropriate equipment for the experiment.	S.2	Laboratory practices	Achievement file laboratory test Reports
2.2	Use the experiment measurements devices correctly.	S.2		
2.3	Analyze and interpret experimental data.	S.2		
2.4	Communicate positively with others.	S.3	Presentation Work group	Reports Presentation
3.0	Values, autonomy, and responsibility			
3.1	Participate in the development of team performance.	V.3	Work group	Reports Presentation

C. Course Content

No	List of Topics	Contact Hours
1.	Operating voltage of the Geiger counter.	6
2.	Statistics of counting.	6
3.	Geiger tube efficiency.	6
4.	Inverse square law.	6
5.	Absorption of beta particles.	6
6.	Resolving time.	6
7.	Half-life of Ba-137m.	6
8.	Rutherford scattering.	6
9.	Scintillation Detector counter 1.	6
10.	Scintillation Detector counter 2.	6
Total		60

Table: The matrix of consistency between the content and the learning outcomes of the course.

	Course Learning Outcomes					
	1.1	2.1	2.2	2.3	2.4	3.1
Topic 1	√	√	√	√	√	√
Topic 2	√	√	√	√	√	√
Topic 3	√	√	√	√	√	√
Topic 4	√	√	√	√	√	√
Topic 5	√	√	√	√	√	√
Topic 6	√	√	√	√	√	√
Topic 7	√	√	√	√	√	√
Topic 8	√	√	√	√	√	√
Topic 9	√	√	√	√	√	√
Topic 10	√	√	√	√	√	√

D. Students Assessment Activities

No	Assessment Activities *	Assessment timing (in week no)	Percentage of Total Assessment Score
1.	Homework, quizzes, reports, and presentation.	1: 15	10 %
2.	Achievement file.	1:15	15 %
3.	Midterm practical exam *	9: 10	25 %
4.	Final practical exam**	End of Semester	50 %

*** (20-marks for practical part and 5-marks for the theoretical part)**

**** (40-marks for practical part and 10-marks for the theoretical part)**

E. Learning Resources and Facilities

1. References and Learning Resources

Essential References	- Experimental Reports. - Supplementary Materials. - Experiments in modern physics, second edition, Adrian C. Melissinos and Jim Napolitano, Academiv Press of Elsevier Science USA, (2003)
Supportive References	- Worked examples in modern physics, Volume 1, P. Rohers and A. Stephens, London ILIFFE BOOKS LTD, Dorsef House, England, (1967).

Electronic Materials	- Blackboard. - PowerPoint presentations. - Digital library of University of Bisha https://ub.deepknowledge.io/Bisha
Other Learning Materials	NA

2. Required Facilities and equipment

Items	Resources
facilities	Classrooms, Physics lab.
Technology equipment	Data show or smart board.
Other equipment	**Laboratory equipment.** 1. Operating voltage of the Geiger counter. 2. Statistics of counting. 3. Geiger tube efficiency. 4. Inverse square law. 5. Absorption of beta particles. 6. Resolving time. 7. Half-life of Ba-137m. 8. Rutherford scattering. 9. Scintillation Detector counter 1. 10. Scintillation Detector counter 2.

F. Assessment of Course Quality

Assessment Areas/Issues	Assessor	Assessment Methods
Extent of achievement of course learning outcomes.	Teachers, students.	Direct (Final exams), Indirect (Questionnaire).
Effectiveness of teaching.	Teachers, students.	Indirect (Questionnaire)
Effectiveness of assessment.	Teachers, students.	Indirect (Questionnaire)
Quality of learning resources	Teachers, students.	Indirect (Questionnaire)
Quality of facilities available	Teachers, students.	Indirect (Questionnaire)
Fairness of evaluation	Peer reviewer.	Direct (Final exams reevaluation).

G. Specification Approval Data

COUNCIL /COMMITTEE	College of Science Council
REFERENCE NO.	20

DATE	17 August 2023