



Course Specification

(Bachelor)

Course Title: Light and Optics

Course Code: MPHY26362

Program: B.Sc. Medical Physics.

Department: Physics.

College: Science

Institution: University of Bisha.

Version: 1

Last Revision Date: 5 September 2023



Table of Contents

A. General information about the course:	3
1. Course Identification.....	3
1. Teaching mode (mark all that apply).....	3
2. Contact Hours (based on the academic semester).....	3
B. Course Learning Outcomes (CLOs), Teaching Strategies and Assessment Methods	4
C. Course Content	4
D. Students Assessment Activities	خطأ! الإشارة المرجعية غير معروفة.
E. Learning Resources and Facilities	6
1. References and Learning Resources	6
2. Required Facilities and equipment	6
F. Assessment of Course Quality	7
G. Specification Approval Data	7



A. General information about the course:

1. Course Identification

1. Credit hours:	3 (2 Lectures + 1 Laboratory)				
2. Course type					
A.	University <input type="checkbox"/>	College <input type="checkbox"/>	Department <input checked="" type="checkbox"/>	Track <input type="checkbox"/>	Others <input type="checkbox"/>
B.	Required <input checked="" type="checkbox"/>	Elective <input type="checkbox"/>			
3. Level/year at which this course is offered:	5 th Level / 3 rd year				
4. Course general Description					
This course is covered the basic knowledge and laboratory skills in light and optics. Through studding the following subjects: the nature of light, geometric optics, the eye and vision, and wave optics.					
5. Pre-requirements for this course (if any):					
NA					
6. Co- requirements for this course (if any):					
NA					
7. Course Main Objective(s)					
Recognize the fundamental of light and optics.					

1. Teaching mode (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1.	Traditional classroom	ε	100%
2.	E-learning		
3.	Hybrid <ul style="list-style-type: none"> • Traditional classroom • E-learning 		
4.	Distance learning		

2. Contact Hours (based on the academic semester)

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





Total	60
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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	Explain the nature of light (Reflection, Refraction, Dispersion), and the basic concepts in geometrical optics.	K1	Lecturing	Quizzes Homework Midterm exam Final exam
1.2	Recognizing basic concepts in the eye and vision, and wave optics.	K1		
2.0	Skills			
2.1	Solve problems in the light and optics.	S1	Solve problems.	Quizzes Homework Midterm exam Final Exam.
2.2	Analyze experimental Data in the light and optics	S2	Practice Lab	Reports Practical exam
2.3	Communicate positively with others	S4	Work group	Reports presentation
3.0	Values, autonomy, and responsibility			
3.2	Ability to work in the team effectively.	V3	Work group	Reports presentation

C. Course Content

No	List of Topics	Contact Hours
1.	<u>The Nature of Light</u> Introduction Electromagnetic Waves Reflection. Experiment# 1	6



2.	Refraction Dispersion Experiment# 2	6
3.	<u>Geometric Optics</u> Introduction Ray Diagrams Plane Mirrors Spherical Mirrors Magnification Experiment# 3	6
4.	Lenses Experiment# 4	6
5.	<u>The Eye and Vision</u> Introduction The Parts of the Eye Emmetropia (Normal Vision) Myopia Experiment# 5	6
6.	Hypermetropia (or Hyperopia) Presbyopia Astigmatism Alternative Structure & Placement Experiment# 6	6
7.	Colour Vision Experiment# 7	6
8.	<u>Wave Optics</u> Introduction Superposition and Interference Huygens' Principle Experiment# 8	6
9.	Diffraction Young's Double-Slit Single-Slit Diffraction Experiment #9	6
10.	Diffraction Gratings Circular Apertures and Diffraction Visual Acuity Thin-Film Interference Experiment #9	6
Total		60





D. Students Assessment Activities

No	Assessment Activities *	Assessment timing (in week no)	Percentage of Total Assessment Score
1.	Homework, quizzes, reports, and presentation.	1: 10	10 %
2.	First term exam	7: 8	10 %
3.	Second term exam	12: 13	10 %
4.	Practical exam	End of Semester	20 %
5.	Final exam	End of Semester	50 %

E. Learning Resources and Facilities

1. References and Learning Resources

Essential References	Introduction to Biological Physics for the Health and Life Sciences, 2 nd Edition, by Kirsten Franklin et. All, Wiley, 2019.
Supportive References	Physics for Scientists and Engineers, 10 th Edition, by Raymond A. Serway, John W. Jewett, BROOKS/COLE CENGAGE Learning, 2019.
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	<p>Laboratory equipment.</p> <ol style="list-style-type: none"> 1. Mirrors and Lenses Experiments. 2. Double slit interference by Laser or microwaves. 3. Spectrometer (Apex angle- Deviation angle- refractive index) 4. Diffraction of light through narrow slit. 5. Malus Law by Laser or microwaves.





Items	Resources
Technology equipment	Projector or smart board
Other equipment	NA

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.	1
DATE	5 September 2023

