

FOUR YEARS UNDERGRADUATE PROGRAM (2024 – 28)
DEPARTMENT OF PHYSICS
COURSE CURRICULUM

PART – A: INTRODUCTION			
Program: Bachelor in Science (Diploma/ Degree/ Honors)		Semester: IV	
		Session: 2024-25	
1	Course Code	PHSC- 04P	
2	Course Title	Waves and Optics	
3	Course Type	Discipline Specific Course	
4	Pre-requisite (if any)	As per program	
5	Course Learning Outcomes (CLO)	<p>After the completion of the course, Students are expected to understand laws and principles behind various optical phenomena, specially related to wave nature of light. The students will also be able to</p> <ul style="list-style-type: none"> ➤ Gain proficiency in operating laboratory equipment such as light source i.e. mercury, sodium and Laser, spectrometers, polarimeter, demonstrating competence in setting up experiments, calibrating instruments, and collecting accurate data. ➤ Develop a deep understanding of optical principles such as refraction, diffraction, dispersion, and interference, as well as their applications in various scientific disciplines ➤ Analyze recorded data and formulate it to get desired results. 	
6	Credit Value	01 Credit	1 Credit = 30 Hours Laboratory Work
7	Total Marks	Maximum Marks: 50	Minimum Pass Marks: 20
PART – B: CONTENT OF THE COURSE			
Total No. of learning-Training/performance Periods -30 Periods (30 Hours)			
Sr. No.	Objects (At least 10 of the following or related Experiments)		No. of Period
1	To determine the Frequency of AC mains with the help of Sonometer.		30
2	Determination of angle of prism using spectrometer.		
3	To determine the Refractive Index of the Material of a given Prism using Spectrometer.		
4	To determine Dispersive Power of the Material of a given Prism using Spectrometer		
5	To determine the value of Cauchy Constants of a material of a prism.		
6	To determine the Resolving Power of a Prism.		
7	To determine wavelength of sodium light using Fresnel Biprism.		
8	To determine wavelength of sodium light using Newton's Rings Method.		
9	To determine the wavelength of Laser light using Single Slit Diffraction.		
10	To determine wavelength of Sodium light by laser diffraction.		
11	To determine wavelength of spectrum of Mercury light using plane diffraction Grating and Spectrometer.		
12	To determine the Resolving Power of a Plane Diffraction Grating.		
13	To determine the thickness of a thin paper by measuring the width of the interference fringes produced by a wedge-shaped Film.		
14	Determination of resolving power telescope.		
15	Study of polarization of sugar solution using polarimeter.		
Keywords:		Waves Motion – General, Velocity of Waves, Wave Optics, Interference, Interferometer, Diffraction, Polarization, Spectrometer.	

Signature of Convener & Members (CBoS):

PART – C: LEARNING RESOURCES

Text Books, Reference Books and Others

Text Books Recommended

1. Advanced Practical Physics for students, B.L. Flint and H.T. Worsnop, 1971, Asia Publishing House
2. A Text Book of Practical Physics, I. Prakash & Ramakrishna, 11th Ed., 2011, Kitab Mahal
3. Advanced level Physics Practicals, Michael Nelson and Jon M. Ogborn, 4th Edition, reprinted 1985, Heinemann Educational Publishers
4. A Laboratory Manual of Physics for undergraduate classes, D.P.Khandelwal, 1985, Vani Pub.
5. Practical Physics B.Sc II : R P Goyal, Shivrul Publications

Reference Books Recommended

1. Practical Physics by S.L. Gupta and V. Kumar
2. Advanced Practical Physics for Students by B.L. Worsnop and H.T. Flint
3. B.Sc. Practical Physics by C.L. Arora
4. Experimental Physics: Modern Methods by R.A. Dunlap

Online Resources (e-books/ learning portals/ other e-resources)

1. Link for e-Books for Physics:Physics Practical: <https://egyankosh.ac.in/handle/123456789/82374>;
https://www.lightandmatter.com/lab_223.pdf;
2. Virtual Lab : <https://vlab.amrita.edu/index.php?sub=1&brch=281>
3. <https://www.compadre.org/books/?ID=70&FID=63273>
4. <https://www.edutech.com/category/higher-education/engineering-labs/virtual-labs-1>
5. <https://phet.colorado.edu/en/simulations/wave-interference>
6. <https://egyankosh.ac.in/handle/123456789/82374>

PART – D: ASSESSMENT AND EVALUATION

Suggested Continuous Evaluation Methods:

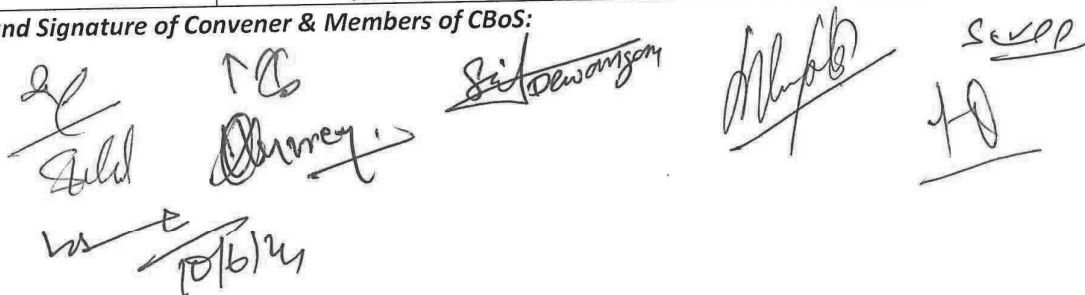
Maximum Marks: 50 Marks

Continuous Internal Assessment(CIA):15 Marks

EndSemester Exam(ESE):35 Marks

Continuous Internal Assessment (CIA): (By Course Teacher)	Internal Test / Quiz-(2): 10 & 10 Assignment/Seminar +Attendance – 05 Total Marks - 15	Better marks out of the two Test / Quiz +Marks obtained in Assignment shall be considered against 15 Marks
	End Semester Exam (ESE):	Laboratory Performance: On spot Assessment Performed the Task based on lab. work - 20 Marks Spotting based on tools & technology (written) – 10 Marks Viva-voce (based on principle/technology) - 05 Marks

Name and Signature of Convener & Members of CBoS:



 The image shows five handwritten signatures in black ink. From left to right: a signature that appears to be 'S. S. S.', a signature that appears to be 'D. D. D.', a signature that appears to be 'S. S. S.', a signature that appears to be 'S. S. S.', and a signature that appears to be 'S. S. S.'. Below the signatures, there is a date '10/6/24' written in black ink.