



NATIONAL INSTITUTE OF TECHNOLOGY, TIRUCHIRAPPALLI

Department: Physics

COURSE PLAN			
Name of the program and specialization	B.Tech. 1st Year – Mechanical Engineering		
Course Title	Physics Lab		
Course Code	PHIR12	No. of Credits	2
Course Code of Pre-requisite subject(s)	NIL		
Session	January 2023	Section (if, applicable)	B
Name of Faculty	Sradha G (Research Scholar) <i>HOD-PHY</i>	Department	Physics
Official Email	413320001@nitt.edu	Phone No.	8921733476
Name of Course Coordinator(s) (if, applicable)	Dr.T. Sonamani Singh, Dept of Physics		
Official E-mail	takhel@nitt.edu	Telephone No.	7054239807
Course Type (please tick appropriately)	<input checked="" type="checkbox"/> Core course	<input type="checkbox"/> Elective course	
Syllabus (approved in BoS)			
Laboratory Experiments			
<ol style="list-style-type: none"> 1. Calibration of voltmeter – Potentiometer. 2. Field along the axis of a Circular coil. 3. Rigidity modulus of the material of a wire - Torsional pendulum with ring. 4. Numerical aperture of an optical fiber. 5. Dispersive power of a prism – Spectrometer. 6. Wavelengths of white light – Spectrometer. 7. Radius of curvature of lens – Newton’s Rings. 8. Wavelength of laser using diffraction grating. 			
COURSE OBJECTIVES			
<ol style="list-style-type: none"> 1. To introduce the spirit of experiments to verify physics concepts such as reflection, refraction, diffraction and interference on light matter interaction. 2. To perform experiments to estimate the materials properties and to check their suitability in science and engineering. 3. To familiarize physics concepts and to design instruments and experimental set up for better and accurate measurements. 			



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4. To teach and apply knowledge to measure and verify the values of certain constants in physics.

Course Outcomes

- On completion of this course, the students will be able to,
1. calibrate and operate voltmeter, ammeter, potentiometer and galvanometer.
 2. demonstrate the principle of dispersion, diffraction, interference and polarization using optical instruments like spectrometer, travelling microscope and polarimeter.
 3. design experimental setup in order to verify concepts of wave and particle nature of light.
 4. explain the principle of light propagation in fibers and light matter interaction using lasers and conventional light sources.
 5. acquire knowledge of electricity, magnetism and mechanics to estimate the fundamental constants in Physics

Laboratory		Aligned Programme Outcomes (PO) with level of correlation											
<i>PHIR12</i>		Programme Outcomes (COs)											
Course Outcomes(Cos)		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO 10	PO 11	PO 12
	CO1	H	-	-	H	M	-	-	-	-	M	-	M
	CO2	H	-	-	H	M	-	-	-	-	M	-	M
	CO3	M	H	H	H	-	-	-	-	-	M	-	M
	CO4	H	-	M	H	H	-	H	-	-	M	-	M
	CO5	H	M	-	H	-	-	H	-	-	M	-	M

COURSE PLAN – PART II			
COURSE TEACHING AND LEARNING ACTIVITIES			
Sl. No.	Week/Contact Hours	Topic	Mode of Delivery
1.	23 rd March 2023	Introduction to the course and demonstration of non-optics experiments	Blackboard and demonstration in laboratory
2.	30 th March 2023	Calibration of voltmeter – Potentiometer	Laboratory
3.	1 st week April 2023	Field along the axis of a Circular coil	Laboratory
4.	2 nd week April 2023	Determination of rigidity modulus of a metallic wire and moment of inertia of a circular disc.	Laboratory
5.	4 th week April 2023	Numerical aperture of an optical fiber	Laboratory



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6.	1 st week May 2023	Quiz 1 & revision of the Experiments	Laboratory
7.	2 nd week May 2023	Demonstration of optics experiments	Laboratory
8.	3 rd week May 2023	Wavelengths of white light – Spectrometer	Blackboard and demonstration in laboratory
9.	4 th week May 2023	Wavelength of laser using diffraction grating	Laboratory
10.	1 st week June 2023	Radius of curvature of lens – Newton's Rings	Laboratory
11.	2 nd week June 2023	Dispersive power of a prism – Spectrometer	Laboratory
12.	3 rd week June 2023	Quiz 2 & revision of the Experiments	Laboratory
13.	As per NITT Schedule	End semester practical exam	Laboratory

COURSE ASSESSMENT METHODS (shall range from 4 to 6)

Sl. No.	Mode of Assessment	Week/Date	Duration	% Weightage
1.	Quiz 1	11 th May 2023	30 min	10%
2.	Quiz 2	15 th June 2023	30 min	10%
3.	Internal Assessment	30 th March 2023 – 15 ^h June 2023	--	40%
4.	Final Assessment *	As per NITT Schedule	3 hr	40%

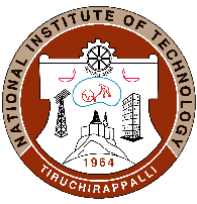
***mandatory; refer to guidelines on page 4**

COURSE EXIT SURVEY (mention the ways in which the feedback about the course shall be assessed)

Feedback from the students will be taken twice (mid-semester and end of the semester) on the depth of the knowledge gained, the effectiveness of the methodology adopted, and the scope of improvement.

ATTENDANCE POLICY (A uniform attendance policy as specified below shall be followed)

- 100% attendance is required to complete the experiments.
- A maximum of 10% shall be allowed under On Duty (OD) category.
- Students with less than 65% of attendance shall be prevented from writing the final assessment and shall be awarded 'V' grade.



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ACADEMIC DISHONESTY & PLAGIARISM

- Possessing a mobile phone, carrying bits of paper, talking to other students, copying from others during an assessment will be treated as punishable dishonesty.
- Zero mark to be awarded for the offenders. For copying from another student, both students get the same penalty of zero mark.
- The departmental disciplinary committee including the course faculty member, PAC chairperson and the HoD, as members shall verify the facts of the malpractice and award the punishment if the student is found guilty. The report shall be submitted to the Academic office.
- The above policy against academic dishonesty shall be applicable for all the programs.

FOR APPROVAL

Course Faculty

[Signature]
14/6/23

CC- Chairperson

[Signature]

HOD

[Signature]

Guidelines

- a) The number of assessments for any theory course shall range from 4 to 6.
- b) Every theory course shall have a final assessment on the entire syllabus with at least 30% weightage.
- c) One compensation assessment for absentees in assessments (other than final assessment) is mandatory. Only genuine cases of absence shall be considered.
- d) The passing minimum shall be as per the regulations.

B.Tech. Admitted in				P.G.
2018	2017	2016	2015	
35% or (Class average/2) whichever is greater.		(Peak/3) or (Class Average/2) whichever is lower		40%

- e) Attendance policy and the policy on academic dishonesty & plagiarism by students are uniform for all the courses.
- f) Absolute grading policy shall be incorporated if the number of students per course is less than 10.
- g) Necessary care shall be taken to ensure that the course plan is reasonable and is objective.