



NATIONAL INSTITUTE OF TECHNOLOGY, TIRUCHIRAPPALLI

Department: Physics

COURSE PLAN

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|--|--|---|-------------------|
| Name of the program and specialization | B.Tech. 1st Year – Metallurgical and Materials 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) | |
| Name of Faculty | Aswathi K P (Research Scholar) | Department | Physics |
| Official Email | 413120052@nitt.edu | Telephone No. | 8606441523 |
| Name of Course Coordinator(s) (if, applicable) | | | |
| Official E-mail | | Telephone No. | |
| 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. Rigidity modulus of the material of a wire - Torsional pendulum with ring. 2. Numerical aperture of an optical fiber. 3. Calibration of voltmeter – Potentiometer. 4. Field along the axis of a Circular coil. 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. Know how to calibrate a given voltmeter.
2. To make experimental setup to verify certain physics concepts of wave and particle nature of light.
3. Understand the light propagation in fibers, light matter interaction and use of lasers in science and engineering.
4. Acquire knowledge, estimate, and suggest materials for engineering applications.

COURSE PLAN – PART II

COURSE TEACHING AND LEARNING ACTIVITIES

| Sl. No. | Week/Contact Hours | Topic | Mode of Delivery |
|---------|----------------------------|---|--|
| 1. | 31 st Mar 2023 | Introduction to the course and demonstration of non-optics experiments, Performance of experiment 1- Determination of rigidity modulus of a metallic wire and moment of inertia of a circular disc. | Blackboard and demonstration in laboratory |
| 2. | 21 st Apr 2023 | Numerical aperture of an optical fiber | Laboratory |
| 3. | 28 th Apr 2023 | Field along the axis of a Circular coil | Laboratory |
| 4. | 12 th May 2023 | Calibration of voltmeter – Potentiometer | Laboratory |
| 5. | 19 th May 2023 | Quiz 1 & Demonstration of optics experiments | Laboratory |
| 6. | 26 th May 2023 | Wavelengths of white light – Spectrometer | Laboratory |
| 7. | 2 nd June 2023 | Wavelength of laser using diffraction grating | Blackboard and demonstration in laboratory |
| 8. | 9 th June 2023 | Radius of curvature of lens – Newton's Rings | Laboratory |
| 9. | 16 th June 2023 | Dispersive power of a prism – Spectrometer | Laboratory |
| 10. | 23 rd June 2023 | Quiz 2 & revision of the experiments | Laboratory |
| 11. | As per NITT Schedule | End semester practical exam | Laboratory |

COURSE ASSESSMENT METHODS (shall range from 4 to 6)



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| Sl. No. | Mode of Assessment | Week/Date | Duration | % Weightage |
|---------|---------------------|--|----------|-------------|
| 1. | Quiz 1 | 19 th May 2023 | 30 min | 10% |
| 2. | Quiz 2 | 23 rd June 2023 | 30 min | 10% |
| 3. | Internal Assessment | 31 st Mar 2023 – 16 th 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.

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

CC- Chairperson

HOD



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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 for all the courses shall be 35% or Class Average/2, whichever is maximum.
- 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.