

## NATIONAL INSTITUTE OF TECHNOLOGY, TIRUCHIRAPPALLI

COURSE OUTLINE			
Course Title	Physics - I		
Course Code	PHIR11	No. of Credits	3 (2 credit theory + 1 credit lab)
Department	Physics	Faculty	Dr. R. Sankaranarayanan
Pre-requisites Course Code	Nil		
Course Coordinator(s) (if, applicable)	Dr. S. Manivannan Dr. N.V. Giridharan		
Other Course Teacher(s)/Tutor(s) E-mail	Details with first year coordinator office	Telephone No.	3609
Course Type	Core / <del>Elective</del>		
COURSE OVERVIEW			
Physics- I course is offered in the first semester to all the branches of engineering. The course carries theory and practical components with 2 credits and 1 credit respectively.			
COURSE OBJECTIVES			
<ul style="list-style-type: none"> <li>• To make a bridge between the Physics in school and engineering courses.</li> <li>• To introduce the basic concepts of modern science like Photonics,</li> <li>• Engineering applications of acoustics, fundamentals of crystal physics and materials science.</li> </ul>			
COURSE OUTCOMES (CO)			
<i>Course Outcomes</i>	<i>Aligned Programme Outcomes(PO)</i>		
The student will be able to 1. Understand many modern devices and technologies based on lasers and optical fibers. 2. Appreciate various material properties which are used in engineering applications and devices. 3. Identify the cause of reverberations in buildings 4. Analyze the crystal structure of materials 5. Decide on suitable materials for engineering applications	<ul style="list-style-type: none"> <li>➤ Obtain in depth knowledge on important Physics concepts</li> <li>➤ Carry out independent research work in interdisciplinary areas</li> <li>➤ Interact with professionals in related areas</li> <li>➤ Communicate ideas and learn new technologies</li> </ul>		

TEACHING AND LEARNING ACTIVITIES				
S. No.	Week	Topic	Mode of Delivery	
1.	First 2-3 weeks	Unit-I : Lasers	Lectures/Power Point Presentation	
2.	Next 2-3 weeks	Unit II: Fiber Optics		
3.	2-3 weeks	Unit-III: Acoustics		
4.	2-3 weeks	Unit-IV: Crystallography		
5.	2-3weeks	Unit-V: conductor, magnetic and superconducting materials		
ASSESSMENT METHODS				
S. No.	Mode of Assessment	Week/Date	Duration	% Weightage
1.	Quiz- I	On completion of Unit-I	30 min	10 %
2.	Mid semester exam	Upto Units-III (around Oct end)	90 min	30 %
3.	Quiz – II	On completion of Unit – IV	30 min	10 %
4.	Semester exam	As per regular timetable	180 min	50 %
			Total	100 %
6.	Practicals	5 experiments	3 h × 5	100 %
ESSENTIAL READINGS : Textbooks, reference books Website addresses, journals, etc				
<ol style="list-style-type: none"> <li>1. A text book of Engineering Physics, M.N. Avadhanulu and P.G. Kshirsagar, S. Chand and Company, New Delhi (2009).</li> <li>2. Engineering Physics, R.K. Gaur and S.L. Gupta, Dhanpat Rai Publications (P) Ltd., 8th Ed., New Delhi (2001).</li> <li>3. Fundamentals of Physics, 6<sup>th</sup> Ed., D. Halliday, R. Resnick and J. Walker, John Wiley and Sons, New York (2001).</li> <li>4. Introduction to Solid State Physics, 7<sup>th</sup> Ed., Charles Kittel, Wiley, Delhi (2007).</li> </ol>				

COURSE EXIT SURVEY (mention the ways in which the feedback about the course is assessed and indicate the attainment also)

- Performance in the assessment methods.
- Questionnaire about the effectiveness of the delivery method, topics and the knowledge gained.

COURSE POLICY (including plagiarism, academic honesty, attendance, etc.)

- 75 % attendance is mandatory.
- Those who are absent for any of the assessment tests on genuine grounds shall be given an opportunity only once for the retest with the prior permission of the concerned faculty member and Head of Physics Department. Retest shall be conducted before the end semester exam and the portions will be up to Unit IV.
- There is no end semester examination for the laboratory. Marks for laboratory sessions shall be awarded on each lab session based on observational skill, understanding etc.
- Total marks =  $\frac{2}{3}$  theory marks +  $\frac{1}{3}$  of lab marks
- Passing minimum is 40 %.
- Relative grades will be awarded for each student based on gap theory.
- Those who fail in the course can appear for the supplementary exam. The marks including laboratory and internal marks shall be considered till his programme duration.
- Those who indulge in malpractice such as copying, plagiarism shall have to redo the course.

ADDITIONAL COURSE INFORMATION

The teacher can be contacted through email/phone/in-person for discussion, counseling and mentoring.

FOR SENATE'S CONSIDERATION

Course Faculty \_\_\_\_\_ CC-Chairperson \_\_\_\_\_

HOD \_\_\_\_\_