



NATIONAL INSTITUTE OF TECHNOLOGY, TIRUCHIRAPPALLI

DEPARTMENT OF PHYSICS

COURSE PLAN - PART I			
Name of the programme and specialization	B.Tech. Instrumentation and Control Engineering (ICE)		
Course Title	PHYSICS - II		
Course Code	PHIR12	No. of Credits	02
Course Code of Pre-requisite subject(s)	NIL		
Session	July 2019	Section (if, applicable)	A
Name of Faculty	Dr. S. Manivannan	Department	PHYSICS
Official Email	ksmani@nitt.edu	Telephone No.	+91-431-2503616
Name of Course Coordinator(s) (if, applicable)	Dr. M. Ashok Dr. R. Sankaranarayanan		
Official E-mail	ashokm@nitt.edu sankar@nitt.edu	Telephone No.	+91-431-2503610 +91-431-2503609
Course Type (please tick appropriately)	Core course <input checked="" type="checkbox"/> Elective course <input type="checkbox"/>		
Syllabus (approved in BoS)			
Laboratory Experiments			
1. 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. Wavelength of a laser using diffraction grating 6. Dispersive power of a prism - Spectrometer 7. Wavelength of mercury spectrum - Spectrometer 8. Radius of curvature of lens - Newton's rings			
COURSE OBJECTIVES			
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. 4. To teach and apply knowledge to measure and verify the values of certain constants in physics.			
MAPPING OF COs with POs			
Course Outcomes On completion of this course, the students will be able to	Programme Outcomes (PO) (Enter Numbers only)		
1. know how to calibrate a galvanometer and convert it into a current and voltmeters.	1, 2, 5, 6, 9		
2. make experimental setup to verify certain physics concepts of wave and particle nature of light.	1, 2, 5, 6, 9		
3. understand the light propagation in fibers, light matter interaction and use of lasers in science and engineering.	1, 2, 5, 6, 9		



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4. acquire knowledge, estimate and suggest materials for engineering applications. 1, 2, 5, 6, 9

COURSE PLAN – PART II

COURSE OVERVIEW

- Physics-II (Code: PHIR12) is a laboratory course offered in the first year to all branches of undergraduate engineering students.
- The course carries 2 credits.

COURSE TEACHING AND LEARNING ACTIVITIES

S.No	Week	Topic	Mode of Delivery
1.	19 th Aug. 2019	<ul style="list-style-type: none"> ➤ Torsional pendulum with ring ➤ Numerical aperture of an optical fiber ➤ Calibration of voltmeter – Potentiometer ➤ Field along the axis of a circular coil 	Demonstration, Hands-on training & clarifications
2.	26 th Aug. 2019	<ul style="list-style-type: none"> ➤ Wavelength of a laser using diffraction grating ➤ Dispersive power of a prism – Spectrometer ➤ Wavelength of mercury spectrum – Spectrometer ➤ Radius of curvature of lens – Newton's rings 	Demonstration, Hands-on training & clarifications
3.	9 th Sep. 2019	Experiment – Wavelength of a laser using diffraction grating	Performing experiment & evaluation
4.	16 th Sep. 2019	Experiment – Dispersive power of a prism – Spectrometer	Performing experiment & evaluation
5.	23 th Sep. 2019	Experiment – Wavelength of mercury spectrum – Spectrometer	Performing experiment & evaluation
6.	30 th Sep. 2019	Experiment – Radius of curvature of lens – Newton's rings	Performing experiment & evaluation
7.	7 th Oct. 2019	Experiment – Torsional pendulum with ring	Performing experiment & evaluation
8.	14 th Oct. 2019	Experiment – Numerical aperture of an optical fiber	Performing experiment & evaluation
9.	21 st Oct. 2019	Experiment – Calibration of voltmeter – Potentiometer	Performing experiment & evaluation
10.	04 th Nov. 2019	Experiment – Field along the axis of a circular coil	Performing experiment & evaluation
11.	11 th Nov. 2019	Compensation Laboratory	Performing experiment & evaluation
12.	18 th Nov. 2019	Semester Examination/Practical	Performing experiment & evaluation

COURSE ASSESSMENT METHODS (shall range from 4 to 6)

S.No.	Mode of Assessment	Week/Date	Duration	% Weightage
1	Assessment – I (Expt. 1 & 2)	9 th Sep. 2019 & 16 th Sep. 2019	4 h + 4 h	15
2	Assessment – II (Expt. 3 & 4)	23 th Sep. 2019 & 30 th Sep. 2019	4 h + 4 h	15
3	Assessment – III (Expt. 5 & 6)	7 th Oct. 2019 & 14 th Oct. 2019	4 h + 4 h	15
4	Assessment – IV (Expt. 7 & 8)	21 st Oct. 2019 & 04 th Nov. 2019	4 h + 4 h	15



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CPA	Compensation Assessment*	11 th Nov. 2019	4 h	7.5
5	Semester Exam/Practical	18 th Nov. 2019	4 h + 4 h	40
Total				100
COURSE EXIT SURVEY (mention the ways in which the feedback about the course shall be assessed)				
<ul style="list-style-type: none">➤ Performance in the assessment methods.➤ Questionnaire about the effectiveness of the delivery method, topics and the knowledge gained will be done by the Academic office/MIS, NITT.				
COURSE POLICY <i>The passing minimum shall be 35% or (class average/2) whichever is greater.</i>				
MODE OF CORRESPONDENCE (email/ phone etc) Faculty can be contacted through office phone (0431-2503616)/e-mail (ksmani@nitt.edu) or in person for further discussions and clarifications on a mutually convenient time.				
COMPENSATION ASSESSMENT POLICY <ul style="list-style-type: none">➤ It is a practical examination with duration of 04 h for 7.5 % weightage only.				
ATTENDANCE POLICY <ul style="list-style-type: none">➤ At least 75% attendance in each course is mandatory.➤ 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 Semester Examination/Practical and shall be awarded 'V' grade.				
ACADEMIC DISHONESTY & PLAGIARISM <ul style="list-style-type: none">➤ 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 programmes.				
ADDITIONAL INFORMATION, IF ANY				
Books for References <ol style="list-style-type: none">1. Physics Laboratory Manual, Department of Physics, National Institute of Technology Tiruchirappalli (2019-20). It can be downloaded from https://www.nitt.edu/home/academics/departments/physics/programmes/BTech/PhysicsLabManual-2019-20.pdf2. Practical Physics, R.K. Shukla, Anchal Srivastava, New age international (2011).3. B.Sc. Practical Physics, C.L Arora, S. Chand & Co. (2012).				
FOR APPROVAL				
Course Faculty <u><i>S. Manivanan</i></u> (Dr. S. MANIVANNAN) 6/9/2019 CC- Chairperson <u><i>[Signature]</i></u> HOD <u><i>[Signature]</i></u> 13/9/19				