

NATIONAL INSTITUTE OF TECHNOLOGY, TIRUCHIRAPPALLI

COURSE OUTLINE			
Course Title	ADVANCED PHYSICS LABORATORY		
Course Code	PH669	No. of Credits	2
Department	Physics	Faculty	Dr. B. Karthikeyan
Pre-requisites Course Code	Nil		
Course Coordinator(s) (if, applicable)	Dr. N. Baskaran		
Other Course Teacher(s)/Tutor(s) E-mail	-	Telephone No.	0431250-3612
Course Type	<input type="checkbox"/> Core course	<input type="checkbox"/> Elective course	
COURSE OVERVIEW			
ADVANCED PHYSICS LABORATORY is offered in the fourth semester to M.Sc students, III semester students. The subject has 2 credit weightage.			
COURSE OBJECTIVES			
<ul style="list-style-type: none"> ➤ The course is intended to provide through hands on experience on Automation, LAB view programming, MATLAB programing. ➤ Advanced sophisticated experiments and equipment's operational learning 			
COURSE OUTCOMES (CO)			
Course Outcomes	Aligned Programme Outcomes (PO)		
By successful completion of this course, the student will 1. Have a practical understanding LAB view 2. To introduce the basic concepts of various advanced experimental techniques used in research through hands on experience. 3. Research related experiments will be learned	<ul style="list-style-type: none"> ➤ Obtain in-depth knowledge on Experimental skills ➤ Carry out independent practical experience ➤ Interact with research problems in related areas 		

COURSE TEACHING AND LEARNING ACTIVITIES				
S.No.	Week	Topics/Experiments	Mode of Delivery	
		1. MATLAB-1: Matrix operations 2. MATLAB-2: Digital Signal Processing M.Sc. (Physics) Department of Physics 21 3. MATLAB-3: Solving Ordinary Differential Equations 4. Microprocessor-1: Stepper Motor Interface 5. Microprocessor-2: Traffic Control 6. Microprocessor-3: Interfacing Display 7. Microprocessor-4: Interfacing with Voltmeter 8. Labview-1: Operational Amplifier Circuits 9. Labview-2: Simulation of Diode characteristics 10. Labview-3: Design of Op-Amp AC Characteristics 11. Labview-4: Construction of OPAMP 12. Labview-5: Design of 555 Timer Chip Astable Circuit 13. X-Ray Diffraction – Determination of lattice parameters of a crystalline solid 14. UV-Vis Spectrophotometer – Determination of absorption coefficient and bandgap 15. FTIR Spectrometer – Determination of vibration levels in a compound 16. Superconductivity – Determination of transition temperature 17. Contact Angle Measurement 18. G.M. Counter 19. Thin Film Deposition and Measurement of Electrical Conductivity – Four Probe Method 20. Ellipsometer – Determination of n and k of a material.	All Practical should be done by the students by hands on experience.	
COURSE ASSESSMENT METHODS				
S.No.	Mode of Assessment	Week/Date	Duration	% Weightage

1.	Lab records	Each observation and record will be evaluated for maximum of 10 marks and is considered for as internal	75 %
2.	Final Examination	Exam will be done for 25 marks which consists of 10 marks as a viva voce examination	25 %
		Total	100 %
ESSENTIAL READINGS :			
1. L.A. Leventhal, Micro Computer Experimentation with the Intel SDK-85 (1980). 2. Learning MATLAB – The MathWorks, Inc (1999). 3. Kenneth L. Ashley, Analog Electronics with LabVIEW, Pearson Education (2003).			

<p>COURSE EXIT SURVEY (mention the ways in which the feedback about the course is assessed and indicate the attainment also)</p> <ul style="list-style-type: none"> ➤ Performance in the assessment methods ➤ Questionnaire about the effectiveness of the delivery method, topics and the knowledge gained
<p>COURSE POLICY (including plagiarism, academic honesty, attendance, etc.)</p> <ul style="list-style-type: none"> ➤ 75 % attendance is mandatory. ➤ Those who indulge in malpractice such as copying, plagiarism shall have to redo the course. ➤ A student has to score a minimum of 50% marks to get a pass. ➤ Those who fail in the course can appear for the supplementary exam. ➤ Any misbehavior, indiscipline in the classroom/laboratory/exam hall will be dealt with seriously. In the worst case, the departmental disciplinary committee is empowered to debar the student from the course.
<p>ADDITIONAL COURSE INFORMATION</p>
<p>FOR SENATE'S CONSIDERATION</p>

Dr. B. Karthikeyan
Course Faculty Dr. B. Karthikeyan _____

N. Basheer
CC-Chairperson _____

M. Ashok
HOD _____
dr