

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. R. Nagalakshmi		
Other Course Teacher(s)/Tutor(s) E-mail	-	Telephone No.	0431250-3612
Course Type	<input type="checkbox"/> Core course	<input checked="" type="checkbox"/> X 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 of MATLAB and 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 4. Have experience on advanced Laboratory experience through analyzing the data. 5. Data analyzing and connecting it with theory will make students towards research.	<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
	Each week Two Practical classes- sometimes repeat also will be allowed	<p>MATLAB</p> <ol style="list-style-type: none"> 1) Matrix operations 2) Temperature conversion (Celsius to Fahrenheit and Fahrenheit to Celsius) 3) Projectile trajectory for different angles 4) Mosley's Law 5) Moment of inertia of different body 6) Radioactive decay 7) Rotating flower pot 8) Black body radiation <p>LABVIEW</p> <ol style="list-style-type: none"> 9) Basic arithmetic operations 10) Boolean operations 11) Conversion of Binary, Hexadecimal, Octal to Decimal Numbers 12) Operational Amplifier – Inverting, Non inverting, Differentiator, Integrator. 13) Temperature conversion – Celsius to Fahrenheit and Fahrenheit to Celsius. 14) Sum of 'N' natural numbers using for and while loops. 15) Factorial of a given number using for and while loop. 16) X-Ray Diffraction – Determination of lattice parameters of a crystalline solid 17) UV-Vis Spectrophotometer – Determination of absorption coefficient and bandgap 	All Practical should be done by the students by hands on experience.

		18). FTIR Spectrometer – Determination of vibration levels in a compound 19) Superconductivity – Determination of transition temperature 20) Contact Angle Measurement 18. G.M. Counter 21) Thin Film Deposition and Measurement of Electrical Conductivity – Four Probe Method 22) Ellipsometer – Determination of n and k of a material.	
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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		50 %
2.	Final Examination	Exam will be done for 25 marks which consists of 10 marks as a viva voce examination		50 %
			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).

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.)

1. 75 % attendance is mandatory.
2. Those who indulge in malpractice such as copying, plagiarism shall have to redo the course.
3. A student has to score a minimum of 50% marks to get a pass.
4. 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.
5. Those who are absent for End semester examinations on genuine grounds, shall be given an opportunity only once to appear for reassessment examination.
6. For the students whose attendance percentage falls between 65-74% has to appear for the extra classes at the end of the semester i.e before End semester exam.
7. Those who fail in the course has to appear for the reassessment exam.

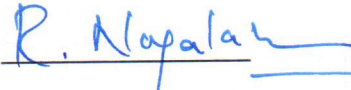
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ADDITIONAL COURSE INFORMATION

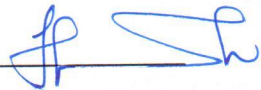
FOR SENATE'S CONSIDERATION


Course Faculty Dr. B. Karthikeyan _____

CC-Chairperson



HOD



(R. NAGALAKSHMI)
