NATIONAL INSTITUTE OF TECHNOLOGY, TIRUCHIRAPPALLI

Department of Electrical and Electronics Engineering

COURSE OUTLINE TEMPLATE			
Course Title	**Circuits and Devices Laboratory**		
Course Code	**EELR10**	**No. of Credits**	**2**
Department	**EEE (III Sem. Sec- B)**	**Faculty**	**Dr. N. Kumaresan**
Pre-requisites Course Code	**Pre-requisite : EEPC10 Electron Devices** **Co-requisite : EEPC11 Circuit Theory**		
Course Coordinator(s) (if, applicable)			
Other Course Teacher(s)/Tutor(s) E-mail		**Telephone No.**	**0431-2503257**
Course Type	☑ **Core course** ☐ **Elective course**		

COURSE OVERVIEW

One common approach for getting students actively involved in the learning process is through laboratory classes. So, the laboratory is an exciting place where students investigate, analyze, and reflect. They test and apply theories and make abstract concepts concrete. Hence, laboratory classes provide students with first-hand experience with course concepts. Therefore, following are the learning objectives through the laboratory experiments for any students: (i) understanding of concepts, (ii) developing experimental skills (e.g., design, observation, and use of equipment), (iii) developing communication skills, including those involved in working in groups. (iv) developing data analysis skills, (v) developing thinking skills (critical, quantitative, qualitative), (vi) directly experiencing phenomena, (vii) connecting book knowledge to real-world applications and (viii) applying concepts to new situations and solve authentic problems.

In this laboratory, students will verify the circuit theorems and I-V characteristics of electronic devices. Students will be assessed in each laboratory class / exercise based on their preparation (i.e., knowledge on theoretical concepts, circuit diagram, experimental procedure, precautions, typical characteristics, formulae and tabular column); making connections; conducting experiments; taking readings; calculating performance quantities; plotting characteristics and bringing out inferences. Mini project is also aimed for this laboratory course.

Safety is an important concern in Electrical Laboratories and hence, it is instructed that all the students should follow strictly the safety rules / guidelines.

COURSE OBJECTIVES

To understand and analyze the basic theorems of Circuit theory.
Understand and analyze series & parallel circuits and measurement of single and three phase power
Understand and analyze different applications of diode and characteristics of Transistor.

COURSE OUTCOMES (CO)

Course Outcomes	Aligned Programme Outcomes (PO)
Upon completion of the course, the students will be able to 1. Verify the network theorems and operation of typical electrical and electronic circuits. 2. Choose the appropriate equipment for measuring electrical quantities and verify the same for different circuits. 3. Prepare the technical report on the experiments carried.	

COs / POs		Course outcomes(COs)		
		1	2	3
Programme Outcomes (POs)	1	H	H	H
	2	H	H	H
	3	H	H	H
	4	NA	NA	NA
	5	NA	NA	NA
	6	H	H	H
	7	NA	NA	NA
	8	H	H	H
	9	H	H	H
	10	H	H	H
	11	H	H	H
	12	H	H	H
	13	H	H	H
	14	H	H	H

COURSE TEACHING AND LEARNING ACTIVITIES

S.No.	Week	Topic	Mode of Delivery
1.	2nd week of July '17 (10 to 14)	Demonstration and use of Bread board, Variable regulated power supply, Function generator, Digital Storage Oscilloscope, Multi meters, etc.	Laboratory demonstration
2.	3rd week of July '17 (17 to 21)	Characteristics of CB and CE configuration of BJT	Conducting experiment in the Laboratory
3.	4th week of July '17 (24 to 28)	Characteristics of MOSFET	
4.	31.07.17 to 1st week of August '17 (1 to 4)	Verification of Kirchhoff's Current and Voltage law.	
5.	2nd week of August '17 (7 to 11)	Verification of Thevenin and Maximum Power Transfer Theorem.	
6.	3rd week of August '17 (14 to 18)	Assessment : Quiz	Date and time will be announced later
7.	4th week of August '17 (21 to 24)	Verification of Superposition Theorem.	Conducting experiment in the Laboratory
8.	Last week of Aug'17 to 2nd week of Sep. (28.8.17 to 8.9.17)	• Transient characteristics of RL series circuit. • Transient characteristics of RC series circuit. • Transient characteristics of RLC series circuit.	

S.No.	Week	Topic	Mode of Delivery
9.	3rd and 4th week of September '17 (11 to 22)	1. Single-phase Resistive circuit 2. Single-phase RL series circuit 3. Single-phase RC series circuit 4. Three-phase circuits : -measurement of power, current and power factor	Demonstration in the laboratory
S.No.	**Week**	**Topic**	**Mode of Delivery**
10.	October '17	Mini project	Assessment criteria will be informed later
11.	3rd week of October '17	Assessment – Lab exam	Date and time will be announced later
12.	First week of November '17	Mini project – report submission / assessment	Date and time will be announced later

COURSE ASSESSMENT METHODS

S.No.	Mode of Assessment	Week/Date	Duration	% Weightage
1.	Internal assessment	During regular laboratory classes	3 hours in each lab class	50 %
2.	Quiz	3rd week of August '17	45 Minutes	10 %
3.	Lab exam	3rd week of October '17	1 hour	20 %
4.	Mini project	1st week of November '17 Details will be informed to the students		20 %

ESSENTIAL READINGS : Textbooks, reference books Website addresses, journals, etc

1. Text / references mentioned in EEPC10 Electron Devices and EEPC11 Circuit Theory courses
2. Lab manual which will be supplied by the faculty handling the lab

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

Feedback from the students during class committee meetings
Anonymous feedback through questionnaire

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

ATTENDANCE

1. Every student should maintain minimum 75 % physical attendance. Students not meeting this criteria will have to RE DO the course.

2. Students who have missed the regular lab class should get the prior permission for attending Compensation lab class.

Grading the students

1. Grading will be based on the clusters (range) of the total marks (all the assessments i.e., Assessment 1 to 4, put together for each student) scored. For grading, Gap theory or Normalized curve method will be used to decide the clusters (range) of the total marks.

2. The passing minimum shall be class mean by two or maximum by three, whichever is lower. Hence, every student is expected to score the minimum mark to pass the course. Otherwise the student would be declared fail and 'F' grade will be awarded.

ACADEMIC HONESTY & PLAGIARISM

1. All the students are expected to be genuine during the course work. Taking of information by means of copying simulations, assignments, looking or attempting to look at another student's paper or bringing and using study material in any form for copying during any assessments is considered dishonest.
2. Tendering of information such as giving one's program, simulation work, assignments to another student to use or copy is also considered dishonest.
3. Preventing or hampering other students from pursuing their academic activities is also considered as academic dishonesty.
4. Any evidence of such academic dishonesty will result in the loss of marks on that assessment. Additionally, the names of those students so penalized will be reported to the class committee chairperson and HoD for necessary action.
5. Students who honestly producing ORIGINAL and OUTSTANDING WORK will be REWARDED.

ADDITIONAL COURSE INFORMATION

CORRESPONDENCE

1. All the students are advised to check their NITT WEBMAIL regularly. All the correspondence (schedule of classes/ schedule of assessment/ course material/ any other information regarding this course) will be done through their webmail.
2. Queries (if required) may be emailed to me / contact me during the lab sessions for any clarifications.

FOR SENATE'S CONSIDERATION

Course Faculty _____ **CC-Chairperson** _____ **HOD** _____ 10/07/2017