DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING
NATIONAL INSTITUTE OF TECHNOLOGY, TIRUCHIRAPPALLI

COURSE OUTLINE TEMPLATE			
Course Title	**CIRCUIT THEORY**		
Course Code	**EEPC11**	**No. of Credits**	**04**
Department	**EEE**	**Faculty**	**C. Nagamani**
Pre-requisites Course Code	**Mathematics II (MAIR12)**		
Course Coordinator(s) (if, applicable)	**---**		
Other Course Teacher(s)/Tutor(s) E-mail: cnmani@nitt.edu	**---**	**Telephone No.**	**0431-2503254**
Course Type	√ **Core course**	☐ **Elective course**	

COURSE OVERVIEW

This course is designed to impart the fundamental knowledge and skills that the students graduating in Electrical Engineering should possess. It builds up on the basic concepts of circuit elements exposing the students to several theorems and techniues for modeling electrical circuits or systems. Problem solving and analysing the behaviour of circuits is the hall mark of the course. Individual, group / team tasks are planned as part of this course.

COURSE OBJECTIVES

- To provide the key concepts and tools in a logical sequence to analyze and understand electrical and electronic circuits

COURSE OUTCOMES (CO)

Course Outcomes

Upon completion of the course, the students will be able to

1. understand the technical representation of common electrical systems
2. analyze and compute the time domain behavior of linear (AC and DC) electric circuits with single or multiple power sources
3. Compute the performance of AC Networks (1 port) which may be 1-phase or 3-phase using phasor analysis.
4. Understand the flow of real and reactive power in AC systems
5. Analyze simple electro-magnetic circuits

Aligned Programme Outcomes (PO)

CO no.	PO 1	PO 2	PO 3	PO 4	PO5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PO 13	PO 14
1	H	L	NA	NA	L	NA	L	L	NA	L	NA	L	H	L
2	H	M	H	M	M	NA	M	H	M	M	NA	M	H	M
3	H	M	H	M	H	NA	M	H	M	H	NA	H	H	M
4	H	M	H	H	H	NA	M	H	M	H	NA	H	H	M
5	H	M	H	M	M	NA	L	M	M	H	NA	H	H	M

COURSE TEACHING AND LEARNING ACTIVITIES			
S.No.	**Week**	**Topic**	**Mode of Delivery**
1	Weeks 1 to 3 (10 contact hours, including two contact hours for problem solving)	Basics of dc and ac circuits - Concepts	Lecture/ Tutorial
2		numerical examples/ problem solving	Group work (exercise)
3	Weeks 4 to 6 (10 contact hours, including two contact hours for problem solving)	Source transformation, Network Theorems, star-delta equivalence	Lecture / Tutorial
4		numerical examples/ problem solving	Group work (exercise)
5	Weeks 7 to 9 (10 contact hours, including two contact hours for problem solving)	Resonance, and analysis of coupled circuits	Lecture / Tutorial
6		numerical examples/ problem solving	Group work (exercise)
7	Weeks 10 to 12 (10 contact hours, including two contact hours for problem solving)	Three-phase circuits	Lecture / Tutorial
8		numerical examples/ problem solving	Group work (exercise)
9	Weeks 13 to 15 (10 contact hours, including two contact hours for problem solving)	Time response of RL, RC and RLC circuits	Lecture / Tutorial
10		numerical examples/ problem solving	Group work (exercise)

Mode of Assessment

S.No.	Mode of Assessment	Week/Date	Duration	% Weightage
1	1st Mid Semester Examination (Written test) (1st and 2nd Units)	6th Week	60 Minutes	20
2	2nd Mid Semester Examination (Written test) (3rd and 4th Units)	12th Week	60 Minutes	20
3	Take Home / Team Task	3rd to 13th week	Work will be carried out along with the course	10
4	Retest (Written Test) (1st to 4th Unit)	14th week	60 Minutes	20
5	End Semester Examination (Written test)	16th week	180 Minutes	50

Note:

1. **Attending all the assessments (Assessment 1, 2, 3 and 5) is MANDATORY for every student.**
2. **If any student is not able to attend Assessment-1 (1st Mid Sem) / Assessment-2 (2nd Mid Sem) due to genuine reasons, student is permitted to attend the Assessment- 4 (retest) with 20% weightage (20 marks).**
3. **In any case, retest will not be offered as an improvement test.**

ESSENTIAL READINGS :
Text Books: 1. *Hayt, W. H, Kemmerly J. E. & Durbin, 'Engineering Circuit Analysis', McGraw Hill Publications, 8th Edition, 2013.* 2. *Charles K. Alexander, Matthew N.O.Sadiku, 'Fundamentals of Electric Circuits', McGraw-Hill Publications, 5th Edition, 2013.*
Reference Books: 1. *Joseph. A. Edminister, 'Electric Circuits - Schaum's Outline Series', McGraw-Hill Publications, 6th Edition, 2003.* 2. *Robins & Miller, 'Circuit Analysis Theory and Practice', Delmar Publishers, 5th Edition, 2012.*

COURSE EXIT SURVEY
Shall be obtained at the end of the course
COURSE POLICY
ATTENDANCE 1. Attendance will be taken by the faculty in all the contact hours. Every student should maintain minimum 75 % physical attendance in these contact hours to attend the end semester examination. 2. Any student, who fails to maintain 75% attendance need to appear for the retest. Student who scores more than 50 % marks in the retest will be eligible for attending the end semester examination. 3. Students not having 75% minimum attendance at the end of the semester and also fail in retest (scoring less than 50%) will have to RE-DO the course. **ACADEMIC HONESTY & PLAGIARISM** 1. Copying in any form during assessments is considered as academic dishonesty and will attract suitable penalty.
FOR APPROVAL 7/7/2017 **Course Faculty** _____ **CC-Chairperson** _____ **HOD** _____ 10/07/2017