

**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	<input checked="" type="checkbox"/>	Core course	<input type="checkbox"/> 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 techniques 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	Aligned Programme Outcomes (PO)														
Upon completion of the course, the students will be able to															
1. understand the technical representation of common electrical systems	C	PO 1	PO 2	PO 3	P O 4	PO5	PO 6	P O 7	PO 8	PO 9	P O 10	PO 11	P O 12	P O 13	P O 14
2. analyze and compute the time domain behavior of linear (AC and DC) electric circuits with single or multiple power sources	1	H	L	NA	N A	L	NA	L	L	N A	L	N A	L	H	L
3. Compute the performance of AC Networks (1 port) which may be 1-phase or 3-phase using phasor analysis.	2	H	M	H	M	M	NA	M	H	M	M	N A	M	H	M
4. Understand the flow of real and reactive power in AC systems	3	H	M	H	M	H	NA	M	H	M	H	N A	H	H	M
5. Analyze simple electro-magnetic circuits	4	H	M	H	H	H	NA	M	H	M	H	N A	H	H	M
	5	H	M	H	M	M	NA	L	M	M	H	N A	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	1 <sup>st</sup> Mid Semester Examination (Written test) (1 <sup>st</sup> and 2 <sup>nd</sup> Units)	6 <sup>th</sup> Week	60 Minutes	20
2	2 <sup>nd</sup> Mid Semester Examination (Written test) (3 <sup>rd</sup> and 4 <sup>th</sup> Units)	12 <sup>th</sup> Week	60 Minutes	20
3	Take Home / Team Task	3 <sup>rd</sup> to 13 <sup>th</sup> week	Work will be carried out along with the course	10
4	Retest (Written Test) (1 <sup>st</sup> to 4 <sup>th</sup> Unit)	14 <sup>th</sup> week	60 Minutes	20
5	End Semester Examination (Written test)	16 <sup>th</sup> 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 (1<sup>st</sup> Mid Sem) / Assessment-2 (2<sup>nd</sup> 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, 8<sup>th</sup> Edition, 2013.
2. Charles K. Alexander, Matthew N.O.Sadiku, 'Fundamentals of Electric Circuits', McGraw-Hill Publications, 5<sup>th</sup> Edition, 2013.

**Reference Books:**

1. Joseph. A. Edminister, 'Electric Circuits - Schaum's Outline Series', McGraw-Hill Publications, 6<sup>th</sup> Edition, 2003.
2. Robins & Miller, 'Circuit Analysis Theory and Practice', Delmar Publishers, 5<sup>th</sup> Edition, 2012.

**COURSE EXIT SURVEY**

Shall be obtained at the end of the course

**COURSE POLICY**

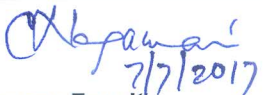

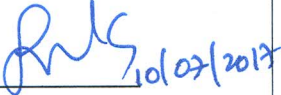
**ATTENDANCE**

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**

Course Faculty  7/7/2017      CC-Chairperson       HOD  10/07/2017