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

COURSE PLAN – PART I			
Name of the programme and specialization	**B.Tech., Electrical and Electronics Engineering**		
Course Title	**Circuit Theory**		
Course Code	**EEPC10**	**No. of Credits**	**4**
Course Code of Pre-requisite subject(s)	**MAIR12 (Mathematics I)**		
Session	**Jan. 2021**	**Section (if, applicable)**	**B**
Name of Faculty	**Dr. C.NAGAMANI**	**Department**	**E.E.E.**
Email	**cnmani@nitt.edu**	**Telephone No.**	**04312503254**
Name of Course Coordinator(s) (if, applicable)			
E-mail	**cnmani@nitt.edu**	**Telephone No. 0431 250 3254**	
Course Type	√ **Core course**	☐ **Elective course**	

Syllabus (approved in BoS)

Fundamental concepts of R, L and C elements, DC circuits, series and parallel circuits - loop and nodal analysis, AC circuits - complex impedance - phasor diagram, real and reactive power - loop and nodal analysis applied to AC circuits. Voltage source –current source transformations, Various Network theorems and applications to dc and ac circuits, star-delta transformations. Resonance in series and parallel circuits, self and mutual inductances, coefficient of coupling - dot convention - analysis of coupled circuits. Three-phase star and delta circuits with balanced and unbalanced loads - power measurements - power factor calculations. Time response of RL, RC and RLC circuits for step and sinusoidal inputs.

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)
1. Understand the representation of electrical systems and explain the behavior of simple DC circuits based on fundamental laws, mesh analysis, nodal analysis and network theorems	PO1-5, PO7-10, PO12-14.
2. Compute the performance of 1-phase AC Networks under sinusoidal steady state using phasor techniques and theorems	PO1-5, PO7-10, PO12-14.
3. Analyze coupled circuits and three-phase AC systems	PO1-5, PO7-10, PO12-14.

4. Analyze and compute the transient behavior of electric circuits with single or multiple power sources	PO1-5, PO7-10, PO12-14.

COURSE PLAN – PART II

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.

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 and examples	Online teaching modes with online tools
2		numerical examples/ problem solving	Tutorial/ Group work
3	Weeks 4 to 6 (10 contact hours, including two contact hours for problem solving)	Source transformation, Network Theorems, star-delta equivalence and examples	Online teaching modes with online tools
4		numerical examples/ problem solving	Tutorial/ Group work
5	Weeks 7 to 9 (10 contact hours, including two contact hours for problem solving)	Resonance, analysis of coupled circuits and examples	Online teaching modes with online tools
6		numerical examples/ problem solving	Tutorial/ Group work
7	Weeks 10 to 12 (10 contact hours, including two contact hours for problem solving)	Three-phase circuits	Online teaching modes with online tools
8		numerical examples/ problem solving	Tutorial/ Group work
9	Weeks 13 to 15 (10 contact hours, including two contact hours for problem solving)	Time response of RL, RC and RLC circuits	Online teaching modes with online tools
10		numerical examples/ problem solving	Tutorial/ Group work

COURSE ASSESSMENT METHODS (shall range from 4 to 6)

S.No.	Mode of Assessment	Week/Date	Duration	% Weightage
1	1st Mid Semester Examination (Written test) (1st and 2nd Units)	6th Week	60 Minutes	25
2	2nd Mid Semester Examination (Written test) (3rd and 4th Units)	12th Week	60 Minutes	25
3	Quiz/ Take Home / Team Task	3rd to 13th week	Non-contact hours	20
CPA	Compensation Assessment*	14th week	60 Minutes	25
4	Final Assessment *	16th week	120 Minutes	30

*mandatory; refer to guidelines on page 4

COURSE EXIT SURVEY (mention the ways in which the feedback about the course shall be assessed)

Apart from the formal feedback (arranged by academic office) at the end of the course, informal and objective feedback shall be encouraged along the course work for improving the teaching – learning process.

COURSE POLICY (preferred mode of correspondence with students, compensation assessment policy to be specified)

MODE OF CORRESPONDENCE (email/ phone etc)

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 through webmail.

COMPENSATION ASSESSMENT POLICY

1. Attending all the assessments (Assessment 1, 2, 3 and 4) is MANDATORY for every student.
2. If any student misses Assessment-1 or Assessment-2 due to genuine reasons, he/ she can seek permission to write the Compensation Assessment (CPA) with 25% weightage. In any case the maximum compensation will be for 25% only, even if both A1 and A2 are missed.
3. In any case, Compensation Assessment will not be offered as an improvement test.

ATTENDANCE POLICY (A uniform attendance policy as specified below shall be followed)

- **At least 75% attendance in each course is mandatory.**
- **A maximum of 10% shall be allowed under On Duty (OD) category.**
- Students with **less than 65% of attendance** shall be prevented from writing the final assessment and **shall be awarded 'V' grade.**

ACADEMIC DISHONESTY & PLAGIARISM

- Any type of malpractice will be punishable.
- Zero mark to be awarded for the offenders. For copying from another student, both students get the same penalty of zero mark.
- The departmental disciplinary committee including the course faculty member, PAC chairperson and the HoD, as members shall verify the facts of the malpractice and award the punishment if the student is found guilty. The report shall be submitted to the Academic office.

  The above policy against academic dishonesty shall be applicable for all the programmes.

ADDITIONAL INFORMATION

FOR APPROVAL		
C. Nagamani	Josephine M.	
Course Faculty _____	**CC-Chairperson** _____	**HOD** _____

Guidelines:

a) The number of assessments for a course shall range from 4 to 6.

b) Every course shall have a final assessment on the entire syllabus with at least 30% weightage.

c) **One compensation assessment for absentees in assessments (other than final assessment) is mandatory. Only genuine cases of absence shall be considered. Details of compensation assessment to be specified by faculty.**

d) The passing minimum shall be as per the regulations.

e) Attendance policy and the policy on academic dishonesty & plagiarism by students are uniform for all the courses.

f) Absolute grading policy shall be incorporated if the number of students per course is less than 10.

g) Necessary care shall be taken to ensure that the course plan is reasonable and is objective.