

# CIRCUIT ANALYSIS-II (THEORY) EE101

Pre-requisite: Circuit analysis-I

Credit Hours 03

Contact Hours 48

## RECOMMENDED BOOKS

- James W. Nilsson, Susan Riedel, "Electric Circuits" Latest edition

## REFERENCE BOOKS

- Charles K. Alexander, Matthew Sadiku "Fundamentals of Electric Circuits", Latest edition
- William H. Hayt, Jack Kemmerly and Steven M. Durbin, "Engineering Circuit Analysis," Latest Edition
- J. David Irwin and Robert M. Nelms, "Basic Engineering Circuit Analysis," Latest Edition

## OBJECTIVE OF COURSE

Circuit analysis is a second course on electric circuits. This course is intended to enhance the knowledge of students with regard to electric circuits and develop skills in analysis. First AC steady-state circuits are explained by using a transformation into the frequency domain. This topic is further explored with power transfer, power calculations and frequency response. The transient analysis of RC, RL, and RLC circuits is also discussed in detail

S.NO	CLO/PLOS MAPPING	DOMAIN	PLO
01	<b>Apply</b> the knowledge of AC signals and phasors to analyze circuits.	C3	01
02	<b>Solve</b> Different problems related to R,L and C circuits	C3	02
03	<b>Apply</b> the principles and techniques of basic circuits on three phase circuits	C3	02
04	<b>Design</b> filters using different circuit design concepts.	C5	03

## COURSE CONTENTS

### Transient Analysis:

- RC and RL circuits
- Natural and step response of series and parallel RLC circuits
- Sinusoids and phasors

### Sinusoidal steady-state analysis

- Sinusoids, Phasors

- Phasor relationships for R, L, and C
- Impedance and Admittance
- Kirchhoff's Laws in the frequency domain

### **Sinusoidal Steady-State Power Analysis (AC Power Analysis)**

- Instantaneous power
- Average and Reactive Power
- The rms value and Power calculations
- Apparent Power and Power Factor
- Complex Power
- Maximum Power Transfer

### **Balanced Three Phase Circuits:**

- Balanced three phase sources
- Three phase sources connections (Wye and Delta)
- Balanced three phase loads
- Balanced three phase systems
- Unbalanced circuits

### **Introduction to Frequency Selective Circuits:**

- Effect of changing the frequency of input signal on the output,
- Transfer function,
- Frequency response( amplitude and phase angle response)
- Analysis and design of RL and RC low pass circuits
- Analysis and design of RL and RC high pass circuits
- Analysis and design of RC and RL high pass circuits (cont.)