

Department of Electrical and Electronics Engineering

COURSE MODULES OF THE SUBJECT TAUGHT FOR THE Q3R SESSION 2025-26

Course Syllabi with CO's

systems), calculation of real and reactive Powers. Two Port networks: Definition, Open circuit impedance, Short circuit admittance and Transmission parameters and their evaluation for simple circuits.

TLP: Chalk and Board, Problem based learning

Practice (Laboratory) Part

(Experiments to be carried out using discrete components)

- 1) Study of the effect of Open and Short circuits in simple circuits.
- 2) Determination of resonant frequency, bandwidth, and Q of a series circuit.
- 3) Determination of resonant frequency, bandwidth, and Q of a parallel circuit.
- 4) Verification of Thevenin's theorem.
- 5) Verification of Norton's theorem.
- 6) Verification of Superposition theorem.
- 7) Verification of maximum Power transfer theorem.
- 8) Power factor correction.
- 9) Measurement of time constant of an RC circuit.
- 10) Measurement of power in three phase Circuits using two-watt meter method.

List of Text Books

TEXT BOOKS:

- 1 Engineering Circuit Analysis William H Hayt et al Mc GrawHill 8th Edition,2014
- 2 Engineering Circuit Analysis J David Irwin et al Wiley India 10th Edition,2014
- 3 Fundamentals of Electric Circuits Charles K Alexander Matthew N O Sadiku Mc Graw Hill 5th Edition,2013
- 4 Network Analysis M.E. Vanvalkenburg Pearson 3rd Edition,2014.

List of Reference Books

1. Electric Circuits Mahmood Nahvi Mc Graw Hill 5thEdition,2009
2. Introduction to Electric Circuits Richard C Dorf and James A Svoboda Wiley 9thEdition,2015
3. Circuit Analysis; Theory and Practice Allan H Robbins Wilhelm C Miller Cengage 5thEdition,2013

List of URLs, Text Books, Notes, Multimedia Content, etc

1. <https://www.youtube.com/watch?v=mNb1DpTjzbM>
2. <https://www.youtube.com/watch?v=U2kVAKhoJs8>
3. <https://nptel.ac.in/courses/108/105/108105159/>
4. <https://asnm-iitkgp.vlabs.ac.in/exp/rlc-circuit-analysis/simulation.html>
5. <https://www.circuitlab.com/editor/>

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| Course Outcomes | At the end of the course the student will be able to: CO1: Understand the basic concepts, basic laws, and methods of analysis of DC and AC networks and reduce the complexity of the network using source shifting, source transformation and network reduction using transformations. CO2: Solve complex electric circuits using network theorems. CO3: Discuss resonance in series and parallel circuits and also the importance of initial conditions and their evaluation. CO4: Synthesize typical waveforms using Laplace transformation. CO5: Solve unbalanced three-phase systems and also evaluate the performance of two-port networks. |
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CIE: Theory component are 25 marks and that for the practical component is 25 marks

Theory component (30):

Internal Assessment Marks (40) Average of Best of 2 IAs + Assignment Marks (20) scaling down to 50%.

The student has to secure 40% of 25 marks to qualify in the CIE of the theory component of IPCC

Practical component (20): 15 marks for the conduction of the experiment and preparation of laboratory record and 05 marks for the test to be conducted after the completion of all the laboratory sessions.

The student must secure 40% of 25 marks to qualify in the CIE of the practical component of the IPCC.

The Correlation of Course Outcomes (CO's) and Program Outcomes (PO's) & Program Specific Outcomes (PSOs)

| Course Code: | BEE302 | TITLE: Electric Circuit Analysis | | | | | | | Faculty Name: | Dr. Shakunthala C | | | | |
|-------------------------|--|----------------------------------|-----|-----|-----|-----|-----|-----|---------------|-------------------|------|------|------|------|
| List of Course Outcomes | Program Outcomes (PO's) & Program Specific Outcomes (PSOs) | | | | | | | | | | | | | |
| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PO12 | PSO1 | PSO2 |
| CO-1 | 3 | 3 | - | - | - | - | - | - | 3 | 3 | - | 3 | 3 | - |
| CO-2 | 3 | 3 | - | - | - | - | - | - | 3 | 3 | - | 3 | 3 | - |
| CO-3 | 3 | 3 | - | - | - | - | - | - | 3 | 3 | - | 3 | 2 | - |
| CO-4 | 2 | 2 | - | - | - | - | - | - | 3 | 3 | - | 3 | 2 | - |
| CO-5 | 3 | 3 | - | - | - | - | - | - | 3 | 3 | - | 3 | 2 | - |

Note: 3= Strong Contribution 2 = Average Contribution 1 = Weak Contribution ‘-’= No Contribution