



Course description:

Topics covered in this course will include; Circuit Variables, Circuit Elements, methods of analysis, circuit theory, The Operational Amplifier, Inductance, Capacitance, First-Order RL and RC Circuits, The Natural and Step RLC response, Sinusoidal Steady-State Circuit analysis, Sinusoidal Steady State Power, Three-Phase Balanced Power, and Frequency Selective Circuits.

Aims of the course:

After successful completion of this course, the student will have a basic understanding of:

1. Definitions and units of basic electrical quantities
2. Ohm's law and Kirchhoff's laws and series and parallel dc circuit analysis
3. Dependent sources, input and output resistances, and operational amplifiers
4. Mesh, loop and nodal analyses of general dc resistive and op-amp circuits
5. DC network theorems and bridge circuits
6. Capacitors and inductors
7. First-order transient analysis of RL and RC circuits

Intended Learning Outcomes: (ILOs)

A Knowledge and Understanding		
A1	Concepts and Theories:	to build new concepts and ideason concepts presented. Develop anunderstanding of the explicit connections among the many circuit analysis tools and methods
A2	Contemporary Trends, Problems and Research	
A3	Professional Responsibility:	
B Subject-specific skills		
B1	Problem solving skills:	Identify linear systems and represent those systems in schematic form Simplify circuits using series and parallel equivalentents and using Thevenin's and Norton equivalentents
B2	Modeling and Design:	Identify and model first and second order electric systems involving capacitors and inductors
B3	Application of Methods and Tools:.	Apply Kirchhoff's current and voltage laws and Ohm's law to circuit problems
C Critical-Thinking Skills		
C1	Analytic skills:	Perform node and loop analyses and set these up in standard matrix format
C2	Strategic Thinking:	Predict the transient behavior of first and second order circuits
C3	Creative thinking and innovation:	Designing new circuits with specific functionality
D General and Transferable Skills		



