EE 232 – ELECTRICAL CIRCUITS 2

CREDIT HOURS

3 Hours

CONTACT HOURS (Hours/week)

Lecture: 2; Tutorial: 2; Lab: 2

TEXT BOOK

J. Nilson & S.Riedel, "Electrical circuits", Prentice Hall, latest edition

COURSE DESCRIPTION

AC series circuit and series response revision, parallel circuit and Δ to Y-simplification. Source transformation, superposition the node voltage method and the mesh current method. Thevenin theorem. Complex power and maximum power calculations. Three phase voltage sources. Analysis of the balanced wye – wye circuit. Analysis of the wye delta & delta wye circuit and delta delta circuit. Complex power calculation in three phase. Unbalanced and four wire three phase loads. Unbalanced Y loads with neutral (wire disconnected) or having Zo. Inductances and capacitors, series-parallel combinations. The natural response for R-L circuit. The natural response of R-C circuit. General solution of step response of R-L and R-C circuit. Sequential switching.

PREREQUISITE:

EE 231

RELATION OF COURSE TO PROGRAM

Required

COURSE INSTRUCTION OUTCOMES

The student will be able to:

Enhance the skills related to AC circuit analysis, three phase circuit balanced and unbalanced load and the natural response of R-L and R-C circuits.

TOPICS COVERED

- A.C. series circuit and series resonance revision Y- Δ transformation.
- Source transformation and Node Voltage method.
- The mesh current method thevenin theorem.
- Complex power & Maximum Power Calculation
- Three Phase Systems
- Balanced Y- Y Circuit
- Y- Δ , Δ-Y , Δ-Δ 3 Phase Systems
- Power Calculation in 3 Phase System
- Unbalanced Δ Connected 3 Phase System
- Y 3 Phase unbalanced System

- Inductor and Capacitor
- Natural Response of R-L Circuit
- Natural Response of R-C Circuit
- Step Response of R-L & R-c Circuits
- Sequential Switching

CONTRIBUTION OF COURSE TO MEET THE REQUIREMENTS OF CRITERION 5:

Professional component Content			
Math and Basic Sciences	**Engineering Topics**	**General Education**	**Other**
	✓		

RELATIONSHIP OF COURSE TO STUDENT OUTCOMES:

Student Outcomes		Course aspects
A	An ability to apply knowledge of mathematics, science, and engineering	a_1 a_2
B	An ability to design and conduct experiments, analyze and interpret data.	b_1 b_2 b_3 b_4
C	An ability to design a system, component, or process to meet desired needs within realistic constraints such as economics, environmental, social, political, ethical, health, and safety, manufacturability, and sustainability	
D	An ability to function on multi-disciplinary teams.	d_1 d_2 d_3 d_4
E	An ability to identify, formulate, and solve engineering problems	
F	An understanding of professional and ethical responsibility	
G	An ability to communicate effectively	g_1 g_2 g_3
H	The broad education necessary to understand the impact of engineering solutions in a global, economic, environmental, and social content	
I	A recognition of the need for, and an ability to engage in life-long learning.	
J	A knowledge of contemporary issues within and outside the electrical engineering profession.	
k	An ability to use the techniques, skills, and modern engineering tools necessary for electrical engineering practice.	k