

## **EE 332- Network Analysis**

### **CREDIT HOURS**

3 Hours

### **CONTACT HOURS (Hours/week)**

Lecture: 2; Tutorial: 2

### **COURSE COORDINATOR**

Prof. Yasser Galal

### **TEXT BOOK:**

W. J. Hayt and J.E. Kemmerly, "Engineering Circuit Analysis", McGraw-Hill International, 1993

### **COURSE DESCRIPTION:**

Introducing the topic and illustrating its importance for electrical engineering field. Complex frequency method for different input forms– Laplace transform and relation between current and voltage for resistance, capacitance and inductance– Laplace transform and electric circuit sources– The impulse function in circuit analysis– Laplace transform and the concept of transfer function– The concept of magnetic coupling– Analysis of magnetic coupled circuits– Linear transformers– Ideal transformers– Two-port networks and it's different equation forms– Evaluation of its parameter– Analysis of terminated two-port circuits– Interconnected two-port networks– Revision and a set of solved examples.

### **PREREQUISITE:**

BA 224 & EE 232

### **RELATION OF COURSE TO PROGRAM:**

Required

### **COURSE INSTRUCTION OUTCOMES:**

The student gains skills on analysis of electrical networks using complex frequency approach and Laplace transform. He/ She is capable of applying such approaches to magnetically coupled circuits and two port networks.

### **TOPICS COVERED:**

- Complex frequency method for different wave forms
- Laplace transform and electric circuit sources
- The impulse function in circuit analysis
- Analysis of magnetically coupled circuits
- Linear transformers
- Ideal transformers

- Analysis of two port networks
- Inter-connected two port networks.

**CONTRIBUTION OF COURSE TO MEET THE REQUIREMENTS OF CRITERION 5:**

<b>Professional Component Content</b>			
<b>Math and Basic Sciences</b>	<b>Engineering Topics</b>	<b>General Education</b>	<b>Engineering Design</b>
	✓		

**RELATIONSHIP OF COURSE TO STUDENT OUTCOMES:**

<b>Student Outcomes</b>		<b>Course Outcomes</b>
<b>a.</b>	An ability to apply knowledge of mathematics, science, and engineering.	✓
<b>b.</b>	An ability to design and conduct experiments, analyze and interpret data.	
<b>c.</b>	An ability to design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability.	
<b>d.</b>	An ability to function on multi-disciplinary teams.	
<b>e.</b>	An ability to identify, formulate, and solve engineering problems.	✓
<b>f.</b>	An understanding of professional and ethical responsibility.	
<b>g.</b>	An ability to communicate effectively.	
<b>h.</b>	The broad education necessary to understand the impact of engineering solutions in a global, economic, environmental, and societal content	
<b>i.</b>	A recognition of the need for, and an ability to engage in life-long learning.	
<b>j.</b>	A knowledge of contemporary issues within and outside the electrical engineering profession.	
<b>k.</b>	An ability to use the techniques, skills, and modern engineering tools necessary for electrical engineering practice.	