

EELE 2301- Electric Circuits I
Course Syllabus

"Faced with the choice between changing one's mind and proving that there is no need to do so, almost everyone gets busy on the proof" Galbraith's Law

Instructor	Dr. Hala J. El-Khozondar Office: E204 E-mail: hkhonzondar@iugaza.edu
Meetings	Room L501 on Sunday and Tuesday from 8:00-9:30
Teaching Assistant	Eng. Fahid Al Khatib
Course Description	The course deals with the following topics: Electrical energy sources, DC circuits, Resistive networks, Network theorems, Natural and step responses of RL, RC, and RLC circuit, computer circuit analysis (Electronic Workbench, OrCad).
Prerequisite:	Physics I, Physics II, Calculus A, and Calculus B
Textbook	James Nilsson and Susan Riedel, " Electric Circuits", 7 th ed., 2005.
References	<ul style="list-style-type: none">▪ Joseph A. Edminister, "Electric Circuits ", 2nd ed. , Schaum's outline Series, 1983▪ William H. Hayt and Jack E. Kemmerly, "Engineering Circuit Analysis, 3rd ed., 1993.▪ J. David Irwin, "Basic Engineering Circuit Analysis", 3rd ed., 1990.▪ L. S. Bobrow, "Elementary Linear Circuit Analysis", 2nd ed., 1987.▪ D. Bell, " Fundamentals of Electric Circuits", 2nd ed., 1981.
Topics	Circuit Elements: resistors, capacitors, inductors, voltage source, and current source. Simple Resistive Circuits: Ohm's circuit, resistors in series and on parallel Techniques of Circuits Analysis: Node voltage and mesh current. Inductors and Capacitor: RC circuits and LR circuits. Resonance of First Order: Analysis of RL and RC circuits. Analysis of RLC circuits
Course objectives	<ol style="list-style-type: none">1. Get familiar with the circuit variable and basic circuit elements2. Analyze simple circuits applying Ohm's and Kirchhoff's laws3. Understand network theorems4. Understand the behavior of inductors and capacitors in electric circuits5. Analyze first-order response of RL and RC circuits6. Analyze Natural and Step responses of RLC circuits

Course intended learning outcomes	<ul style="list-style-type: none"> ▪ Calculate the values of currents and voltages in simple resistive circuit by using Ohm's and Kirchhoff's laws. ▪ Find the responses of complicated circuits applying different network theorems ▪ Write numerical equations for currents and voltages of circuits containing inductors and capacitors ▪ Graph the response of networks and compare with inputs. ▪ Write expressions for currents and voltages of RL and RC circuits ▪ Write expression for currents and voltages of RLC circuits ▪ Design simple circuits. ▪ Create output response functions using OrCad
Assessment	<p>Midterm Exam (35%) Assignments (10%) Quizzes (10%) Final Exam (45%)</p>
Homework Policy	<p>Homework assignments will be given in a regular basis. Each assignment is to be returned within one week. <i>No delay will be accepted except with good excuse.</i></p>
Office Hours	<p>As posted on the office door, or by appointment.</p>

Course outline:**Teaching starts on Saturday: January 28, 2006 and ends on Monday: May, 15, 2006 (15 weeks)**

Chapter Number and Title	Number of Weeks (number of meetings)	Homework Problems
Chapter 1 Circuit Variable	1 (one meeting)	1, 7, 9, 12, 19, 22, 27, 30
Chapter 2 Circuit elements	1 (one meeting)	1, 4, 7, 9, 11, 20, 22, 26, 31, 33
Chapter 3 Simple Resistive Circuits	1 (2 meetings)	3, 8 (c), 9 (c), 15, 17, 27, 34, 41, 44, 53, 64
Chapter 4 Techniques of Circuit Analysis	4 (8 meetings)	1, 6, 9, 18, 33, 41, 55, 61, 65, 70, 85, 90
Midterm	Sunday, March 21	11:00-12:30
Chapter 6 Inductance, Capacitance, and Mutual Inductance	2 (4 meetings)	1, 3, 8, 11, 15, 21, 22, 26, 27, 34, 42, 44, 46
Chapter 7 Response of First Order RL and RC Circuits	3 (6 meetings)	1, 3, 8, 11, 19, 21, 26, 30, 32, 55, 60, 62, 73, 76, 78
Chapter 8 Natural and Step Responses of RLC Circuits	3 (4 meetings)	16, 19, 23, 38, 41, 46
Final	Wednesday, June 1	9:00-12:00