AL IMAM MOHAMMAD IBN SAUD ISLAMIC UNIVERSITY
COLLEGE OF ENGINEERING
Department of Electrical Engineering

Course Information	
Course Code and Name:	EE 221: **Fundamentals of Electric Circuits**
Credit Hours**:**	**3 (**3 Lecture + 1 Tutorial)
Prerequisites:	Math 105 (Calculus 1), Physics 118, PHYS 120, and GE 101

Course Description
Basic laws: Ohm's, KVL, KCL. Resistive networks. Circuit analysis techniques: nodal and mesh analysis. Network theorems: Thevenin's, Norton's, source transformations, superposition, maximum power transfer. Energy storage elements. Phasor technique for steady-state sinusoidal response. Transient analysis of first-order circuits

Textbook			
Title	Fundamentals of Electric Circuits		
Authors	C. K. Alexander and M. N. O. Sadiku		
Publisher	McGraw-Hill	Year and Edition	Fifth Edition, 2006.

Course Contents
Introduction to Circuit Analysis and Design: Overview, SI Units, Voltage, Current, Power and Energy
Basic Components and Electric Circuits Sources, Resistance Ohm's Law
Voltage and Current Laws: Nodes and Branches; Kirchhoff's Laws; Single-loop Circuit
Voltage and Current Laws:(cont.) Resistors in Series and Parallel; Voltage Division; Current Division
Basic Nodal and Mesh Analysis: Introduction; Nodal Analysis; The Supernode
Basic Nodal and Mesh Analysis: (cont.) Mesh Analysis The Supermesh Node vs. Mesh Comparison
Circuit Analysis Techniques: Linearity, Superposition, Source Transformations, Thevenin and Norton Equivalents
Circuit Analysis Techniques: (cont.) Maximum Power Transfer, Delta-to-Wye Equivalent Circuits
Capacitors and Inductors: Inductors, Capacitors, Series and Parallel Combinations
Basic RL and RC Circuits: RL circuits RC circuits
Basic RL and RC Circuits: (cont.) Unit-step, pulse functions. Natural and force response Driven circuits
Sinusoidal Steady State Analysis: Characteristics, Forced Response, Complex Forcing Function, The phasor, Impedance and Admittance
Sinusoidal Steady State Analysis: (cont.) Node-Voltage Mesh-Current Methods, Superposition, Source Transformations, Thevenin and Norton Equivalents
AC Circuit Power Analysis

Academic Coordinator	Signature
Fawzi S. AlOrifi	

Official Stamp