

KING FAHD UNIVERSITY OF PETROLEUM & MINERALS

ELECTRICAL ENGINEERING DEPARTMENT

EE201 -Electric Circuits I (Tentative Syllabus)

Second Semester 2009-2010 (092)

EE 201 Electric Circuits I

3, 3, 4

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. Important power concepts of ac circuits. Transient analysis of first-order circuits.

Pre-requisite: MATH 102 and PHYS 102

Textbook:

James Nilsson and Susan Riedel, *Electric Circuits*, 8th edition, Prentice Hall, 2008.

Other reference:

Clayton R. Paul, *FUNDAMENTALS OF ELECTRIC CIRCUIT ANALYSIS*, 1st Edition, Wiley & Sons. Inc. 2001.

Tentative Schedule:

W k	Date	Topics	Text	Laboratory/Tutorial
1	Feb. 20	Circuits Variables, Sources, Power and Energy	1.1-1.6, 2.1	No Meeting
2	Feb. 27	Ohm's Law, KCL, KVL, Dependent Sources	2.2-2.5	Exp # 1 : Electrical circuits simulation using Multisim Electronics Workbench : An Introduction
3	Mar. 06	Resistive Circuits, Nodal Analysis	3.1-3.4, 3.7, 4.1	Exp #2 : Electric circuit fundamentals
4	Mar. 13	Nodal Analysis (Continued), Mesh Analysis	4.2-4.5	Exp # 3 : Resistors in series, color codes & power rating
5	Mar. 20	Mesh Analysis, Source Transformation	4.6-4.9	Exp # 4 : Kirchhoff's laws
<i>Major Exam I* (1.1 – 4.8), Wed. 24th Mar. (7:00-9:00 pm)</i>				
6	Mar. 27	Thevenin and Norton Equivalent Circuits	4.10-4.11	No Exp.
7	Apr. 03	Maximum Power Transfer, Superposition	4.12-4.13, 5.1-5.2	Exp # 5 : Series & parallel circuits, voltage divider & current divider rules
8	Apr. 10	Operational Amplifiers	5.3-5.6	Exp # 6 : Superposition theorem
<i>Midterm Vacation, Thur, 15th April 2010 - Fri, 23rd April 2010</i>				
9	Apr. 24	Inductors, Capacitors, First Order Circuits	6.1-6.3, 7.1-7.2	Exp # 7 : Thevenin's theorem and maximum power transfer
10	May. 01	First Order Circuits (Continued)	7.3-7.7	No Meeting
<i>Major Exam II* (4.9 – 7.7), Sat. 8th May (7:00-9:00 pm)</i>				
11	May. 08	First Order Circuits, Sinusoidal Response, Complex Numbers .	9.1-9.2, App. B.	Exp # 8 : Transients of a first order RC circuit
12	May. 15	Frequency Domain Analysis	9.3-9.7	Exp # 9 : The oscilloscope and function generator
13	May. 22	Frequency Domain Analysis (continued)	9.8, 9.9, 9.12	Exp # 10 : Sinusoidal AC analysis
14	May. 29	Average and Reactive Power, Complex Power	10.1-10.5	Final Lab Exam
15	Jun. 05	Maximum Power Transfer	10.6	
Final Exam Monday 21 June 2010 at 07:00 pm				

Course Outcomes:

- 1) Apply knowledge of mathematics, science, and engineering to the analysis and design of electrical circuits.
- 2) Identify, formulate, and solve engineering problems in the area circuits and systems.
- 3) Use the techniques, skills, and modern engineering tools such as pspice, workbench, necessary for engineering practice.
- 4) To function on multi-disciplinary teams through the electric circuits experiments and projects.
- 5) To design an electric system, components or process to meet desired needs within realistic constraints.

Grading:

Class work (15 %):	Quizzes (8 marks), Homework (3 marks), and one design problem (4 marks).
Two Major Exams (30%):	Common exams. Location of major exams will be reserved and posted by each section instructor.
Laboratory (20%):	Reports (7 marks), performance and/or quizzes (3 marks), Theoretical final exam (5 marks), Experimental final exam (5 marks).
Final Exam (35%):	Common and Comprehensive

Suggested Practice problems:

HW #01: 1.12, 1.13, 1.19, 1.26, 2.4	HW #08: 5.2, 5.10, 5.13, 6.2, 6.4, 6.13
HW #02: 2.6, 2.12, 2.20, 2.25, 2.26	HW #09: 7.4, 7.10, 7.11, 7.21, 7.35
HW #03: 2.28, 2.29, 3.4, 3.7(c), 3.8	HW #10: 7.46, 7.47, 7.63, 7.84, 9.1, 9.6, 9.8
HW #04: 3.13, 4.3, 4.15, 4.19, 4.25, 4.27, 4.29	HW #11: 9.9, 9.10, 9.13, 9.14
HW #05: 4.51, 4.52, 4.55, 4.56, 4.59	HW #12: 9.15, 9.26, 9.32, 9.36
HW #06: 4.60, 4.63, 4.67, 4.68, 4.70	HW #13: 9.51, 10.1, 10.3, 10.4, 10.7
HW #07: 4.73, 4.75, 4.86, 4.88	HW #14: 10.9, 10.17, 10.19, 10.22, 10.29

Important Points to Remember:

1. **Practice Problems:** Practice problems are to be solved completely by the students. Solutions will not be collected but it will be posted in **Blackboard CE8**. Different assignments will be given as homework.
2. **Pre-Labs:** Each student must submit the pre-lab. Assignment at the beginning of each lab. (no pre-labs for the first two experiments). No pre-lab will be accepted for an experiment that has already started.
3. **Lab. Makeup:** No lab makeup will be allowed without an official excuse from students affairs.
4. **Attendance:** According to the university regulations, any student that exceeds 20% (9 lectures) of the scheduled class meeting without an official excuse will receive a grade of DN in the course.
5. **Official Excuses:** All official excuses must be submitted to the instructor no later than one week of the date of the official excuse. The instructor may not accept late excuses.
6. **Course Lectures:** They are available online through the **Open Courseware**. You are strongly encouraged to systematically review those online lectures to enhance your understanding of the course material.

Instructor	Office	Sec	Phone	E-mail	Office Hours
Dr. Oualid Hammi	59/0012-5	5	7394	ohammi@kfupm.edu.sa	SUMT 11:00 -12:00 Or by appointment

This information and more will be available on Blackboard CE8