

EE 251

Basic Electrical Engineering for Non Majors

Electrical and Computer Engineering
King Abdulaziz University

This Course ...



- Applications of Electrical Engineering in Different Systems..
- Concepts and Basics of Electricity and Electronics..
- Practical Engineering Applications..

Course Content



- History of Electricity
- Basic Concepts
 - electrons, battery, DC&AC, frequency, closed loop, current, RMS
- Components
 - R, C, L, fuses, breakers, relays, solenoids, diodes, transistors, ICs

Course Content



- Circuit Analysis
 - ohms law, dividers, KCL, KVL, complex impedance, current source, power
- Application Specific Circuits
 - generators, converters, protection, math, filters
- Power Generation and Distribution
 - DC machines, transformers, 3-phase systems

Course Content



- Sensors & Actuators
 - resistive, capacitive, inductive
 - Wheatstone bridge
 - special sensors
 - data acquisition

Grades



1. Quizzes	20	15%
2. Activities	10	10%
3. Journals	10	5%
4. Labs	5	15%
5. Simulation	5	10%
6. Project	1	5%
7. Exams	2	20%
8. <u>Final</u>	<u>1</u>	<u>20%</u>
		100%

Quizzes



- EVERY DAY
- Grades 0 or 10
- Be **ON-TIME**
- Absence = -2
- Adjust excuses immediately (no more than 2)
- No material on table (-1 for the whole team)
- Calculator & Pencil
- 2 decimal points with proper units
- **Cheating = -50% (BLACK LIST!!)**
- **25% absence (with excuse) = DN**

Activities



- Team Activity
- **Absent member (-2)**
- Time 45-50 min
- If simulation needed, submit next lecture
- Write nicely: hand-writing and drawings
- Same grade for members

Journal



- Team Assignment
- Write a nice summary with:
 - A Question and an Answer
- Members may choose to share writing a journal all together or divide journals among them
- **Grade (10) to the best Team ONLY**

Labs



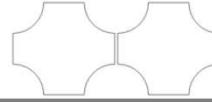
- 2-Student Experiments
- Home Experiments:
 - Must **BUY** components and Bread Board
 - Must **BUILD** experiment BEFORE coming to the lab
 - Must **Print** Lab Sheet BEFORE coming to the lab
 - **Zero Grade for no sheet or no bread board**
- **NO Makeups**
- **NO Excuses**
- ***download sheets and lab material from website***

Lab Sheets



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Basic Electrical
Engineering

Lab01: Ohm's Law



ID	Comp	Name	Date: / /

1. Objectives

1. Prove that resistors in series have an equivalent resistance according to Equation (1) using (3×) 1kΩ resistors rated ½W.
2. Prove that resistors in parallel have an equivalent resistance according to Equation (2) using (3×) 1kΩ resistors rated ½W.
3. Build the resistive network shown in Figure (1) and measure its equivalent resistance using all R=1kΩ rated ½W

Lab Sheets

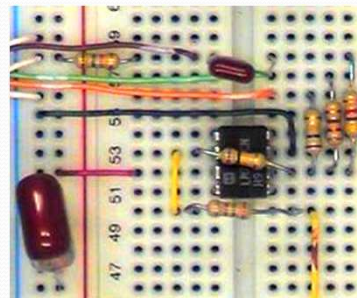
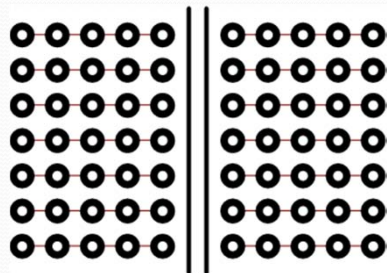


- Print the sheets *at Home*
- Build the experiment *at Home*
- Write the experiment Steps *at Home*
- Results and Comments in the Lab
- *The list of all components needed for the course is in the course website*

Bread Boards



- A board with spring contact holes to hold components; no soldering is required
- Holes of each row are internally connected

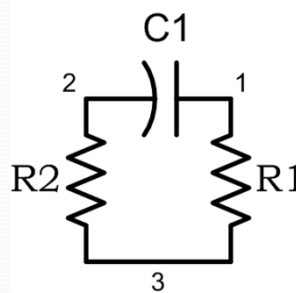
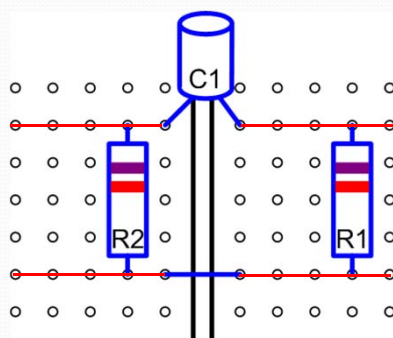


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Example



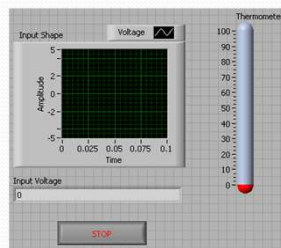
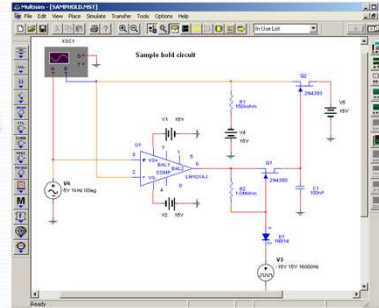
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Simulation Labs

- Electric Circuit Simulations
- Data Acquisition Experiments
- **Course Project**
- Conducted in Teams



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Course Project

- In Simulation Lab

1. 2-page Proposal	10%
2. Design Simulation	
3. In-Class Presentation	20%
4. In-Class Demo	40%
5. Final Report	30%
- **Check website for Templates and Format**

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Team Rules



- Workload = 100%
 - members loads *must be Equal (20% each)*
 - more work = more grades
- Conflicts
 - any conflict should be stated from the beginning
 - *absent member will transfer his grades to others*
 - *But: homogeneous team gets high grade*

Course Website



- Visit the course website

<http://engg.kau.edu.sa/ee251>
<http://enggkau.iomb.com/ee251>
- User account will be activated soon..

Course Website

EE 251 Introduction to EE for Non Major

Electrical & Computer Engineering Courses

home syllabus material survey profile signout

Welcome.. Learn how to analyze and design analog circuits

- Once you receive your login ID, the initial password will be your Computer number that must be changed.
- Choose a partner from the class and assign him from the profile. One of the group members is enough to do so.
- Once the lab sessions are assigned, you can choose the suitabel slot from your profile.

last updated: Se

you will need Acrobat Reader

Students' Login

Student ID:

Password:

Login Reset

You Need To Login

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Term Calendar

EE 251 Fall 2012 Calender

Date	Lectures	Labs	Tutorials	WK
SAT September 10, 2011	Registrations			
SUN September 11, 2011				
MON September 12, 2011	L01: Teams, IDs, and Introduction	Lab Registrations		15
TUE September 13, 2011				
WED September 14, 2011				
THR September 15, 2011				
FRI September 16, 2011				
SAT September 17, 2011	L02: Basic Concepts			
SUN September 18, 2011				
MON September 19, 2011	L03: Electronic Components	Lab Registrations		14
TUE September 20, 2011				
WED September 21, 2011				
THR September 22, 2011				
FRI September 23, 2011				
SAT September 24, 2011	L04: Circuit Analysis (Ohm's Law)			
SUN September 25, 2011				
MON September 26, 2011	L05: Circuit Analysis (Dividers)	LAB00: Introduction		13
TUE September 27, 2011				
WED September 28, 2011				
THR September 29, 2011				
FRI September 30, 2011				
SAT October 1, 2011	L06: Circuit Analysis (KCL, KVL)			
SUN October 2, 2011				
MON October 3, 2011	L07: Circuit Analysis (KCL, KVL)	LAB01: Ohm's Law		12
TUE October 4, 2011				
WED October 5, 2011				

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Term Calendar



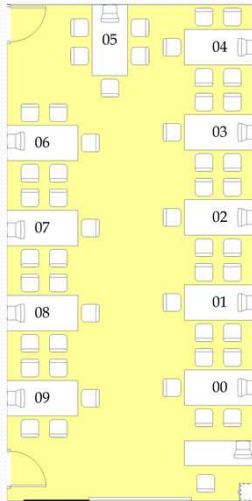
FRI	October 21, 2011			
SAT	October 22, 2011	L12: Application Specific Circuits		
SUN	October 23, 2011			
MON	October 24, 2011		SIM02: MultiSim Simulations (AC)	9
TUE	October 25, 2011	L13: Application Specific Circuits		
WED	October 26, 2011			
THR	October 27, 2011			
FRI	October 28, 2011			
SAT	October 29, 2011	L14: Application Specific Circuits		
SUN	October 30, 2011			
MON	October 31, 2011		LAB03: AC Circuits	8
TUE	November 1, 2011	Exam Review		
WED	November 2, 2011			
THR	November 3, 2011	Exam I: Bldg 79 04:00-05:30pm		
FRI	November 4, 2011			
SAT	November 5, 2011			
SUN	November 6, 2011			
MON	November 7, 2011	Hajj Break		
TUE	November 8, 2011			
WED	November 9, 2011			
THR	November 10, 2011			
FRI	November 11, 2011			
SAT	November 12, 2011	L15: DC Machines		
SUN	November 13, 2011			
MON	November 14, 2011		LAB04: Op amp	7
TUE	November 15, 2011	L16: DC Machines		
WED	November 16, 2011			
THR	November 17, 2011			

Lab Sessions



- Hardware Labs (*Register Now*)
 - 1:30 sessions
 - max. 20 students
- Simulation Labs
 - As assigned in schedules

Students ID's



• EE251 Sections

- A: S.M.. 11:00-12:20
- B: S.M.. 01:00-02:20
- C: .S.T. 08:00-09:20
- D: .S.T. 09:30-10:50
- E: .S.T. 01:00-02:20

• IDs in Teams (e.g. section **B**)

- TB0: B01 – B05
- TB1: B11 – B15
- ::
- TB9: B91 – B95

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1st Assignment



• IN CLASS NOW:

- *Choose Your Team*
- *Choose Your Lab mate*

• AT HOME:

1. Navigate through the Course Website
2. Download all material
3. *user accounts will be activated later*

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