Syllabus of EE210.01 -- Fall 2009

Introduction to Electrical Engineering

Instructor: Burak Acar, acarbu@boun.edu.tr

Objective: To introduce the basic principles of Electrical Engineering to non-electrical engineers and to provide the student with the analytical and computational tools needed to solve practical problems involving electric circuits.

Textbook: *Electric Circuits, 8th ed.,* by James W. Nilsson and Susan A. Riedel, Prentice Hall.

References:

- *Introduction to Electric Circuits.,* by R.C. Dorf and J.A. Svoboda, John Wiley & Sons.
- *Principles and Applications of Electrical Engineering,* by Giorgio Rizzoni, McGrawHill

Class Schedule: Mondays 12:00-13:00 KBZ01
Wednesdays 14:00:16:00 NH305

Quiz on homework: Wed 14:15 in NH 305 and Wed 17:00
Teaching Assistant: Balkır Kayaaltı, balkirkayaalti@yahoo.com
Gurkan Sonmez, gurkan.sonmez@boun.edu.tr

Grading: Quiz 20%, two midterms with 25% each, final exam 30%.

Course Outline

Lectures will generally follow the textbook material. The schedule given below is only approximate.

Week	Lect	Topic	Reading
1	1-2	Basic concepts of electrical engineering. Circuit variables and elements. Ohm's law, power and energy	1.1-1.6
2	3-4	Ohm's law, resistive circuit analysis, Kirchoff's laws, parallel, series resistances, current voltage measurement techniques	2.1-3.7
3	5-6	Circuit conversions, Circuit analysis with node voltage method. Circuit analysis with mesh current method.	4.1-4.8
4	7-8	Source transformations, Thévenin and Norton equivalents. Maximum power transfer. Superposition	4.9-4.13
5	9-10	Operational Amplifiers and basic applications. Op-amp circuits	5.1-5.7
6		MIDTERM 1	
7	11-12	Inductor, capacitor, mutual inductance. Review of linear differential equations.	6.1-6.4
8	13-14	Response of first order RL and RC circuits General response of RL and RC circuits.	7.1-7.7
9	15-16	Natural and step responses of RLC circuits.	8.1-8.5
10	17-18	Sinusoidal steady state analysis, review of complex numbers, phasor concept. Circuit analysis with phasors.	9.1-9.12
11		MIDTERM 2	
12	19-20	Sinusoidal steady state power calculation. Power calculations and maximum power transfer.	10.1-10.6
13	21-22	Balanced three phase circuits. Analysis of delta and wye circuits, power calculations.	11.1-11.6