EHB 211E: Basics of Electr. Circuits

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Recommended texts:

1) Dorf and Svaboda, “Introduction to Electric Circuits”, Wiley, 2014
2) Leon O. Chua, Charles A. Desoer, Ernest S. Kuh, "Linear and Nonlinear Circuits," McGraw-Hill, 1987.
3) Muştak E. Yalçın. “Elektrik Devre Temelleri Ders Notlari”, 2011

Course description: Electric circuits, models and Circuits elements. Kirchhoff’s laws: Kirchhoff’s voltage law and Kirchhoff’s current law. Graph theory, element graph: Branch currents, branch voltages, Graph matrices. Tellegen Theorem and Conservation of energy. Two terminal elements: resistor, capacitor and inductor. Ind. sources, dependent sources. Three terminal elements: Gyrator, transistor, transformer. Nonlinear elements Linearized models. Node voltage method and mesh current method for resistive circuits. Thevenin and Norton equivalent circuits. RLC circuits: First order and second order circuits. State equation and state variables for linear time invariant circuits. Solution of second order state equations.

Grading: 20% Midterm I, 20% Midterm II, 40% Final exam, 20% HW (Total of 6 sets)
VF Limit ➔ MT1 + MT2 > 50 (over 200)

Topics:

09/14:	Fundamental Concepts	
09/21:	Festival of Sacrifice – No class	
09/28:	Graph Theory	HW1
10/05:	Graph Theory	HW2 & HW1 return
10/12:	No class	HW2 return
10/19:	Circuit Elements	
10/26:	Midterm I	
11/02:	Operational Amplifiers	HW3
11/09:	Analysis Methods	HW3 return & HW4
11/16:	Analysis Methods	HW4 return
11/23:	Thevenin Equivalent Circuits	
11/30:	Midterm II	
12/07:	State Equations of First-Order Transient Circuits	HW5
12/14:	State Equations of Second-Order Transient Circuits	HW5 return & HW6
12/21:	Stability in Transient Circuits	HW6 return