Basic of Electrical Circuits (EHB 211E, CRN 20951)

Semester grade = 20 % of the homework average +
40 % of the midterm average +
40 % of the final exam

Final examination permit: Sum of midterm grades should be ≥ 50.

(The list of eligible/ineligible students will be available on the 14th week)

Midterm dates:

- 21 March 2018
- 02 May 2018

Assistant: M.Sc. Bilgi Görkem Yazgaç (He collects and grades homeworks)

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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, inductor, independent sources, dependent sources.
- Three terminal elements: gyrator, transistor, transformer
- Nonlinear elements, linearized models.
- Small signal analysis
- 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

Textbooks:

1. Lineear and Nonlinear Circuits, L.O. Chua, C.A. Desoer, E.S. Kuh, McGraw Hill, 1987
2. Electric Cuircuits J.W. Nilsson, Adison-Wesley-Literature, 1994
3. Analysis of Linear Circuits, Clayton R. Poul, McGraw Hill, 1989
4. Elektrik Devrelerinin Analizi, Prof. Dr. Cevdet Acar, İTÜ Elektrik-Elektronik Fak., 1995
5. Devre Analizi dersleri Kısım I, Prof. Dr. Yılmaz Tokad, Çağlayan Kitabevi 1986
6. Elektrik Elektronik Devrelerinin Analizi, Prof. Dr. Uğur Arifoğlu, Alfa Basım, 2013