

BME207 Basic Electronic Circuit

(Fall, 2014)

Office	College of Electronics and Information, Room 326
Office Hours	Tue 16:30-17:30, Thr 16:30-17:30
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Class Hours	Tue/Thr 13:30-14:45
Classroom	227

1. Description

This course introduces electric and electronic components and circuits for biomedical instrumentation. Emphasizing basic physical principles and characteristics of circuit elements, students are expected to learn how to use R, L, C, operational amplifier and other analog and digital semiconductor devices for circuit designs in biomedical instrumentation. Topics include basics of electrical and electronic components and circuits; resistor, capacitor and inductor and their circuits for transient and frequency responses; tools to analyze linear circuits including KCL, KVL, series-parallel equivalent circuit, superposition, Thevenin, Norton, load effect, etc; signal and circuit response including transient and steady-state frequency response; AC circuit analysis using phasor; operational amplifier and applications; semiconductor, diode, BJT and FET; power electronic circuit; logic circuit and digital system.

2. Prerequisites

Physics and electromagnetics

3. Text and References

Title	Author	Publisher	Year	Remark
Principles and Applications of Electrical Engineering, 5th. Ed	G. Rizzoni	McGraw-Hill	2005	Main Text
Engineering Circuit Analysis	W. Hayt, J. E. Kemmerly and S. M. Durbin	McGraw-Hill	2012	Reference

4. Grading Plan

Midterm	Final	Homework	Four or more absences
45%	45%	10%	F

5. Schedule

Week	Topics
1	Introduction to Electronic Circuit for Instrumentation
2	Circuit Elements and Basic Rules
3	Resistor Circuit Analysis
4	Capacitor, Inductor and AC Circuit
5	Transient Response
6	Frequency Response
7	Electricity and Power
8	Midterm and solutions
9	Operational Amplifier
10	Semiconductor and Diode
11	Bipolar Junction Transistor
12	Field Effect Transistor
13	Power Electronics
14	Digital Logic Circuit
15	Digital System
16	Final and solutions