ESE 211: Electronic Laboratory A

Spring 2011

Introduction to the measurement of electrical quantities; instrumentation; basic circuits, their operation and applications; electronic devices; amplifiers, oscillators, power supplies, wave-shaping circuits, and basic switching circuits. PSpice circuit simulation.

The core of course is set of laboratory experiments designed for step by step introduction into electronic circuit analysis and design. The weekly (*very short*) lectures cover (*minimum*) theoretical background for the laboratory experiments (*ESE 372 gives full scale support*).

Text Books: J.A. Svoboda, "PSpice for linear circuits", 2nd edition, Wiley, ISBN 9780471781462
A.S. Sedra, K.C. Smith, "Microelectronic circuits", 6th edition, Oxford, ISBN 978-0-19-532303-0

Prerequisites: ESE 271
Corequisites: ESE 372 for ECE/ESE majors only

Topics Covered:

Analysis of DC and AC circuits using PSPICE.
DC voltage and current measurements.
AC measurements.
Transient response of 1st order RC and LR circuits.
Frequency response of 1st order RC and LR circuits.
Transformers.
Frequency response of 2nd order circuits.
Semiconductor diodes.
Diodes in rectifier circuits.
BJT operation and small-signal parameters.
BJT Common Emitter Amplifier.
MOSFET differential amplifier.
Circuits with Operational Amplifiers.

Class/laboratory Schedule: Lecture: 55min/1 day per week
Lab: 3 hr/1 day per week

Grading: Labs - 40%, Exams - 40%, Quizzes - 15%, Portfolio – 5%