EE 323L Microelectronic Circuits I Laboratory

Designation: Required

Catalog Description: EE 323L Microelectronic Circuits I Lab (one 3 hour lab) Experiments on linear and logic properties of diodes and transistor networks.

Credits: 1


Class/Lab Schedule: 3 lab hours per week.

Topics Covered:
- Introduction to PSPICE. (1 week)
- Operational Amplifier basics, explorations, experimentation and interpretation of inverting and non-inverting amplifiers. (2 weeks)
- Voltage and current off sets, miller integrator, frequency effects. (2 weeks)
- Junction diodes basics, diode action, rectifying and filtering, large and small signal models. (2 weeks)
- MOSFET measurements, conductivity parameter, transconductors, CMOS active load amplifiers. (3 weeks)
- Bipolar transistor basics, basic junction currents and biasing schemes, amplifiers voltage gain, and input impedances, large regional distortion. (2 weeks)


Course Objectives and Relationship to Program Objectives:
Understand and develop proper procedures in conducting experimental investigation, proper use of test equipment, recordation of experimental data and analysis. Interpretation and report preparation and submittal. Develop cooperative habits in effectively carrying and experiments. [Program Objectives this course addresses: 1,3,4]

Course Outcomes and Their Relationship to Program Outcomes
The following are the course outcomes and the subset of program outcomes numbered 1 - 11 in square braces “[ ]”, they address:
- Coping with the reality of what is covered in the lecture classes. [1, 2, 3]
- Experiencing the old and the new by poking and probing and making thing work. [1, 2, 3, 5]
- Learn to select, make decisions, and take action. [1, 3, 5]
- Develop discipline and proper preparation and review before starting experiment and proper assessment of experimental results. [1, 2, 3, 4, 5, 6]
- Study and experiment with OP amps, diodes, BJTs and MOSFETS. [1, 2, 3, 4, 5, 7]

Contribution of Course to Meeting the Professional Component
"Engineering topics: 100%"

**Computer Usage:**
Negligible. In the laboratory, the focus is in getting the experiments carried out properly and cope with the challenges of experimentation and discovery, enjoyment of reality. Thus computer use takes a secondary role.

**Design Credits and Features:**
EE 323L has 1 design credit. The design aspect in a laboratory comes in adjusting and correcting and even modifying the procedure or experimental set up.

**Instructor(s):** Aaron Ohta, Olga Boric-Lubecke, David Garmire

**Person(s) Preparing Syllabus and Date:** K. Najita, February 2003. Modified June, 2009 Aaron Ohta and Anthony Kuh.