

ELECTRONICS
PHYSICS 321

FALL 1997

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Office Hours
Monday 2-3 pm
Tuesday 1-2 pm
and by appointment

Text:

Brophy, *Basic Electronics for Scientists*, (McGraw-Hill)

Course requirements:

Two midterms, one final exam.

Tentative exam dates: MT #1 MT #2 Final
(*in-class midterms*) Thurs, 9 Oct Thurs, 13 Nov Sun. 14 Dec, 12:25 pm

One homework assignment per week.

One laboratory per week, starting second week: lab books due each Friday.

Course description:

A. *Linear circuits*

Resistors, current / voltage sources, metering devices
Linear circuit analysis, linear circuit theorems, linear network analysis.
Capacitors, inductors: transient and ac response.
Differential equations and complex notation
Passive filters
Transformers
Input / output impedance

B. *Nonlinear Circuits*

Diodes
Transistors: Bipolar junction transistors, Field effect transistors (JFET, MOSFET)
Transistor amplifiers (Gain, input / output impedance, frequency response)
Transistors in integrated circuits
Operational amplifiers (integrated circuits)
Feedback (applied to transistor amplifiers & IC operational amplifiers)
Active Filters
Noise / interference / circuit isolation

C. *Digital Circuits*

Logic gates (Types, logic families, transistor description)
Boolean algebra
Flip-flops (RS, J, JK, D, Master slave, flip-flops.)
Counters, shift registers
Digital to analog, analog to digital conversion