

PHYSICS 228
ELECTRONICS
(3.0 ; 3 credits)

Textbook: Principles of Electronic Instrumentation
By: Diefenderfer and Holton (Third Edition)
Saunders College Publishing

Analog Electronics (70%):

1. DC linear circuit analysis and multimeters
2. Capacitors, inductors and transients
3. Periodic waveforms: ac networks and measurements, and the oscilloscope.
4. Power supplies: Transformers, diodes, filters, and regulators.
5. Operational amplifiers: inverting and non inverting amplifiers, integrators, differentiators and comparators. Some practical considerations.

Digital Electronics (30%):

6. . Logic gates, flip-flops, latches, registers, and multiplexers.
7. Timers, multivibrators and counting circuits

Fall 2000

PHYSICS 229
ELECTRONICS LABORATORY
(0.3; 1 credit)

Manual: Experiments in Electronics, Instrumentation and Microcomputers.
By: Holler, Avery, Crouch and Enke.

Experiments:

1. Introduction to the breadboard frame and DC measurements using the DMM.
2. Periodic waveforms : AC measurement with the DMM and the oscilloscope.
3. Power supplies : diode characteristics, rectifier circuits, filters, regulation, the Zener diode.
4. Operational amplifiers: inverting and non inverting amplifiers, the integrator and the differentiator, Op Amp characteristics.
5. Frequency and Period measurements : basic digital gates, counters, latch and display, investigation of some common transducers.
6. The 555 timer and multivibrators.

N.B. Pre- or co-requisite: **Physics 228.**

Fall 2000

