Physics 623 Syllabus

Fall 2001

Profs. Albert Erwin and Dan McCammon

Lectures in Sterling Hall Room 3331 on Tues. and Thurs. from 1:00 PM to 2:15 pm Labs in Sterling Hall Room 3525 on Wed. 2:25-5:25 pm; 7:00-10:00 pm

A. Erwin: Office Hours in 2249 Chamberlin by appointment Phone: 262-2486; email: <u>erwin@klong3.physics.wisc.edu</u>

D. McCammon: Office hours in 6207 Chamberlin 9-10 am Tues. and by appt./dropin Phone: 262-5916; email: mccammon@wisp.physics.wisc.edu

Text and References are on reserve in the Physics Library:

Text

"The Art of Electronics" by Horowitz and Hill, Cambridge 2nd Ed.

Useful General References:

"Introduction to Modern Electronics" Clint Sprott, (Wiley) (2 photocopies)

"Electric Circuits & Modern Electronics" L.W. Anderson & W.W. Beeman

"Introductory Electronics for Scientists and Engineers" R.E.Simpson, (Allyn and Bacon) 2nd Ed.

"Electronics for the Physicist", C.F.G. Delaney (Ellis Horwood)

"Basic Electronics for Scientists", James J. Brophy, (McGraw-Hill) 5th Ed.

References for Specific Topics:

"Transmission Lines", Robert A. Chipman (Schaum Outline Series) 1968

"Analog Signal Processing and Instrumentation", A.F.Arbel (Cambridge)

"Designing with TTL Integrated Circuits", Morris and Miller (McGraw Hill)

"Pulse, Digital and Switching Waveforms", Millman and Taub (McGraw Hill) 1965

"Microelectronics", J.Millman and A. Grabel (McGraw Hill) 1987

Evaluation:

50% Laboratory (participation, skills development, notebook)
10% Problem sets
10% First Midterm
10% Second Midterm
20% Final Exam
(Final can count 40% if it is higher than average of all 3 exams.)

Physics 623 Lectures and Labs — Fall 2001 (Preliminary: 17 Aug 01)

Week	Lect	Date	Lecture Topic (Tues+Thur)	Lab (Wed)	Laboratory
1	Tues	Sep 4	Intro. – Basics – Ohm's Law	Sep 5	Introduction
	Thur	Sep 6	A.C. Circuits		
2	Tues	Sep 11	Transistor Operation and Biasing	Sep 12	Transmission Lines
	Thur	Sep 13	Transistor Amplifiers		
3	Tues	Sep 18	Differential Amplifiers	Sep 19	Transistor Amplifier
	Thur	Sep 20	Feedback and Op Amps		
4	Tues	Sep 25	Op Amp Circuits	Sep 26	Difference Amplifier
	Thur	Sep 27	Feedback		
5	Tues	Oct 2	Frequency Dep. & Stability	Oct 3	Operational Amp I
	Thur	Oct 4	Noise		
6	Tues	Oct 9	Phase Detectors	Oct 10	Operational Amp II
	Thur	Oct 11	Midterm Exam #1		
7	Tues	Oct 16	Multivibrators and Switching	Oct 17	Noise
	Thur	Oct 18	Field Effect Transistors		
8	Tues	Oct 23	MOSFETs	Oct 24	Lock-In Amplifier
	Thur	Oct 25	Digital Logic		
9	Tues	Oct 30	Digital Circuits	Oct 31	Oscillators
	Thur	Nov 1	Digital Analysis		
10	Tues	Nov 6	Digital Analysis	Nov 7	Digital Circuits I
	Thur	Nov 8	Digital/Analog Conversion		
11	Tues	Nov 13	Digital Synthesis	Nov 14	Digital Circuits II
	Thur	Nov 15	Midterm Exam #2		
12	Tues	Nov 20	Digital Circuits	Nov 21	Phase -Lock Loops
	Thur	Nov 22	Thanksgiving (Nov 23-Nov 24)		
13	Tues	Nov 27	Digital Computers	Nov 28	D/A and A/D Conversion
	Thur	Nov 29	Computer Architecture		
14	Tues	Dec 4	Buses	Dec 5	Electronic CAD + Sim
	Thur	Dec 6	Fiber Optics		
15	Tues	Dec 11	Electronic Instruments	Dec 12	FP Gate Array
	Thur	Dec 13	Review		
	Tues	Dec 18	<i>Final Exam</i> (12:25 pm: room TBA)		