

UW Physics 623 Syllabus

4 credits Fall 1997

Profs Murray Thompson and Richard Prepost

September 3, 1997

lectures in Sterling Hall Room 3335 on Tuesdays and thursdays from 1:00 PM to 2:15 PM

Labs in Sterling Hall Room 3525 on Wednesdays 6:00 PM to 9:00 PM

Normally, home assignments will be given each Tuesday and collected in class each Tuesday.

A Few Spot quizzes may be held during classes and labs.

Mid-semester exam on Tuesday Oct 21 at 1 PM (instead of class) in Sterling 3335

Final Exam #26 on Thurs Dec 18 at 7:45 AM (!!!) in a room yet to be chosen

623 will have a lab exam instead of the lab on Wednesday Dec 11.

A good knowledge of elementary electronic circuits will be assumed

(This includes Input Impedances, Output Impedances, AC Impedances,

Norton's Theorem, Thevenin's Theorem from Physics 321)

Murray Thompson Office hours in Chamberlin 4283 or CHamberlin 2260

Tuesdays, thursdays 2:30 to 4:30 PM and, if urgent, any time

Richard Prepost in Chamberlin 4271 (phone 262 4905 Mon and Fri 9 - 10 AM

Grading ratio of

(mid-semester exam /final/assignments/lab work + writeups) = (25/30/20/25)

students may collaborate on home assignments

Spot quizzes in Class and lab will count as assignments

Text:

"The Art of Electronics" by Horowitz and Hill, Cambridge 2nd Ed (very thick)

On Reserve in Chamberlin 4th floor Library:

"Introduction to Modern Electronics" Clint Sprott, Wiley 1981 (2 photocopies)

"Student Manual for the Art of Electronics", Hayes and Horowitz (Cambridge)

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

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

(Physics 321 text)

"Electronics", J.Clavert and M.McCausland, (Wiley)

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

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

"Electronics for the Physicist", Delaney (Ellis Horwood)

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

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

"Basic Electronics for Scientists" James J. Brophy (McGraw Hill) 5th Ed 1990

623 Lectures and labs 1996 fall

| week | Lect | Date | Likely Lecture (Tues+thuRs) | Lab Wed | Likely laboratory (Wed) |
|------|------|--------|-------------------------------------|---------|--------------------------------|
| 1 | Tues | Sep 2 | Transmission Lines | Sep 3 | Transmission Lines |
| | thuR | Sep 4 | Diodes p-n junction | | |
| 2 | Tues | Sep 9 | Transistor Biasing | Sep 10 | Transistor Amplifier |
| | thuR | Sep 11 | Transistor Circuits | | |
| 3 | Tues | Sep 16 | Feedback and Op Amps | Sep 17 | Difference Amplifier |
| | thuR | Sep 18 | Transistor and Op Amps | | |
| 4 | Tues | Sep 23 | Operational Amplifier Circuits | Sep 24 | Operational Amp I |
| | thuR | Sep 25 | Frequency Dependence | | |
| 5 | Tues | Sep 30 | Feedback | Oct 1 | Op Amperational II |
| | thuR | Oct 2 | Noise and Phase Lock | | |
| 6 | Tues | Oct 7 | Positive Feedback | Oct 8 | Noise |
| | thuR | Oct 9 | Multivibrators and Switching | | |
| 7 | Tues | Oct 14 | Field Effect Transistors | Oct 15 | Lock-In Amp |
| | thuR | Oct 16 | MOSFETs | | |
| 8 | Tues | Oct 21 | <i>Examination</i> | Oct 22 | Oscillators |
| | thuR | Oct 23 | Digital Logic | | |
| 9 | Tues | Oct 28 | Digital Circuits (TTL,ECL,etc) | Oct 29 | Digital Circuits I |
| | thuR | Oct 30 | Digital Analysis | | |
| 10 | Tues | Nov 4 | Digital Analysis | Nov 5 | Digital Circuits II |
| | thuR | Nov 6 | Digital/Analog Conversion | | |
| 11 | Tues | Nov 11 | Digital Synthesis | Nov 12 | D to A and A to D conversion |
| | thuR | Nov 13 | Digital Circuits | | |
| 12 | Tues | Nov 18 | Digital Circuits | Nov 19 | Electronic CAD (Mentor) + Sim |
| | thuR | Nov 20 | Digital Computing | | |
| 13 | Tues | Nov 25 | RAM & Caches | Nov 26 | Field Programmable Cell Arrays |
| | thuR | Nov 27 | Thanksgiving: Nov 27-Nov 30 | | |
| 14 | Tues | Dec 2 | Computer Architecture (RISC & CISC) | Dec 3 | to be chosen |
| | thuR | Dec 4 | Busses | | |
| 15 | Tues | Dec 9 | Fiber Optics | Dec 10 | Lab exam |
| | thuR | Dec 11 | Physics Electronic Instruments | | |

UW First Class Tues September 2, UW Last Class Fri Dec 12

623 Mid Sem Hr Exam Tues Oct 21 in class, 623 Final Exam #28 ThuRs Dec 18 & 7:45 AM.

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