

Physics 241 – Circuit Theory and Electronics
Spring 2004

Instructor: Dr. Howard L. Brooks Office: 241 JSMC Hours: 8:30 – 10 MF, 8:30 – 9 TTh
9 – 10 W

Meets: 9 – 11:40 T, 9 – 11:50 Th Room: 230 Julian

Text: INTRODUCTORY ELECTRONICS FOR SCIENTISTS AND ENGINEERS, 2nd Edition
by Robert E. Simpson

GOALS OF THE COURSE:

1. You will learn about the nature of electric circuits and components.
(The WHAT IS IT question)
2. You will learn to use basic electrical circuits and devices.
(The WHAT DO YOU DO WITH IT question)
3. You will design and build electrical circuits to accomplish intended tasks.
(The HOW DO YOU MAKE IT question)

GRADING:

Grades will be assigned according to the following scale:

Semester total	Grade	Semester total	Grade
Above 93%	A	77-80%	C+
90-93%	A-	73-77%	C
87-90%	B+	70-73%	C-
83-87%	B	67-70%	D+
80-83%	B-	60-67%	D
		below 60%	F

W-competency: Each written activity will be evaluated for W competency. All work is expected to be your best writing. It is possible to pass the course and not earn the W. You cannot fail the course and earn the W.

Exams: Each exam will count for 12% of your grade. The exams will include some benchwork analysis in addition to conceptual and quantitative exercises.

Homework: The homework assignments are due the next class period after their posted date on the class schedule. The set of assignments will count for 12% of your grade. Late assignments will not receive credit.

Lab journals: Your lab journal will count for 30% of your grade. This must be a detailed record of your activities in the laboratory. At the end of each activity you must write a summary evaluation. The evaluation must include specific answers to any questions included with the experiments. Lab journals must be turned in with your exam on each scheduled examination date.

Semester term paper: You will complete a semester term paper dealing with some aspect of the future of electronics for 10% of your grade. The paper will be a documented research paper of approximately 8-10 pages and will be due on May 11.

CLASS SCHEDULE: PHYSICS 241 SPRING 2004 (revised)

Week	Tuesday	Thursday
Feb. 3-5	H1 Kirchhoff's Laws Ch. 1.1 – 1.8 Problems: Ch. 1 – 3, 7, 11, 14, 18	H2 Thevenin's Theorem Ch. 1.9 – 1.14 Problems: Ch. 1 – 32, 33, 36, 39, 42
Feb. 10-12	H3&4 Low-Pass & High-Pass Filters Ch. 2.1 – 2.10 Problems: Ch. 2 – 13, 14, 22	H6 Pulses and RC Filters Ch. 3.1 – 3.5 Problems: Ch. 3 – 11, 12, 18
Feb. 17-19	H8&9 Diodes and Diode Circuits Ch. 4.1 – 4.10 Problems: Ch. 4 – 10, 11, 16, 20	H10 Power Supplies Ch. 4.11 Problems: Ch. 4 – 23, 24, 28, 29
Feb. 24-26	EXAM I	H13 DC Transistor Curves Ch. 5.1 – 5.6 Problems: Ch. 5 – 2, 6, 7
Mar. 2-4	H14 Common Emitter Amplifier Ch. 5.7 Problems: Ch. 5 – 9, 11, 13	H14 continued
Mar. 9-11	H23 Operational Amplifier Ch. 9.1 – 9.8 Problems: Ch. 9 – 7, 9, 11	H24&25 Op Amp Applications Ch. 10.1 -10.12 Problems: Ch. 10 – 8, 9, 10, 18, 19
Mar. 16-18	H31&33 More Op Amp Applications Ch. 10.13 – 10.24	More Op Amp Applications
Mar. 30- Apr. 1	EXAM II	H36&37 Gate Basics Ch. 12.1 – 12.5 Problems: Ch. 12 – 10, 11, 12, 13
Apr. 6-8	H38&39 Gates and Decoders Ch. 12.6-12.8 Problems: Ch. 12 – 15, 16, 17, 18	H40&41 RS Flip-Flop Ch. 13.1 – 13.2.1 Problems: Ch. 13 – 3, 6, 8
Apr. 13-15	H43&45 D and JK Flip-Flops Ch. 13.2.3 – 13.2.8 Problems: Ch. 13 – 16, 18, 19 TERM PAPER TOPIC&SOURCES	H46&47 Counters Ch. 13.3-13.4 Problems: Ch. 13 – 20, 21, 27
Apr. 20-22	H52 The 555 Timer Ch. 13.5-13.6	EXAM III
Apr. 27-29	H55 Random-Access Memory Ch. 14.1 – Ch. 14.12 Problems: Ch.14 – 3, 6, 13, 14	H56 Digital-to-Analog Converter Ch. 15.1 – 15.3 Problems: Ch. 15 – 2, 5, 6 TERM PAPER ROUGH DRAFT
May 4-6	H57 Analog-Digital Converter Ch. 15.4 – 15.5 Problems: Ch. 15 – 10, 11, 14	Micro-Master Lessons 2,3,4,5,6 Microprocessor I Ch. 16.1 – 16.2
May 11-13	Micro-Master Lessons 10,11,12,13 Microprocessor II Ch. 16.3 -16.4 SEMESTER TERM PAPER DUE!	Micro-Master Lesson 14 Microprocessor III Ch. 16.5 – 16.9
May 19	WEDNESDAY! 8:30 -11:30 a.m.	FINAL EXAM

