

Physics 3500/8800
ELECTRICAL AND ELECTRONIC CIRCUITS
Spring 2009

Lecture: 5:30 - 6:30 PM, MW, Room 218-SC

Lab: 6:45 - 8:45 PM, MW, Room 226-SC (CRN 12932 / 12945)

PREREQUISITES: *Phys 2212K or permission of department and background in electric-circuit principles with laboratory-based background in electrical measurements. {N.B. This course is not open for credit to Physics and Astronomy graduate students.}*

TEXTBOOK: *None. Materials to supplement the lectures will be posted on the Website given below. The materials are in PDF format; viewing them requires Adobe Acrobat Reader, preferably ver. 6 or higher.*

LAB MANUAL: *Must order on line by CRN at <http://www.theprintshopatlanta.com/>. (A direct link is on the course website listed below.)*

Instructor: Dr. Nelson (<http://www.phy-astr.gsu.edu/nelson/teaching.htm>)

Office: Rm. 408 Science Annex

Office Hours: M 5:00-5:25 pm, W 6:35-7:00 pm, and by appointment

Dates:	Section:	Contents:
1/5 - 1/28	1.	Basic electricity and electrical circuits: A.C. and D.C. circuits, resistors, capacitors, inductors, and measuring instruments.
2/2 - 2/9	2.	Power sources: batteries and elements of power supply design.
2/11 - 3/11	3.	The amplifier: transistors, their operation and elementary principles of amplifier design.
3/16 - 3/23	4.	The operational amplifier: the basic idea and use of packaged operational amplifier circuits; introduction to the idea of feedback.
3/25 - 3/30	5.	Oscillators and more use of feedback: design considerations with emphasis on packaged circuits.
4/1 - 4/6	6.	The use of feedback for control: mechanical and electronic systems.
4/8 - 4/20	7.	Introduction to pulse and digital circuits: operation and use of integrated circuit components.
4/22 - 4/27	8.	Data acquisition and more sophisticated digital circuits; digital computers, computer interfacing and microprocessors.

Holidays: Mon. 1/19/09; 3/2 - 3/8/09

Tests: Wed. 2/18/09, Sections 1 and 2; (*Homework sets 1 - 3*)
Wed. 4/15/09, Sections 3 through 6 (*Homework sets 4 & 5*).

Final Exam: Mon. 5/4/09 at 5:00 PM, **COMPREHENSIVE** (All sections and all homework Sets)

POLICIES

GRADING: *Grades for this course will be derived from the final exam, two other examinations, homework, and the laboratory as indicated below. For each student, the 50% contribution from the tests and final exam will be calculated as the better of (1) 16⅔% each, or (2) 12½% for each test and 25% for the exam.*

Lab	40%
Homework	10%
Tests and Exam	50%
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	100%

LABORATORY: *Laboratory attendance is required. For more information, see the Laboratory Policies included with the lab manual. Students repeating the course may CHOOSE to use their previous laboratory grade and not repeat the laboratory. See the classroom instructor to make this arrangement.*

HOMEWORK: *Homework assignments will NOT be collected and graded; rather the Homework Grade will be derived from a series of one-problem quizzes (see below) based directly on the homework assignment.*

HOMEWORK QUIZZES: *Normally, there are 5 or 6 homework quizzes which collectively provide the homework grade. Each quiz will be scheduled with at least one week's notice. In addition, time as needed in the class meeting before the quiz will be used for answering any questions about the homework assignment.*

IT IS IMPORTANT TO NOTE that the quizzes will come at the beginning of the scheduled class period and will take approximately 10 minutes; thus it is important to arrive on time for the quizzes. In addition, the quiz will be worked out for any necessary discussion immediately following all papers being turned in.

Thus, THERE WILL BE NO MAKE-UP OR RESCHEDULING of quizzes. To compensate for this, the lowest quiz grade will be dropped.

EXAMINATION MAKE-UP / RE-SCHEDULING: *Rescheduling of examinations will be considered on an individual basis. The general guideline is that exams may be rescheduled if absence on the exam date is unavoidable for business or medical reasons and that arrangements are made ahead of time. In case of illness which prevents attendance at an examination, rescheduling will require medical verification.*

ATTENDANCE: *All instructors are required to report the attendance of students receiving Veterans Benefits and / or Federal Aid / Student Loans. For this course, the information will come from quizzes and examinations, laboratory attendance, and random checks of class attendance.*

POLICY ON ACADEMIC HONESTY: *All students are subject to the University Policy on Academic Honesty. This is particularly important in the laboratory where students may be tempted to use work from another person in a previous term. The University Policy also describes the consequences of academic dishonesty.*