Physics 3325 and 3125 – Electronics & Lab
Spring 2006 Syllabus

Instructor: Professor G. D. Earle
Textbook: Electronics and Communications, by M. Plonus, 2001.
Lectures: Tuesdays and Thursdays at 2 PM in FN 2.106
Lab Periods: To be determined based on student and TA schedules

General

Physics 3325 provides a background in analog and digital electronics that is sufficient to allow experimentalists to communicate effectively with electrical engineers regarding issues related to instrumentation design and performance. Beginning with Ohm's law, the course builds by adding key concepts and techniques of circuit analysis and design, including Kirchhoff's voltage and current laws, mesh analysis, nonlinear solid-state devices, operational amplifiers, filter and amplifier design, and sequential and combinatorial digital circuit design. General concepts such as noise, signal bandwidth, Fourier analysis, and coding and modulation techniques will be discussed as they arise. These topics typically correspond to roughly three semesters of coursework in electrical engineering, so in order to cover them in one semester Phys 3325 attempts to provide breadth at the expense of depth. By the end of the course students should be able to read and correctly analyze hybrid circuit schematics at a level of complexity equivalent to that found in modern experiment design.

Rules

Homework will be periodically assigned, collected, and graded. No late homework is accepted. Homework scores will account for roughly 25% of the course grade, with the balance determined by in-class exams and independent instructor evaluation. The laboratory exercises are graded separately, but are closely tied to the classroom discussions. Participation in the laboratory sessions is therefore a mandatory part of the class. Laboratory meetings are nominally scheduled for Friday evenings, but may be rescheduled based on student schedules.