Physics 221

Electronics Lecture

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Office Hours: Tuesdays 2:00 - 3:00 pm or by appointment

Fall 2017
Monday & Thursday
12:10 - 2:00 pm
3 Credits

Course Objectives and Outcomes:

This course is an introduction to analog and digital electronic circuits. The course will provide students with practical analytical techniques necessary for solving linear circuits, and principles and concept of some commonly used semiconductor devices.

The topics covered:

Analog circuits: Direct Current Circuits, Alternating Circuits, Fourier Analysis and Pulses, Semiconductor Physics, The Bipolar Transistor, The Field-Effect Transistor, Feedback, Noise, Operational Amplifier, Optoelectronics.
Digital circuits: Basic Logic Concepts.

Learning Outcomes:

The students should be able to (1) apply knowledge of analog and digital electronics, networks, mathematics and science to technical problems or projects, (2) apply principles of physics to electrical/electronic(s) circuits in a rigorous mathematical environment at or above the level of algebra and trigonometry.

Prerequisite: Physics 110 and 120, or Physics 111 and 121.

Text: "Introductory Electronics for Scientists and Engineers" 2nd edition by Robert E. Simpson, Allyn and Bacon (Addison-Wesley)

Grading

Homework	**10%**
Three midterm exams	**20% each, 60% in total**
Comprehensive final exam	**30%**

Three midterm exams will be given during the semester. No makeup midterm exams will be given. If a student misses one midterm for a valid reason, the course grade will be based on the exams taken, with homework plus final still counting for 100% of the course grade. Homework is assigned in class and must be handed in one week after the chapter ended.

Class Schedule for Physics 221 Fall 2017 (Tentative)

8/28	**Direct current circuit**	**8/31**	**Kirchhoff's laws**
9/7	**Thevenin's and Norton's theorems**	**9/11**	**Alternating current circuits**
9/14	**Capacitance and inductance, Filters**	**9/18**	**Resonance**

9/19	**Fourier transform and pulses**	**9/25**	**Exam 1**
9/28	**Semiconductor physics, energy band**	**10/2**	**PN junction and diodes**
10/5	**Diodes and applications**	**10/12**	**Bipolar transistors**
10/16	**Transistor circuits**	**10/19**	**Amplifiers**
10/23	**Exam 2**	**10/26**	**Field-effect transistors**
10/30	**FET circuits**	**11/2**	**Feedback**
11/6	**Feedback/Operational amplifiers**	**11/9**	**Operational amplifiers**
11/13	**Noises**	**11/16**	**Oscillators and special circuits**
11/20	**Exam 3**	**11/27**	**Logic circuit**
11/30	**Logic circuits**	**12/4**	**Logic circuits**
12/7	**Logic circuit**	**12/11**	**Review**

Final exam to be arranged

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"In compliance with the American Disability Act of 1990 (ADA) and with Section 504 of the Rehabilitation Act of 1973, Hunter College is committed to ensuring educational parity and accommodations for all students with documented disabilities and/or medical conditions. It is recommended that all students with documented disabilities (Emotional, Medical, Physical and/ or Learning) consult the Office of Access ABILITY located in Room E1124B to secure necessary academic accommodations. For further information and assistance please call (212- 772- 4857)/TTY (212- 650- 3230)."

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