

EE211 ELECTRICAL ENGINEERING LABORATORY I

Spring 2002

2001 Catalog Data: EE 211 Electrical Engineering Laboratory I, R-1, L-4, C-3. Prerequisites: ES 250 (Electrical Science). Corequisites: EE 221 or EE241. An introductory laboratory course. The goals include: develop familiarity with basic electrical instruments and measuring techniques, examine fundamental electrical properties using simple circuits, develop sound techniques for circuit construction and trouble shooting, develop effective technical communication skills through reporting of experimental results, and develop sound safety practices for circuit construction and use of instrumentation. Continued as EE 311. (Spring)

Textbook: None.

Coordinator: Abul N. Khondker, ECE Department.

Goals: To acquaint students with basic laboratory equipment and to give practical insight into the circuit topics introduced in basic circuit courses.

Learning objectives: Students will:

1. become familiar with the operation of basic laboratory equipment such as ammeters, voltmeters, oscilloscopes, function generators and other instruments
2. develop the ability to conduct experiments using sound laboratory practices
3. gain practical insight into topics introduced in the basic circuits courses
4. become aware of fundamental laboratory safety practices
5. learn how to formulate an appropriate written laboratory report

Prerequisites by Topic: None.

Topics: See list of experiments in Laboratory Projects section.

Computer Usage: 1. The computer is used for in lab data collection for some experiments as listed below.

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students must prepare using a word processor. The reports also include computer generated graphics.

3. PSPICE circuit simulation program is used extensively in most experiments to predict the outcome of the experiments.
4. Maple, a symbolic mathematical analysis software and Excel spreadsheets may be used in some experiments.

Laboratory Projects:

1. PSPICE Analysis. Equipments: Personal computers. (1 week)
2. Oscilloscopes. Equipments: oscilloscope, dc power supply, resistors, capacitors. (1 week)
3. Function Generator. Equipments: oscilloscope, function generator, resistors, capacitors. (1 week)
4. Impedances. Equipments: oscilloscope, function generator, resistors, capacitors, inductors. (1 week)
The computer is used for preparing formal final reports which
5. Transient Response. Equipments: oscilloscope, function generator, multimeter, resistors, capacitors, inductors. (1 week)
6. Operational Amplifier. Equipments: oscilloscope, function generator, dc power supply, op amp, resistors, capacitors. (1 week)
7. 555 Timer. equipments: oscilloscope, dc power supply, 555 IC, light emitting diode, resistors, capacitors. (1 week)
8. Single Phase Power. Equipments: Variable transformer, ac voltmeter, multimeter, wattmeter, resistors, capacitors, inductors. (1 week)
9. Frequency Response. Equipments: wave analyzer, Personal computer, oscilloscope, resistors, capacitors, inductors. (1 week)
10. Combinational Logic. Equipments: 7400, 7402, 7404, 7408, 7420, 7427 and 7432 ICs, logic probe, dc power supply, oscilloscope, Z200 computers and resistors. (1 week)