

PHYS 251-L Physics II LAB

Fall 2018

CATALOG DESCRIPTION: PHYS 251-L Physics II LAB

Laboratory to accompany PHYS 251. Corequisite: enrollment in PHYS 251.

TEXT: Lab experiment instructions in pdf form are available below under Schedule of Labs section. We encourage students to bring their laptops or tablets to lab. Pc's will be available for those who do not have laptops or tablets.

INSTRUCTORS: Dr. Johnny B. Holmes
Dr. Ted Clarke

PREREQUISITES BY TOPIC:

1. Basic algebra, trigonometry, calculus (differentiation and integration)
2. Newton's Laws of Motion and Newton's Law of Gravity
3. Law of Conservation of Energy

GOALS:

This laboratory course supplements the lecture course, so it is designed to assist you in reaching the goals of PHYS 251. The additional goals of this course are:

1. To provide a hands-on experience with some of the properties of electricity and magnetism.
2. To test the models developed in PHYS 251 in the real-world environment of the laboratory, and to see how well the models work and to find their limitations.
3. To acquaint the student with lab techniques.
4. To show the limitations of experimental verification of scientific theories.

EXPERIMENTS:

1. Electric Field Simulations
2. *The Cathode Ray Tube (CRT)
3. Ohm's Law (2 weeks)
4. *RC Circuits (Resistor and Capacitor)
5. Magnetic Deflection
6. Induction
7. *Determination of e/m (the charge to mass of the electron)
8. The Oscilloscope
9. AC Circuits (2 weeks)

GRADING: see individual lab instructor's syllabus

[Syllabus for Dr. Holmes](#)

SCHEDULE FOR LABS:

	M/T/W/R	Aug 20-23		none
1	M/T/W	Aug 27-30		Electric Fields Simulations download Electric Fields Simulation program from this page
	M/T/W	Sept. 3-6		None (Labor Day)
2	M/T/W	Sept 10-13	*	* The Cathode Ray Tube
3	M/T/W	Sept 17-20		Ohm's Law , Parts 1-3
4	M/T/W	Sept 24-27		Ohm's Law , Parts 4-5
5	M/T/W	Oct. 1-4	*	* R-C Circuits
6	M/T/W	Oct. 8-11		Magnetic Deflection
	M/T/W	Oct. 15-18		<i>None - Fall Break</i>
7	M/T/W	Oct. 22-25		Electromagnetic Induction
8	M/T/W	O 29-N 1	*	* Charge to Mass Ratio of the Election (e/m)
9	M/T/W	Nov. 5-8		The Oscilloscope
10	M/T/W	Nov. 12-15		AC Circuits Part 1
	M/T/W	Nov. 20-22		<i>none - Thanksgiving</i>
11	M/T/W	Nov. 26-29		AC Circuits Part 2 & Part 3
	M/T/W	Dec. 3-6		<i>Make-up date</i>

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