ELEC 204 Electrical Laboratory
Course Syllabus, Spring 2017

Pre- or Co-requisites: ELEC 202 or ELEC 308

Course description: An introduction to the experimental method. Laboratory exercises are designed to supplement the material presented in ELEC 201 (*Electric Circuit Analysis I*) and ELEC 202 (*Electric Circuit Analysis II*).

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Class Schedule:

Sections 04:	Mon	13:00–14:50	GRIMS 311
Sections 01/02:	Mon/Wed	15:00–16:50	GRIMS 311
Sections 05/03:	Tues	13:00–14:50 / 15:00–16:50	GRIMS 311

Required equipment offered by Digilent: Analog Parts Kit -- bundled with Analog Discovery design kit
Autorange Digital Multimeter (MS8217)

References: R. C. Dorf & J. A. Svoboda, *Introduction to Electric Circuits*, 9th Edition, John Wiley & Sons, 2013.

Course webpage: http://ece.citadel.edu/mazzaro ("ELEC 204")

Course objectives: (see course website for a complete list)

(1) to competently operate basic electrical laboratory equipment (DC power supply, multimeter, function generator, oscilloscope)
(2) to perform voltage, current, impedance, transient, and frequency-response measurements
(3) to build, troubleshoot, and measure direct-current and alternating-current circuits
(4) to work as part of a technical team
(5) to keep an organized laboratory notebook and prepare a formal laboratory report

Grading policy:

Pre-lab exercises	20%
Lab reports	60%
Lab notebook	10%
Lab practical (exam)	10%

Grade breakpoints:

$90\% \le A < 100\%$	$70\% \le C < 80\%$	$F < 60\%$
$80\% \le B < 90\%$	$60\% \le D < 70\%$	

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Course policies:

Attendance: A student missing a lab must work out a time with the instructor to make it up. Missing more than 2 labs will result in a failing grade in the course.

Lab teams: The students will be divided into teams of two to three individuals. The **lab work, lab notebook, and technical reports are the responsibility of all team members**.

Course website: Lab procedures, dates, and course announcements will be distributed to the class via the course website. It is the responsibility of each student to **check this website regularly**.

Lab decorum: Each lab team member is expected to earnestly participate in each experiment. **Students must respect the lab equipment and clean their lab bench** by properly stowing all wires and components after each experiment. Food and drink are not permitted at any time in the laboratories. Each student must understand and follow all safety instructions. Horseplay is strictly prohibited at all times and could result in the removal of students from the course. All potentially hazardous situations must be reported to the instructor.

Accommodations for learning disabilities: Upon receipt of a bona fide letter from the Office of Access Services, Instruction, and Support (OASIS), appropriate accommodations will be made for learning disabilities. However, nothing can be done retroactively.

Lab notebooks: Each lab team will keep a handwritten lab notebook in accordance with the prescribed format. The lab notebooks must be available at each lab meeting.

Pre-lab exercises: **Each lab team will complete the "Pre-lab" exercises for each lab before arriving to perform the lab experiment.** These "Pre-lab" portions will be checked by your instructor at the beginning of each lab period.

Lab reports: Lab reports must follow the prescribed format and be the printed output of a word processor. **Lab reports must be submitted at the beginning of the lab period** on the due date.

Lab practical: At the end of the course, each student will demonstrate individually to the instructor the ability to construct circuits from a schematic diagram, to operate the test equipment, and to take and interpret data. This lab practical examination will take place during the last regular class period and will be given in lieu of a final examination.

Week	*Due at start of class*	*Activity*
1		Lab orientation
2	Pre-lab #1	Lab #1, Direct-Current Measurements
3	Pre-lab #2, Report #1	Lab #2, Linear Superposition
4	Pre-lab #3, Report #2	Lab #3, Thevenin Equivalents
5	Pre-lab #4, Report #3	Lab #4, Operational Amplifiers
6	Pre-lab #5, Report #4	Lab #5, First-Order Circuits
7	Pre-lab #6, Report #5	Lab #6, Single-Phase AC Power
8	Pre-lab #7, Report #6	Lab #7, Transformers
9	Pre-lab #8, Report #7	Lab #8, Three-Phase Power
10	Pre-lab #9, Report #8	Lab #9, Active Filters
11	Pre-lab #10, Report #9	Lab #10, Audio Generation & Capture
12	Report #10	Lab practical (exam)