

## ELEC 313 Electronics Laboratory Course Syllabus, Fall 2015

Prerequisite:	ELEC 206		<u>Corequisi</u>	te: ELEC 306	
Course description:	Experimental studies coordinated with the subjects introduced in ELEC 306 ( <i>Electronics I</i> ).				
Instructor, Sections 01/02:	Dr. Jason Skinner, Grimsley Hall Room 310 phone: 843-953-3352, e-mail: jason.skinner@citadel.edu				
Instructor, Sections 81/82:	Dr. Gregory N phone: 843-9	lazzaro, Gri 53-0429, e-	imsley Hall Room 3 -mail: gmazzaro@c	312 <u>sitadel.edu</u>	
<u>Class Schedule</u> :	Section 81: Section 01: Section 02: Section 82:	Mon Tues Wed Wed	20:15–22:15 13:00–14:50 14:00–15:50 20:15–22:15	GRIMS 311 GRIMS 311 GRIMS 311 GRIMS 311	
Required equipment:	1 electronics p	project box			

(per team) 1 solderless breadboard

Students in Sections 01 and 02 must purchase their own box & breadboard, equivalent to these: <u>http://www.digilentinc.com/Products/Detail.cfm?NavPath=2,393,1343&Prod=BUNDLE-PROJBOX-STICKERS</u> <u>http://www.amazon.com/BB400-Solderless-Plug--BreadBoard-tie-points/dp/B0040Z1ERO</u> <u>Note</u>: The Analog Parts Kit offered by Digilent is an acceptable substitute for both of these items.

Students in Sections 81 and 82 may borrow both of these items from the ECE Department.

Course webpage:

http://ece.citadel.edu/mazzaro ("ELEC 313")

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

- (1) to characterize diodes, diode circuits, and transistors
- (2) to construct and measure op-amp circuits
- (3) to solder and measure a motor driver circuit
- (4) to measure AC circuits using voltmeters and oscilloscopes
- (5) to construct and characterize BJT and MOSFET circuits (DC and small-signal)
- (6) to prepare lucid, succinct technical reports
- (7) to work as part of a technical team

Grading policy:	Pre-lab exercises	20%		
	Lab reports	60%		
	Lab notebook	10%		
	Lab practical (exam)	10%		
Grade breakpoints:	$90\% \le A < 100$	%	$70\% \leq C < 80\%$	F < 60%
	$80\% \le B < 90\%$	Ď	$60\% \le D < 70\%$	



<u>Attendance</u>. 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.

<u>Lab teams</u>. The students will be divided into teams of two or three individuals. The **lab work**, **lab notebook**, **and technical reports are the responsibility of all team members**.

<u>Course website</u>. 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**.

<u>Lab decorum</u>. 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.

<u>Accommodations for learning disabilities</u>. 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.

<u>Lab notebooks</u>. 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.

<u>Pre-lab exercises</u>. 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. Components and wires required to construct each circuit for each pre-lab will be available in the lab room (GRIMS 311) ahead of each lab.

<u>Lab reports</u>. 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.

<u>Lab practical</u>. 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, Amplifier models
3	Pre-lab #2, Report #1	Lab #2, Diode characterization
4	Pre-lab #3, Report #2	Lab #3, Diode circuits
5	Report #3	Lab #4a, DC Motor Driver Kit
6	(completion of Lab #4a)	Lab #4b, DC Motor Driver Lab
7	Pre-lab #5, Report #4	Lab #5, CMOS circuits
8	Pre-lab #6, Report #5	Lab #6, MOSFET characterization
9	Pre-lab #7, Report #6	Lab #7, MOSFET amplifier configurations
10	Pre-lab #8, Report #7	Lab #8, BJT characterization
11	Pre-lab #9, Report #8	Lab #9, Common-emitter transistor amplifier
12	Notebooks, Report #9	Lab practical (exam)