PHYS3360/AEP3630 **Lab Schedule & Procedures** **Spring 2013**

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Chapter Date	**Intro 1**	**Opamp 2**	**AC ckt 3**	**Feedbk 4**	**Diodes 5**	**BJT 6**	**FET 7**	**Gates 8**	**F.F. 9**	**Timing 10**	**Comp 11**	**Noise 12**
#1: Jan 21-25	**L**											
#2: 30-Feb 1	**D**	**L**										
#3: Feb 4-8	**R**	**D**	**L**	**L**								
#4: Feb 11-15		**R**	**D**	**L**								
#5: Feb 18-22			**R**	**D**	**L**							
#6: 25-Mar 1				**R**	**D**	**L**						
#7: Mar 4-8					**R**	**L**	**L**					
#8: Mar 11-15						**D**	**L**					
#9: Mar 18-22	***SPRING BREAK***											
#10: Mar 25-29						**R**	**D**	**L**				
#11: Apr 1-5							**R**	**D**	**L**			
#12: Apr 8-12								**R**	**D**	**L**		
#13: Apr 15-19									**R**	**D**	**L**	
#14: Apr 22-26										**R**	**D**	**L**
#15: 29-May 3											**R**	**D**
	May 4: Last Day of Classes											**R**
	May 8: First Day of Exams											

L = working in Lab; D = written lab report Due (on the last lab day of the week); R = written lab report Returned with grade

- All labs follow the *PHYS3360/AEP3630 Lab Manual* and, starting from Chapter 8 also the *PHYS3360/AEP3630 Supplement*. You should read the material and prepare for the lab work *before* coming into lab (the very first week is the exception). Do not try to read the manual for the first time while doing the lab work. ***You must complete and turn in lab books for all 12 labs to pass the course.*** In case you are unable to finish on time, you may skip an occasional experiment and submit your report anyway, bearing in mind that: a) your grade may be lower as a result; b) you are still responsible for understanding how all the experiments work. Consider dropping experiments marked 'Optional' first if you find yourself in a crunch.
- Each lab group will consist of 2 people typically with one lab station per group. Try to pair up by status (undergrads together, audits together, grads together, etc.), and to keep the same partner for the whole semester. As a courtesy to your partner, plan to attend your scheduled laboratory hours regularly. Feel free to discuss your lab work with your partner and with other students. You and your partner will often have identical data, but your analysis and write-up must be done independently. In the event that you cannot maintain a regular schedule, please work alone (not always possible when the labs are filled to their fullest capacity), or find a partner who can work with the same schedule.
- Malfunctions of equipment, components, etc. should be reported to your lab instructor. ***Don't put damaged components back in the drawers.***
- When you are finished for the day in the lab, put away your equipment and leave the lab in a clean orderly state for the next group to use.
- ***Food and beverages are not allowed in the lab.***
- ***Three (3) lab notebooks are required.*** One is to take current data in, another has the prior week's data and your analysis and written report, and a third has the data from two weeks ago, the analysis you wrote the prior week and is being graded (i.e. rotate through this set of books every three weeks.) The lab book should contain graph paper so that you may record waveforms from the scope. ***Don't use single-line ruled paper.*** The campus store sells a notebook called ***"5x5 Quadrille Ruled" no. 33-209.*** This or an equivalent will be suitable.
- On the front of each lab notebook please record your name, your lab partner's name, and your TA's name.
- The general purpose of a laboratory notebook is to produce a record of your work that is sufficiently complete so that someone else with a similar background could accurately reproduce your experiment. For the purpose of this course, your lab book should be complete enough so that the grader does not have to refer to anything else (e.g., the lab manual) to understand exactly what you have done. The whole lab book,

including written report and original data (all in the same book) will be handed in. A formal lab report and extended discussion are ***not*** required.

- Original data should be recorded directly in the lab book (not on loose paper) on *the right-hand page*, with the left-hand page left blank for analysis and discussion. Your ***recorded data should include:***
    - A drawing of the circuit schematic with measurement points and components clearly indicated.
    - Indicate your ground potential reference.
    - A list of component values (i.e. resistances and capacitances) and component types (e.g., IC or transistor numbers) as well as calculations of component values not specified in the lab manual.
    - A sketch of the input and/or output waveforms of your circuit. Be careful to record the appropriate voltages and time intervals (with correct units and order-of-magnitude prefixes).

  Record any other observations you feel are important. Graphing your data and performing some analysis while in the lab is strongly recommended, to check that your experiment is working.
- Analysis and discussion of the data should be recorded on *the left-hand page* of the lab book. Your ***analysis should include:***
    - Answers to all questions explicitly posed in the experiment description. ***Do not repeat any information already recorded in the data section***.
    - Analysis of any other important data.
    - Wherever possible, comparisons between quantitative theoretical calculations and/or qualitative predictions with your experimental data, and comments on any discrepancies and their possible origins.
    - Comparisons between measured component properties and the values given in the manufacturer's specification sheets.
    - ***Don't repeat verbatim the discussion in the lab manual.*** Give a clear and concise explanation of the circuit in your own words.
- Refer to Appendix A of the Lab Manual for additional information and an example of how a lab report should look like.
- Lab reports will be graded according to the point distribution available on the class website with 5 point/week late penalty. All lab units have their maximum specified in the spreadsheet (*Blackboard* $\Rightarrow$ *Course Info* $\Rightarrow$ *Important documents* $\Rightarrow$ *Lab Point Distribution*). You are encouraged to think independently about the experiments as in a real research environment. A detailed quantitative analysis or an observation of effects not explicitly asked for but implied by the discussion in the Lab Manual or the lecture may result in a grade higher than the maximum for a given experiment.
- The lab load is very large in this course and requires disciplined lab attendance and work. To cut on the load somewhat, ***a score cutoff is introduced*** (refer to *Blackboard* $\Rightarrow$ *Course Info* $\Rightarrow$ *Important documents* $\Rightarrow$ *Lab Point Distribution*). If your lab report receives a score larger than the cutoff, you receive the full credit for that unit. This effectively reduces the number of experiments that you need to do. You need to decide between you and your lab partner which lab experiment can be skipped (if any). It is advised that you try to aim for a score that is higher than the cutoff to allow for possible subtractions during grading, but the overall approach ought to be maximizing the quality rather than quantity.
- ***Don't be surprised if you get a low grade on your first lab or two;*** you'll need to get the hang of what we're looking for, and we give lower grades at the start to give you feedback on what you need to improve. ***And, yes, if your report is illegible or messy, points will be deducted.***