

Physics 116A Lab Syllabus – Fall 2008

TA: **Evan Friis**, e-mail: friis@physics.ucdavis.edu, office: Room 327 Phys/Geo

Office Hours: TBA (Questions on lab, lecture, or homework are all allowed in office hours.)

Come to lab prepared. In general, lab instructions will be available beforehand on the Physics 116A SmartSite (see class outline for details). Please try to have any necessary theoretical calculations (i.e. filter falloffs, gains, etc.) that are asked for in the instructions done beforehand or at least attempted.

It is critical to keep a clear record of your work in the lab along with the data which you collect. Traditionally, this is done in a bound logbook, although there is a trend toward on-line electronic logbooks for some experiments. **For this lab, you will use an 8.5" x 11" loose-leaf notebook of your choice.** This way you can turn in your notes from a given experiment as part of the lab report without losing access to the rest of the logbook. We encourage you to use quadrille-ruled paper (such as the Engineer's Composition Pad available in the bookstore). This simplifies making tables, quick graphs and diagrams. Note that it is best to use only one side of the page with this paper. Each student must keep his/her own logbook, although data sheets can be shared between lab partners via photocopies.

For all but one of the experiments, you should turn in relatively brief writeups based on your logbook pages. (The experiment on diode characteristics will have a more formal report.) To this end, I would like for you to hone your real-time logbook writing skills. Here is the format I have in mind (each of these labs will be worth 20 points):

1. Keep a table of contents at the beginning of the notebook so you can find things easily.
2. Each lab should have some sort of introduction to show me that you know and thoroughly understand what is being asked of you in each lab. (~2pts)
3. Work through each circuit you're asked to build by doing any required theory (calculations, any principles you may have used) followed by your procedure (take me through it as you do it), then any data you recorded, plots and finally comparison with theory. (~13pts)
4. Summarize the lab in a conclusion. State anything neat or interesting you learned, hypothesize on the sources of any errors/problems you had. Please be thoughtful when discussing possible sources of error. (~5pts)
5. Write in ink and cross off anything you don't want graded with big X's so I can still read it but not grade it. Leave blank space if you need to fill in stuff later. Remember that drawings, schematics and plots can often say a lot more than a table of numbers. **A plot made by hand while taking data can also help you become aware of things going wrong in time to correct them.** You can add computer plots later if you so choose. Use the time outside of lab to fill in and complete the work to be handed in. Please be clear and concise with decent penmanship.
6. Use significant figures correctly and error estimates appropriately.
7. **Remember that each graph should have a title and labeled axes with units indicated.**

I feel electronics and circuit design are best learned in the lab so don't be afraid to get your hands dirty. I hope you have a good time with the lab portion of the course. You should learn a lot that you can take with you if you go into graduate level physics or get an engineering/lab job in industry.