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**Course Description:**

Applied lab portion of EE3338. Material includes Diode, Op Amp, and transistor circuit design and analysis.

**Course Materials:**

A bounded notebook (i.e. a composition notebook, ~ \$2) is required for this lab. Lab assignments will be handed-out the week or so before they are due.

**Course Goals:**

Students who successfully complete this course are expected to:-

- ✓ Demonstrate competence using common EE measurement instruments, such as digital multimeters (DMM) and oscilloscopes, for the measurement of resistance, current, voltage, etc.
- ✓ Understand basic techniques for analyzing data.
- ✓ Understand basic concepts for designing circuits including components such as diodes, Op Amps, and transistors.
- ✓ Demonstrate competence in written technical communications.

**Course Rules and Regulations:**

1. **Absences:** Since the lab meets only once a week, it is imperative that students make every effort to attend. Students who miss a laboratory may be required to show a valid excuse, medical or otherwise, presented in writing to the class instructor, in order to make-up the lab session. In general, only one lab may be made up. **STUDENTS WHO MISS 3 OR MORE LABS UNEXCUSED MAY BE AUTOMATICALLY DROPPED FROM THE COURSE WITH A FAILING GRADE.**
2. **Labwork: No Late Work Accepted.** Prelab must be completed before students are allowed to start the lab. Prelab work will be checked at the start of lab; students who arrive at a lab without their prelab completed will be asked to leave the lab. No extra time will be allotted. Follow the lab report format as concerns entering prelab results into your lab notebook. The only acceptable format for the rest of the laboratory report is that given in the laboratory report handout. Lab reports will be due at the end of lab unless otherwise noted. Lab grading will be done on the following scale:

4: Prelab completed, lab work completed, good lab results, lab report format followed, etc.

3: Mostly at level 4 quality with some minor deficiencies.

2: Moderate deficiencies from level 4 quality.

1: Major deficiencies from level 4 quality.

0: Lab not completed.

A passing grade in the lab (at least a C) will require approximately an average performance of no worse than 2.5. A grade of A will be assigned for average lab performance of approximately 3.5 or better, a grade of B will be assigned for average lab performance of approximately 3, etc.

3. **Academic Conduct.** Academic dishonesty will not be tolerated. Discussions are allowed, but you must submit ONLY your work. It is the official policy of the university that all suspected cases or acts of alleged scholastic dishonesty must be referred to the Dean of Students for investigation and appropriate disposition. Any student who commits an act of scholastic dishonesty is subject to discipline. Scholastic dishonesty includes, but is not limited to cheating, plagiarism, collusion, and the submission for credit of any work or materials that are attributable in whole or in part to another person, taking an examination for another person, any act designed to give unfair advantage to a student or the attempt to commit such acts.

Dean of Students link:

<http://studentaffairs.utep.edu/Default.aspx?tabid=4333>

## Rules for a Lab Notebook

For legal reasons, such as seeking a patent, engineers need to keep a proper lab notebook. This notebook should be a bounded notebook (e.g., a composition book) that does not have pages that can be removed or added easily. (**Thus, three-ring binders and spiral notebooks are not appropriate for this purpose.**) Also, in keeping with the latter idea, gluing and/or stapling anything into the notebook is not allowed. If necessary, items may at times be taped into the notebook. In such cases, the tape-paper edge should be initialed to show that the item could not be easily removed and replaced. Taping should never be done if something can be easily written.

The records in an engineer's notebook are legal documents, and as would be expected for such documents, certain rules are utilized. For instance, when possible, all entries in the notebook should be made with nonerasable ink directly into the notebook. These entries may be handwritten or printed, but must be legible. When mistakes occur, these should not be blacked-out or ripped out. Mistakes are crossed-out with one line (~~a mistake~~). An assumed mistake may later be found to not be a mistake at all and may be important. An engineer (patent attorney, manager, etc.) may need to be able to read what was thought to be a mistake. Also, not erasing and not using pencils is very important in a court action. An engineer should be able to show that changes in the notebook were not easily made at a later date. In general, all entries must be permanent and legible.

Beyond the above techniques for entering data, an engineer must also number, date and initial each entry page in the notebook. Another person should periodically review the notebook and then initial and date each reviewed page as well. For convenience in referencing, a table of contents should also be maintained for the notebook and several pages at the beginning of the notebook should be saved for this purpose.

Examples of the latter page formats for this lab can be seen below. Note that the lab report format contains a title, a summary, and then data (in this case your prelab and lab work). Conclusions are optional, but when included contain a summary of important observation. Make sure to read the notes on the lab report format example, especially on the left page.

<i><u>Table of Contents</u></i>	
<i><u>Lab Title</u></i>	<i><u>Page</u></i>
<i>Lab 1: Engineering Notebooks</i>	<i>2</i>
<i>Lab 2: One Hot Discovery</i>	<i>10</i>

<p>1</p> <p><i>Write only on the right page to start. You can then add extra notes or things that you left out on the left page as needed.</i></p> <p><i>Do not type the whole lab report or the prelab up on a computer and then attach it to your notebook. You can temporarily record answers on a sheet of paper and then transfer them to the notebook. Only tape in what is absolutely necessary, i.e. something that would take a long time to transfer or that could not be transferred via writing to the notebook (a detailed picture printout, a photo, a data plot or similar). When taping in data, the edge where the tape and notebook page meet would normally be initialed to show that the added material was not removed and replaced later. These steps with taped material are important for legal reasons.</i></p>	<p>9/4/2007 JAM <span style="float: right;">2</span></p> <p><i>Lab Title (e.g., Lab 1: Engineering Notebook<sub>s</sub>)</i></p> <p><i>Summary</i>  <i>In this section, briefly and in your own words, state what you are to do in the lab.</i></p> <p><i>Prelab</i>  <i>In this section, record prelab data and answer prelab questions. If you must attach a data sheet, photo, etc. to your notebook, use tape. Do not staple or glue pages.</i></p> <p><i>Lab Work</i>  <i>Record lab results.</i></p> <p><i>Conclusions/Summary</i>  <i>Only record conclusions if there is a profound statement to be made. For instance, "I just discovered how to turn water into transistors." Or "The new resistance that will reduce the electrocution problem is 500 ohms."</i></p>
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**A lab notebook is not useful unless the author can be identified.** For this lab, make sure to list information like your name, phone number, e-mail address, class (EE3138), and lab meeting time on the notebook cover.