ECE Dept., NJIT
ECE 392: Electrical Engineering Laboratory II

Introduction:

This laboratory is the 2nd electronics laboratory in EE program.
Prerequisite course: EE 291, from which we are familiar with

- basic electronic measurements
- elements of data analysis, presentation of results and reporting

In this laboratory, we will learn proper experimental methods and procedure, including:

- advanced measurement techniques
- recording of data and all relevant information
- preparing tables and graphs, etc.

Upon finish the course, you should be very familiar with

- effective laboratory practices
- professional style data presentation

All these skill will be very helpful for your future study and work.

Requirements:

Attendance

A laboratory course is a practical experience.

- using proper equipment
- involving teamwork

So, attendance at all meetings is required. Students who miss a session must make up for it as soon as possible. I can arrange it during other sections. But, student absent has to make his own measurements and not to use the data recorded by the group partner.

Preparation for lab work

You have to be prepared for each session. Otherwise, you will waste your time, even your collaborators' time. How to prepare:

- complete the *Prelab* assignment
- go through the text of the *Laboratory Manual* carefully (give website)
- solve questions and uncertainties with me at the beginning of the lab session or email me the question.

Deliverables:

Prelab:

- Complete at home by each student individually
- Hand in prior to doing the experiment

Laboratory Reports

Complete by each group after all measurements are completed

Recommended report format:
1. Cover page
2. Introduction

3. Experimental Procedure
4. Experimental Data
5. Discussion
6. Conclusions

1. Names of the team members, group number, section and course number (EE392-101), number and title of the experiments, date of the report delivery

2. A brief statement (objectives or goals of the experiments, give an outline of the report, state the relation of the experimental results and theoretical expectation)

3. To describe the setup or instruments configuration and how the experiment proceeded, also include the circuit schematics with the value of components

4. Data should be presented clearly with a reference to the procedure and the schematic. Should give enough information about the data. Ex.
   tables: Ex. *frequency distribution*
   graph: axes of the graphs must be labeled and the units
   indicated; Ex. Diode characteristics; if more than one figure in a report, number each one and every figure should have a caption

5. Comparison: before comparison, you may have to do some data analysis or data processing. Ex. Graph is one of the best ways to do the comparison.
   Theory: continuous curve
   Experiment: points
   error analysis: sometimes the results show much discrepancy. But if you and explain the reason for that, the results can be accepted. E.g.
   precision and accuracy of the instruments
   the value of the circuit components may not be well known
   but most reason lies in experimental procedure or
   because of not taking into account all factors, in analysis

   note: if there are large discrepancies, and they can't be explained by instruments or circuit components matter. They may be the mis-connected wire or damaged components. Find the reason and repeat it in the lab

6. To include a short statement to finish the report. Tell the reader whether the experimental results agree with the theory. If there were differences, try to explain the reasons. Any suggestion and advices on the experiment are welcome.

All report pages must be numbered.

Notes

When you are doing experiments, write down as many details as you can.
Record/draw the circuits that work well and do not work. This can save your time, since you won't repeat the same mistake. Also, detail notes make you finish your report much easier.