ROCHESTER INSTITUTE OF TECHNOLOGY
MICROELECTRONIC ENGINEERING

LABORATORY NOTEBOOK

The purpose of a laboratory notebook is to preserve experimental data and observations that are a part of a scientific experiment. The notebook must be clear, concise, and complete. If the notebook is to be of any value, experiments that fail must be recorded as faithfully as those that succeed.

The guiding principle for note keeping is to write with enough detail and clarity that another person could pick up the notebook at some time in the future, repeat the work based on written descriptions, and make the same observations that were originally recorded. Additionally, the author should be able to return to an experiment at a later date based on what has been recorded in the notebook.

After the data is recorded, the laboratory notebook provides a forum in which data and observations are analyzed, discussed, evaluated, and interpreted. This process leads to the writing of reports, theses, dissertations, technical papers, patent disclosures, and correspondence with colleagues. Industrial notebooks are an integral part of many corporations. If properly kept, the notebook is a researcher's proof of discovery or invention and is often the sole source of information needed in pursuit of a patent.

The following guidelines will be used to evaluate lab notebooks (100%):

Introduction/Theory	**15%**
Planned Procedure	**15%**
Observations and Data	**25%**
Discussion of Results	**20%**
Conclusions	**15%**
Professionalism and Presentation	**10%**

Requirements of a Laboratory Notebook:

1. Cleanroom notebooks are available through the department or online (search "cleanroom notebook"). Notebooks must be permanently bound. All pages must be permanently and strongly attached. Notes should be recorded in a consistent style, in chronological order, and with no blank or missing pages. Pages should have areas for page numbers and headings. Notebooks smaller than composition style are not suitable.
2. Notes should be recorded with permanent ink. Pencil can be erased or become illegible with handling. If work is conducted in chemical environments, ink should not be water-soluble. Colors that are reproducible are best. Inks that bleed excessively (felt tip) should be avoided. The use of red ink for student lab books should also be avoided.
3. Photocopied material, including articles, references, machine generated data, unstable documents (thermal copies), etc. may be permanently attached in the notebook when needed.

4. Items attached to the notebook must be done with permanent Scotch tape or glue.
5. Notebook pages should be serially numbered. If pages are not numbered, write the page number by hand and circle it.
6. Use every page in sequence, without leaving blank pages. Do not use right hand pages only.
7. Write the **date and heading** at the top of each page and **sign and date** the bottom of each page. Use the same date format through out the notebook. Do not omit the year.
8. Clearly label and describe all drawings, graphs, tables, etc.
9. Make corrections to data or calculations by crossing out the incorrect data with a single stroke, accompanied by your initials. Leave the unwanted entry legible.
10. Blank space at the end of pages or between pages should be crossed out with a single diagonal line, accompanied by your initials.
11. Document any equipment or material used by name and number.

Organization of Lab Notebook:

- **Table of Contents**

The table of contents should reference all entries in the lab notebook. It should have just enough information to be useful but not so much that it is hard to read. It should include one column for date, subject (lab name and section), page number, and project number, if appropriate.

- **Table of Abbreviations (optional)**

A table of abbreviations, symbols, code numbers, or other information may be included if it might be useful.

Each Lab should have the following sections:

1. **Introduction/Theory**
   The experiment objective or purpose should be included in this section. Additionally, an explanation and support of the proposed work should be provided. The introduction should answer the questions: Why is the work being undertaken? What related work others have done? Why was the experiment chosen? What benefits will result from this work? Cite literature if appropriate. State theories and assumptions used for this lab.

2. **Planned Procedures**
   A description of the experimental plan should follow the introduction. A clear statement of the problems should be included. Use simple sentences and clarify with an outline, flowchart, or numbered list. Do not repeat information contained in the introduction section. The introduction should be a general look backward, while this section should provide a general look forward.

3. **Observations and Data**
   This section is the heart of the laboratory notebook. Raw data should be recorded - the actual measurements and observations at the time of experimentation. Record the data as completely as possible and leave full interpretation of observations for later. Diagrams, descriptions and preliminary calculations may be appropriate. No information should be recorded in this section that was no taken at the time of experimentation. Write in the first person. Write in brief declarative sentences as the work progresses. Do not trust observations to memory; write down what happened when it happened. If an idea or interpretation of an observation is made during this step, document it and expand further in the Discussion section.

4. **Discussion of Results**
   This section provides the opportunity to reflect on what was done and observed during the course of experimentation. Write this section after observations are complete. This section should also contain calculations, charts, graphs, tables, figures, etc. (neat and clearly labeled). Do not use this section to simply restate the data. Use it to understand the data.

5. **Conclusion**
   This section should summarize the goal of your work, what was done, and what was found. A numbered list may be used to organize the conclusions. Looking at it another way, the conclusion should contain all the information that would be put into an abstract describing the work.

This is Your Laboratory Notebook:

1. Sign and date every page to make it a legal document.
2. Use headings for each page and section.
3. Record observations as you go, don't wait.
4. Write Introduction and Planned Procedures ahead of lab time.
5. Keep *Table of Contents* up to date.
6. Be thoughtful in your discussions.
7. Keep in mind: **can someone repeat this experiment with similar results?**