



LaACES Lab Notebooks

Documenting your Work

Colleen H. Fava, LaSPACE Assistant Director
September 2020

2020-2021 LaACES at LSU

What is a Lab Notebook?

Complete record of procedures, data, and thoughts for your own reference, your team members, and to pass on to other researchers.

- Document why experiments were initiated, how they were performed, results, and comments on results
- Place to compile data/charts/photos/ideas
- Place to collect clues, to troubleshoot problems
- Place to observe the whole picture and think

Additional reasons lab notebooks are kept by scientists and engineers

- Legal document, to prove patents
- Defense against accusations of fraud or lawsuits

How will you use this Lab Notebook?

All of the work you do and all the information you are provided each week is *cumulative*.

Proper documentation of processes and results will enable you to transfer information with relative ease to:

- Lab Reports (first up: SkeeterSat Report Presentations)
- Design Documents (PDR, CDR, FRR Written & Oral Presentations)

Additionally, these lab books will be reviewed to ensure an adequate level of work is being accomplished per every hour you are working on your payload.

- Faculty & Staff will review books regularly. If we see little or no evidence of work being accomplished, timesheets may not be approved.

Preparing a New Lab Notebook

Front and Inside Cover

- Name (John Doe), Context (LaACES @ LSU), Beginning Date (September 19, 2019)

Create Table of Contents

- # first 3 pages front and back: ToC-1 → ToC-6

Number all Pages

- Beginning with #1, number all pages following ToC pages

Establish Entry/ToC Format

- Start/End Times, Date, Context, Entry Title
(leave title blank until entry is complete)

What goes in your Lab Notebook

Notes on Lectures

- Enter these notes sparingly. Lecture slides are available for future reference, but some equations or principles will be worth noting. Anything your instructors repeat is likely worth capturing.

Group Activities

- Document the process and procedures of any in-house activities, explain why the experiment/activity is being conducted, document results and annotate explanations for successes and failures.

Independent Research/Project Development

- **EVERYTHING!** All the articles you read, hypotheses you develop, experiments you undertake, expected results, actual results, etc.

Attachments in your Lab Notebook

Use tape or glue to insert crucial materials into your lab book:

- Computer generated data, Photographic data
- Printed graphs
- Datasheet templates
- Assignment Sheets/Instructions
- Notes (or pasted copies) of discussions, conversations, emails, readings related to experiment design or goals
- Bibliographic information for resources
- Annotations for names/locations of larger files

Always write the date and other identifying information on these materials in case they get separated! And be sure to log these insertions into your Table of Contents.

Frequency of Entries in your Lab Notebook

Daily

- Every day that you are working in the lab on exercises or project development, you should use the lab book as a general log. Document questions, observations, preliminary results, **even failures**.

Weekly

- Review the previous week's entries and add notes/clarifications as needed. Ensure continuity and connectivity between entries. Especially crucial in the second half of the project cycle.

Monthly

- Review all entries to-date and add notes/clarifications as needed. Ensure continuity and connectivity throughout the lab book.

Tips for Keeping a Useful Lab Notebook

- Never, ever, remove a page
- Fill consecutive pages
- Cross out unused parts of pages
- Record all info as accurately as possible
- Do NOT omit any result, no matter how odd
- Leave some space between lines and in the margins for future notes and elaborations (**initial & date these**)
- Cross out mistakes lightly (might need to recover these later)
- Write legibly (avoid felt tip pens)
- Put a full date (avoid international date problems) with month spelled out and year included
- Time/Date stamp beginning and end of entry

“Your” Lab book is really “Our” Lab book

Lab Notebooks will remain in the Lab **at all times!**

- Scans and Photocopies are permitted if you want to take information home to review (esp over longer breaks)
- Lab books will be periodically reviewed by faculty/staff (at least every 2 weeks) and must be accessible to your team members when we move into the preliminary design phase.

Lab Notebook Format Review Checklist

Questions to ask when reviewing lab books:

- Black or Blue ballpoint pen used?
- Other colored pens/highlighters used within reason?
- Legible handwriting?
- Table of contents up-to-date?
- Entries fully dated (Oct. 13, 2014, 6 pm–Oct. 13, 2014, 9 pm)?
- Clear headings identifying content areas?
- Written in first person?
- Complete sentences?
- Active verbs and precise descriptions?
- Could the work be followed by another scientist?
- Is the researcher correctly “thinking in the notebook”?
- Is the notebook stored safely & properly when not in use?

Lab Notebook Content Checklist

- Plans: tests to run, research to perform, questions to answer
- Ideas: a notebook is a repository of creativity (You are not limited to the ideas you implement)
- Realities: deviations from the plan; adjustments
- Observations: risk mitigation; procedures eliminated
- Illustrations: sketches, graphs, and photographs
- “Links” to the notebooks of others in your group
- “Links” to instrument logbooks and data on disks
- E-mails from collaborators (tape or paste them in)
- Summaries of papers you have read (full citation)
- Hints and tips you may get from science friends
- Concerns, questions, failures, conundrums, etc

Getting Started with your Lab Notebook

- Enter your name & course info, create a 6 pg ToC, and number the following pages.
- Document all the steps, any obstacles, and ultimate results during each session moving forward.
- Get to the lab at least 15 minutes early and review your lab book: read previous entries to refresh your mind and clean up errors AND transfer any relevant information that was independently obtained outside of the lab.
- Buddy up with at least two other student participants and exchange lab notebooks regularly. Offer each other feedback and tips for improving the notebook.

LaACES Lab Notebook Discussion

Questions? Comments?

Colleen H. Fava, LaSPACE Assistant Director
364 Nicholson Hall / colleenf@lsu.edu / 225-578-8680