**Engineering Notebooks**

**Question & Answer**

**Revision 1.0**

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This document is intended to provide a brief overview of engineering notebooks[[1]](#footnote-1) by using a series of questions and answers. This document does not provide specific details regarding notebook requirements for a particular course. Rather, it is meant to provide the basic principles behind, and structure of, a well-documented engineering notebook. Specific requirements will vary from course to course, and from project to project[[2]](#footnote-2). The information presented here is based on comments from faculty and on the excellent reference book “Writing the Laboratory Notebook”, by Howard M. Kanare, American Chemical Society, Washington D.C. 1985.

Q: What is an engineering notebook?

A: An engineering notebook is a permanent record of a person’s work on a project. It contains all the notes, analysis, and results generated during the project. The engineering notebook is meant to be a permanent document. As such, loose-leaf paper or three-ring binder notebooks are unacceptable. The permanency of the document is important for legal, as well as practical, reasons. Bound pages, initialed and dated in chronological order, provide a strong basis for patents and other legal claims of invention or discovery. From a practical perspective, bound pages prevent the accidental loss of separate pieces of paper. How often has someone jotted down an idea or phone number on a scrap piece of paper, only later to forget where they put it.

Q: Who needs to keep an engineering notebook?

A: Anyone who works on a project should keep an engineering notebook. Handouts and scrap pieces of paper are not appropriate places for recording measurements or sketching schematics. Managers should keep one in order to maintain a record of the project’s progress, from conception to implementation. Similarly engineers working on the project need to keep an accurate record of exactly what they did, how they did it, and the results.

Q: Why should I keep an engineering notebook?

A: An engineering notebook provides a single, permanent repository of information for a given project. In one sense, the engineering notebook can be viewed as a narrative history of a project. In another sense, it can be viewed as a technical manual for the project’s design, analysis, build, and measurement. Both in industry and the academic community, projects typically result in reports, patents, journal articles, or other types of publications. A well-kept engineering notebook will contain all of the information necessary to generate these papers. In addition, the ability of you or someone else to reproduce your results is very important. By keeping a well-documented engineering notebook, you will be able to look back at what you did years from now and see what you did, why you did it, and reproduce the results if necessary.

Q: When am I supposed to use my engineering notebook?

A: You should use your engineering notebook whenever you are working on the project. The more you put into the engineering notebook the more useful it will become. Notes from phone conversations, meetings, and tours are very helpful. Do not expect to remember the person’s name you talked to and the details of your conversation. Write it down. When performing an experiment, record exactly what you did. This includes more than just the measurements. Someone else should be able to generate the same results by simply following what you have written in your engineering notebook.

Q: What am I supposed to put in my engineering notebook?

A: The exact information varies greatly depending on the type of project. A three-hour engineering experiment that verifies Ohm’s Law is vastly different from a three-month project to develop an automatic drive system. There are, however, some basic elements that belong in any engineering notebook. The first several pages should be reserved for a table of contents. The table of contents should contain the date, page number, and title (or short description) for each entry in the engineering notebook. Sections should have distinguishable and descriptive titles. Every page should be dated and initialed by the author at the time of recording. Many engineering notebooks provide spaces for the page number, date, and author initials. Wherever you put them, be consistent.

Other types of information that belong in the engineering notebook can be placed into three different categories: research, analysis, and experiments.

Research include brainstorming, ideas, internet searches, library/book research, discussions, meetings, decisions, datasheets, part selection process, algorithm / commands and functions, standard procedures etc. Remember to record sources (with full bibliography info). Also remember that any website can disappear or change without notice. Record all information you feel is relevant for the completion of the project into your engineering journal incase the website is removed or modified.

The second category includes theory, analysis, and design work. It is important to write down the reasons for the analysis. Are you trying to determine a voltage? Build a bridge? For designs, you must indicate what the exact specifications. Any assumptions that are made should be noted. Equations should be written in a logic order with meaningful comments to guide the reader. Schematics and diagrams should be legible and complete. Drawings made on the computer should be printed out and stapled into the engineering notebook. Be sure to include a description of every drawing.

The third category is build, experimentation and testing. As mentioned previously, you need to include enough detail to accurately duplicate the work at a later time. This includes a complete list of materials and components as well as the type of measurement equipment. When recording the results it is important to also note the method of measurement. How did you measure the speed of the pendulum? The numerical results should be clearly labeled – don’t forget to include units. Data can often times be put into tabular or graphical form. As with drawings, tables and graphs can be produced on the computer, printed out, and stapled into the engineering notebook.

Q: How do I keep a worthwhile engineering notebook?

A: A worthwhile engineering notebook contains the details necessary to not only remember what you did, but to also be able to duplicate your work. A reconstruction of events and activities over the past days or weeks from memory is very unreliable. Many important bits of information can and will be lost over time. To be effective, the engineering notebook must be kept up-to-date at all times. This means taking time during an experiment to write down exactly what you built and how the measurements were made; or during a phone conversation to record the person’s name and phone number; or during a brainstorming session to sketch the various design ideas. The key is in the details. Another important thing to remember is to keep a meaningful table of contents. A few minutes spent in adding entries into the table of contents can save you hours in searching for that one bit of information that you know is somewhere in one of your notebooks. Date and number the pages and include noticeable headers to clearly identify each section.

1. Engineering notebooks are often referred to by other names, including project notebook, engineer’s logbook, and engineering journal. [↑](#footnote-ref-1)
2. The term project is used to refer to any number of different types of activities, including laboratory experiments and research. [↑](#footnote-ref-2)