

University of California, Santa Cruz Computer Engineering Department

The General Practice of Engineering Notes

S. C. Petersen

Engineering students should develop the useful and practical habit of keeping orderly engineering notes as a prelude to acceptable professional practice. In industry such notes are typically bound with numbered pages and often require signatures. Formally, they are legally required in any potentially patentable R&D work. Informally, they are quite valuable to providing us with documentation on any worthy engineering work that we might be engaged in. This means some form of technical notes (whether done in a “lab setting” or not) where a *chronologically traceable record* was kept of what you thought about as journal entries, perhaps scribbling ideas, equations, schematics, taking data etc., that eventually led to a final acceptable engineering solution to a particular problem being worked out. Therefore, all relevant design details, schematics and experimental results will be embedded in them.

Your engineering notes will consist of two notebooks; one bound, the other loose-leaf, as described below.

1. Obtain a suitable bound notebook, preferably “8.5 by 11” but not 5 by 7 (these are too small), and organize it as follows.
 - Your name, course and title must be at the very beginning.
 - Follow with several pages reserved for a *Table of Contents* having entries keyed to page numbers. Here where you will make entries for subsections considered important enough to index. Usually these conveniently refer to significant beginning or completion points for ongoing work, but don’t index every page! Often we want to know where a set of research or design notes resides for future reference, so they should be indicated here.
 - Each succeeding page must have your name, *date*, *topic*, and a *page number*, preferably in the upper right corner.
 - At the very end leave a section (one or two pages) for *tickler items* (i.e. “things to do”) and indexed items not otherwise part of your table of contents; build these entries backwards from the last page. Several pages earlier, reserve space for a *bibliography of references* (datasheets, data books, textbooks etc.).
2. Prepare a loose-leaf binder with sections using numbered tabs to contain supplementary materials, like datasheets, application notes, articles etc. that don’t easily fit into your bound notebook. Each numbered section must begin with a page numbering scheme that can be easily maintained. The following sections are mandatory:
 - **Application Notes.** Number these entries sequentially by unique sets; for example, if the first app note was 25 pages long and the second 10 pages, the first would appear in the index page as “AN-1” and the second as “AN-2”. Modify this to work for you. The idea is to *make it maintainable* in such a way that you can refer to it from written entries in your bound notebook and easily find them.
 - **Datasheets.** Same idea as app notes above; number datasheet sets as D-1, D-2, etc.
 - **Components.** Same idea as app notes above; number entries by sets, beginning with C-1, C-2, etc. This section is primarily used to keep footprints, industrial order sources (like Digikey pages), mechanical drawings for components and the like.

Learning to keep good engineering notes requires discipline, especially if you're one of those people who like to "keep everything in your head". Remember, they are not an end in themselves. They should, however, be thoughtfully complete and adequately support all design, experimental and research work done in this course. Note that schematics, drawings and block diagrams are not sufficient alone. Your thoughts, ideas, conclusions etc. should also be included as "journal" entries in your bound notebook.