ECE 2799 – ELECTRICAL AND COMPUTER ENGINEERING DESIGN (D '05)
REPORT WRITING TIPS

This document is intended to provide tips related to some common report writing pitfalls. This is by no means a complete encapsulation of what is expected, but instead highlights several important issues. Refer to the Grading Rubric and sample reports for further information and guidance. If you have any questions, feel free to ask.

- Use facts and evidence to substantiate your claims. People often think they should tell the reader that their solution is "best". On the contrary, such claims undermine the reader's confidence. Persuasion is an art best accomplished through evidence and careful argument, and the best way to sell one's work is through facts and other evidence, delivered in an understated way. Avoid using words such as "best", "optimal", "exact", etc. unless these words are literally true. Design rarely results in anything that is optimal or probably "best".

- All choices, decisions, statements, etc. MUST BE EXPLAINED! You must justify your choices. We need to understand your thought process and why choices are made. EXPLAIN EVERYTHING.

- Another thing worth mentioning is the importance of flow, transitions, and a logical organization. You must develop a consistent "voice" throughout the report; the reader should not be able to detect where one writer leaves off and another begins. The group is telling a story, not just creating a data dump. Someone needs to integrate the contributions into a coherent whole.

- DO NOT TURN IN A REPORT WITHOUT HAVING PROOFREAD IT FIRST!!! This is a VERY important thing to become used to doing. You should sit quietly, without the game on, without WAAF blaring in the background, without playing fetch with your dog, and read OUT LOUD TO YOURSELF the entire report. I guarantee that you will come across mistakes or sentences that sound awkward. The key is to read it aloud, because it slows you down, preventing you from skipping over things as when reading to yourself in your head.

- Students often use the numbered headings as a substitute for writing and organization. This is one of the most egregious flaws in some of the example reports that have been used in the past. Even in the longest report, it is rarely necessary or appropriate to go beyond 3 levels of structure. Some tips that can help prevent "over-segmentation" of the report are as follows:

- A single paragraph (or single sentence) is not typically enough material to warrant a separately numbered section.
- Never have a single section at any level. That is, there should be no 2.1 unless there's a 2.2.

- As useful as sections, subsections, lists, tables, and figures are, they don't help the reader much unless they are put in context. Things should be explained in text. This means, for example, introducing sections and subsections – there should never be two headings without text in between them. Similarly, a table or figure should be explicitly discussed in the text. Writers should not assume that such things "speak for themselves" or that the main point will be apparent to the reader.

- You should try to focus on making these professional reports; as professional as possible. The fact that it happens to be a HW assignment is a minute detail of only secondary importance. The first, largest heading on your report should not be "Homework #1...".

- A Table of Contents (TOC), Table of Figures (TOF), and, if necessary, Table of Tables (TOT) should be included. These should include the appropriate entries, EXACTLY MATCHING section names, figure captions, etc. Page numbers should be included, without the word "Page" for every entry. The numbers should all be aligned on their right edge. For those of you using Microsoft Word, check out the various tab marks available, especially the one that looks like a backwards "L".

- Page numbers must be appropriately used. Cover pages DO NOT receive a page number. The TOC is (i), the TOF is (ii), and the TOT is (iii). The next page (for HW#1 starting with the Introduction) is page 1 and so on. Only the number should be used without the word "Page", and should be centered on the bottom of each page.

- New MAJOR sections begin on a new page. These sections should be numbered 1, 2, 3, etc. Subsections should be numbered 1.1, 1.2, 1.3, etc.

- ALL SOURCES MUST BE CITED! When you use a figure, table, statistical information, or anything else that is not your own original work, you MUST CITE THE SOURCE! Assignment will not be graded if sources are not appropriately cited. This is very serious because, whether intentional or not, it suggests that ideas, etc. are your own, when in fact they are not.

- A References section must be included at the end of the report. If you do not know how to properly format such a bibliography, the library website would have links to such information.

- Figures should be on a separate line from text, centered, appropriately labeled as Figure X with a caption. References to these figures must be made. Do not simply toss a figure in the report that floats around unmentioned. Also, do not say "the figure below/above/etc." Say, "As can be seen in Figure X,...".

- All text should be justified (vis-à-vis alignment), as opposed to left aligned. Section headings should be left aligned and figures, tables, etc. with their labels and captions should be centered.

- Bulleted lists are a great way of organizing lists of information in an aesthetic fashion. Use them when appropriate.

- Be sure to use consistent spacing between paragraphs and also between section headings and the first paragraph of each section.

- The first line of EVERY paragraph should be indented.

- *OPTIONAL:* There is a nice piece of software called "LaTeX", which is used to professionally typeset books and is very popular when doing large reports. It is a markup language, similar to HTML. Dave highly encourages groups to learn it. It will take a couple of days to get used to, but he's sure you will love it over Microsoft Word's method of thinking it knows what you really want to do. Go to "http://www.miktex.org/" to download a LaTeX package that Dave uses, which is considered one of the best. What you are interested in is using "pdflatex" specifically. Dave has a reference book available for people who require assistance. He had to wait until his MQP to be exposed to this. You have a chance right now to learn this GREAT word processing method. He assures you that the benefits far outweigh any transitional cons.

- Use appendices when appropriate. Any large attachments (such as a contact list) should be attached and labeled Appendix A, Appendix B, etc., with appropriate references made to them in the document (...attached as Appendix A...). The appendices should also appear on the TOC.

- Use 1 or 1 1/2 spacing between lines. Do not use double spacing.

- DO NOT EVER BEGIN A SENTENCE WITH "because" OR "but". This is unacceptable and should not be a new concept.

An example of what NOT to do:

2. Component Research

2.1. LEDs

Many types of LEDs exist (Table 2.1). In order to choose...

A much better example:
(Note that the use of first person and active voice is encouraged.)

2. Component Research

In this section, we present the results of our research for suitable components for our design. First, we will discuss the results of researching light-emitting diodes. Then, we will present findings about high energy-density batteries. Finally, we will discuss some of the integrated circuits that are available for controlling lighting applications.

2.1. LEDs

Our research revealed many types of light-emitting diodes (LEDs). Table 2.1 presents a list of LED devices, ordered by price, and indicates the power rating, current rating, and color of each. Our criteria for choosing...