

## **FORMAL RESEARCH REPORT and PRESENTATIONS – Handout 2**

**ROUGH DRAFT OF FORMAL REPORT DUE:** At the beginning of recitation, October 10-12, 2006.

**ROUGH DRAFT LENGTH:** 5 page minimum, 10 page maximum

*You are required to work on your own for this assignment. If you have questions or need assistance, please ask Dr. Callen, Ms. Bourgeois, or your recitation instructor.*

### **Overview of Assignment**

This is the second handout regarding the formal research report and presentations. You are required to research, evaluate, and report on a technology or product that is strongly related to electrical and/or computer engineering. You have already submitted a research proposal and annotated bibliography, with at least four primary references. The second phase of your project is to develop a rough draft of your final paper.

### **Purpose**

The purpose of this phase is primarily twofold: (1) to encourage development of the central theme of your paper and (2) to document the arranging of your thoughts and associated presentation into the proper format. The emphasis on the rough draft will, therefore, be placed on timeliness of submission, development of the abstract, and format of the references, with corresponding textual citation.

### **Writing the Rough Draft**

As you prepare your final paper and presentation, keep in mind that the primary objective of this assignment is to “research, evaluate, and report on a technology or product that is strongly related to electrical and/or computer engineering.” Although there is no single “correct” approach to this assignment, it is likely that your paper and final presentation will include the following elements: (a) a brief description of the technology or product selected, (b) a statement of the specific issues and/or questions you considered, (c) a summary of the results you obtained from your research into the published literature, and (d) your analysis and discussion of the results, as applied to the issues and/or questions you selected. Your paper should not merely report technical information, but should “take a stance,” “argue a position,” or “prove a point.” The “why” questions surrounding your topic are typically more important than the “what” or “how” of the technology.

You **MUST** include proper citations within the body of the rough draft and a numbered list of references at the end of the paper. For the rough draft, you should have at least five sources referenced in the body of the paper.

Follow the conventions defined in the “Guidelines for Effective Written and Oral Communications” handout. Section 10.8 in the [Mayfield](#) gives a detailed explanation, with examples, of the IEEE citation and documentation system. A link to the [Mayfield](#) is available on the OWL. In general, it is not necessary to quote directly from your sources, but simply to cite them as references. Also, remember to cite the sources for figures, tables, and similar items. You do not need to include a table of contents, list of figures, or similar items.

### **Requirements for the Rough Draft**

The rough draft should be a minimum of five pages, typed, double spaced. 11-point font is suggested. Headings and subheadings are required, as they help the reader navigate the paper and access information quickly.

While organizational strategies may vary based on the topic and the nature of the argument, generally speaking, most papers will be organized into four main parts: Introduction, Description of Technology, Discussion, and Conclusions. While you can view these “parts” as actual headings and sections of the paper, you are NOT limited to this organizational strategy. Your topic and argument will dictate how you organize the information and issues.

### **Introduction**

Recommended length of Introduction for rough draft: 3-5 paragraphs, citations must be included.

This is where you introduce the topic in terms of the “big picture” and provide the reader with the background/history necessary to understand the topic and the issues your paper will address. Toward the end of this section, you should include the paper’s “thesis.” The thesis has three main components, and should be explicitly stated so that the reader clearly understands what the paper examines, argues, and concludes. You can think about the thesis as being the answer to the three sentences below:

“This paper examines/compares/analyzes/studies \_\_\_\_\_”

“This paper argues \_\_\_\_\_”

“This paper concludes \_\_\_\_\_”

### **Description of Technology/Process/Product**

Recommended length for this section of the rough draft: 1 1/2-2 pages of text, citations must be included.

This section is where you explain “what” the technology is and “how” it works. This section of the paper is necessarily technically detailed and is where the engineering and math behind the technology is presented. If you are doing a comparison, this section will lay out the technical details of both or all technologies/applications/products being compared.

For the purpose of the rough draft, you can choose to outline this section instead of writing full paragraphs and sentences. The outline MUST be organized as a proper outline (using headings, subheadings and numbering, lettering, or bulleting of subtopics). The outline must contain enough detail so that the reader understands the technical information being presented. You can write full sentences or long and/or short phrases. However, one or two word bullets will not be sufficient. You must cite your sources.

### **Discussion**

Recommended length for this section of the rough draft: 2-3 pages of text, citations must be included.

This is where you begin “joining the conversation” and building and supporting your argument. In the previous section, you answered the first component of the three-part thesis, “This paper examines...” In this section, you are addressing the second component, “This paper argues...” The defining characteristic of this section is the inclusion of a variety of sources that “speak” to the issues you are addressing and arguing. What are people saying about the topic? What are the pros and cons, the advantages and disadvantages? By providing multiple view points (author A says X, while author B says Y), you enable your reader to understand the complexities of the topic rather than presenting a flat, biased, one-dimensional look at the issues.

Citing sources also works as “back up” or support for the argument you are making. If you agree with author A, be ready to explain why his/her position (and by extension your own opinion on the issue) is more effective/sound/convincing.

### **Conclusions**

Recommended length for this section of the rough draft: 2-3 paragraphs.

This section is the logical extension of the Discussion section, because here you tell the reader what can be concluded based on the findings you presented above. It’s not enough to argue that X is more effective in a certain application than Y. Now you have to analyze the implications of this argument. What are the tradeoffs? What obstacles must be overcome before X replaces Y? What is the future of this technology, product, process, application?

The Conclusions section is much, much more than a “summary” of your paper. It is where you come full circle and think critically about what you examined and argued.

## Report Grading

The rough draft is worth 5% of your overall grade in ECE 4000. Your rough draft will be graded on the following elements:

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| <b>Timeliness</b> | (20 pts) Rough draft turned in at start of recitation, Oct. 10-12. Penalty of 5 points per day, or part thereof, late. |
| <b>Content</b>    | (40 pts) Definition of final paper. Statement of thesis. The conclusion (s) is not necessary at this time.             |
| <b>Writing</b>    | (15 pts) Organization, clarity, and correctness (grammar, spelling, punctuation, etc.) of your writing.                |
| <b>References</b> | (25 pts) References in standard form. References cited in text.  |