

To: ENGR 199 Students

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cc: Elizabeth Thompson
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Subject: Writing Technical Memos – Structure and Content

Writing technical memos is an important skill for your courses here at IPFW and for your future career. The exact format of a memo is fairly flexible, but there are general standards that are helpful. This memo outlines some basic conventions for the structure and content of memos reporting on a design task, a technical analysis or a laboratory project.

Summary

Your basic memo will consist of a header, four major sections plus references and attachments as necessary. These four major sections are the purpose, summary, discussion and closing. The purpose and summary should be on the first page.

Some key issues to consider when preparing a memo:

1. The memo should begin with a header that includes *To*, *From*, *Date*, *cc* (copies), and *Subject* as exemplified in this memo. A unique reference number is sometimes included.
2. The first page should begin with a statement of *Purpose*. This statement can be written in terms of the purpose of the work and/or written in terms of the purpose of the memo. In most cases, I prefer the former.
3. The rest of the first page should be a brief *Summary* including the “bottom line.” In an engineering memo, this is often the key conclusion and recommendation of the work. In most cases, this should focus on what action you would like your reader to take.
4. Subsequent pages include a detailed *Discussion* of the subject followed by a *Closing* section that presents all action items in detail. For an engineering memo, this closing is often the detailed statement of conclusions and recommendations.
5. When needed, a *References* section may be included.
6. *Attachments* (or appendices) are also included when needed. This section should begin with a list of the attachments.
7. Write the *Purpose*, *Discussion* and *Closing* sections first and then write the summary based on them.
8. Back up material must be carefully organized and presented. Simply stapling a sheaf of pages to the back of the first page is not acceptable.
9. As with all writing, you must consider your audience when writing a memo. What do they expect? How do they prefer material to be presented? Some audiences will prefer an outline format and others a narrative presentation. Unless otherwise instructed, your primary audience for memos is your fellow students.

Please carefully review these guidelines. You will be expected to follow them in all technical memos for this course.

Discussion:

Your memo must include appropriate content and be in a professional format. Below is an outline of the typical sections of the memo and their content.

Header

This memo is in standard format. Note that the header contains:

1. To: the name or names of the author of this work
2. From: the name or names of the primary recipients. This is usually the people who will act on this work or who requested it.
3. cc: name or names of other people who need to receive a copy (usually for their information). The “cc” is an archaic reference to carbon copies.
4. Date: the date of issue. Spell out the date.
5. Subject: A brief but specific statement of the memo’s topic. It should be unique.

We attempt to be egalitarian in addressing memos. It is most common in U.S. industry to simply use names, no titles (no Mr., Ms., Dr., etc.). If titles are used, all names should be presented with similar titles. If you use Dr. when addressing a memo to your instructor, you must refer to yourself and your classmates as Mr. or Ms. Always check the spelling of all names which you use. Sign your initials by your name on the original copy.

Purpose

In the first paragraph of the memo you should explain the purpose of the work you are describing or the purpose of this particular memo. Consider answering the reporter’s standard questions: Who? What? When? Where? How? This section may have the section title, “*Purpose*” or “*Objective*”, or may be presented in the first paragraph without title.

Summary

The *Summary* should provide a synopsis of the entire work with a focus on the meaning of this work and the action required as a result of this work. It includes a brief description of what methods were used, what information or results were collected, and what conclusions and recommendations were drawn from this information. Make sure all aspects relate to the subject of the current memo.

The *Purpose* and *Summary* should fit on the first page of the memo. For design memos these two sections will almost always take the entire first page.

Discussion

The discussion section of the memo provides a complete description of what the author has accomplished. In many cases this section will be longer than the cover sheet. Write this section first. Break it into clearly marked sections for the convenience of the reader.

Some possible subsections for the *Discussion* portion of the memo are:

- Background - What is known from previous work? What are the detailed objectives and why are they needed?
- Theory - What are the key equations that apply to the study? (Please use an equation editor.) What are the variables in the equation? What are the constants? What data was taken? Which parameters are fit to the data?

- Methodology - How was this study conducted? What were the experimental or analytical procedures used? What data were collected? How were the data treated? Figures of any experimental apparatus are included when appropriate
- Results - What were the results? Result section generally centers on figures or tables and their explanation. Sample calculations can be attached. Such calculations should show complete unit analysis for all variables. Computer calculations should be fully documented. Note: just including a raw computer output is **never** adequate.
- Alternatives – What alternative ways of meeting the purpose were developed? What are their relative strengths and weaknesses? When might one of these be considered over the main solution or solutions proposed?

In most cases you will not use the title “Discussion” for this section. Instead use In many cases you may use the appropriate headings from this list. The most common problem in the *Discussion* is that the author is not concise. However, this section must be complete while being concise.

Close

Your closing section should focus on what should result from this memo. A summary of your entire memo is not necessary (you did that on the first page). For engineering memos this portion will most often be complete Conclusions and Recommendations sections. The actual title “Close” is rarely used.

A *Conclusions* section consists of a list of the key conclusions which you drew from this work. Are there any generalizations that can be deduced or inferred from the facts presented? What do the facts mean to the project? Most often these are presented as separate numbered sentences. Be clear and specific with each conclusion.

A *Recommendations* section consists of a list of actions which should be taken as a result of this work. How should the presented information be used? What next step is needed and why? The most common error is that recommendations are not specific enough. Your recommendations must be specific enough implement. You are often looking for ways to improve what is currently being done. “Improve” may mean make cheaper, faster, more reliable, easier, more appropriate, safer etc.

In some informative memos, such as this one, a closing section may not be necessary.

References

If reference is made to other publications the detailed information should be included here. References are used to provide direction to additional information and to give credit to others whose work has been incorporated in this memo.

Attachments

Refer to all attachments in the body of the memo. If they are not worth commenting on in your text, they are not worth attaching. It is helpful to include a list of attachments. Common attachments are graphs, tables, computer programs or program output, list of variables and meanings (particularly if computer output is also attached), statistical output, calculations to illustrate unit cancellation or other calculation details, and detailed experimental procedures.