

Senior Engineering Design Proposal Format

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Introduction

The following document is intended to give students in ENGR 4412/4422 Senior Engineering Design guidance in preparing project proposals for the course. This is by no means the only format that a proposal might take – since all possible worthwhile projects may not be anticipated – but a basic outline that many proposals will likely take and a list of items that are required.

The basic outline is as follows:

Table One Typical sections included and inclusion requirements for the project proposal.		
Section	Required Part	Typical Page Length*
1. Front Material	Always	≥ 2
2. Introduction	Always	≤ 1
3. Background	Always	≥ 3
4. Project Description	Yes	≥ 4
5. References	Yes	≤ 1
6. Budget	Yes	≤ 1
7. Figures/Tables	Not always	> 1
8. Appendices	Project Committee Form	> 1
*Page length assumes double-spacing.		

Note that the sections should be numbered in some fashion (Roman or arabic numerals are acceptable). Sub-sections do not necessarily need to be numbered as there should not be that many sub-sections.

Front Material Section

The proposal should include a cover page and a table of contents. It may be necessary for some proposals with a significant number of figures or tables with a list of figures and tables as well. The cover page should state the following information:

1. Name of the proposed project.
2. Name(s) of team member(s).
3. Date submitted.
4. The following statement:

*Submitted to the Faculty of the Department of Physics and Engineering of
the University of Central Oklahoma*

In Partial Fulfillment of the Requirements for the Degree

**BACHELOR OF SCIENCE OF ENGINEERING PHYSICS/BIOMEDICAL
ENGINEERING**

Please only use the degree name of your actual degree.

5. The words “Approved by” followed by the signatures of the Faculty Project Director, other committee members, and of each team member.

Please follow the example cover page in Appendix A of this document.

A Table of Contents should also be included. This can be one page with page numbers shown for major sections in the proposal.

The cover page should not be numbered. The table of contents should be numbered, but most documents of this kind use lower case roman numerals to denote pages prior to the start of actual proposal (i.e. the *Introduction* section). The page numbering for the front material should start with the cover page, but the page number itself should not be displayed on the cover page.

Sometimes other sections may be placed here before the start of the proposal itself: abstract, acknowledgments, preface, etc. Most of these are really more appropriate on the final project report.

The *Introduction* Section

The introduction should include be about one paragraph that includes at least the following information:

1. A broad statement of the proposed project – including a set of broad objectives (there should not be too many).
2. A statement of why this project is being undertaken (e.g. no one else has tried to solve a particular problem this particular way).
3. A statement of who will be involved – the students and committee members.
4. A statement of where and how the project will be completed.
5. A statement that includes the total cost of the project.

The words “a statement” above could be interpreted as meaning one sentence on each, however a creative writer may incorporate more than one item in a sentence of the introduction. It cannot be stressed enough that the introduction should be brief and only introduce the reader to the problem and the proposed solution. Additional pieces of information (i.e. who is involved) are necessary as documentation of the project.

The length of the *Introduction* section is typically about one page double-spaced with a 10-12 point font.

The *Background* Section

This section is intended to familiarize the reader with any background materials that are pertinent to the proposed project. This could include any of the following:

1. Basic formulas used in the area of the project. If a formula is of an applied nature one should state the assumptions made and the governing equation(s) from which this formula is derived.
2. Engineering or physics concepts that are critical to understanding existing designs in the area of the project or the proposed design.
3. Descriptions of existing solutions closely related to the project area (do not include the proposed solution – this goes in the *Project Description* section).
4. Figures, tables, or diagrams that are associated with the project area that either need to be referred to in the *Project Description* section or are vital to understanding the project area. Note if these items are voluminous – more than a couple of pages - then they are best put into a special section called *Figures/Tables*.

In this section it is really important to observe some style guidelines for equations, figures, and tables. Another document given to you called **Engineering Report Format** contains some useful information on numbering and caption styles -be sure and look at it.

The *Project Description* Section

This section should contain at the very least a narrative description to your solution of the problem to be solved and documentation of why the proposed solution should be expected to work. This section is similar to a section present in a final project report entitled *Methodology*. The primary difference here is that the project has not begun, so really the methodology described is really a proposed one.

Since this the focus of the project is to be design, one should place strong emphasis on the major design constraints that will be considered. The project should involve engineering standards and realistic constraints that include most of the following considerations: economic, environmental, sustainability, manufacturability, ethical, health and safety, social, and political.

This section will probably take the most space of any section in the report.

A time-line that covers the period from the date of the report to the end of the following semester should be included. There is no particular format for the time-line, but it needs to include milestones for the project, and dates that these milestones are expected to be passed. Super fine detail here is not the goal, but a picture of the broad effort of the project over the next two semesters is critical.

The *References* Section

This is a succinct section that should contain all references from the preceding sections of the proposal. Please see the **Engineering Report Format** document on the proper citation form (including inter-net sources).

The *Budget* Section

This section requires a *complete* estimated budget for the project. It is possible that the Physics and Engineering Department will not be supplying all of the necessary funds for the project. Discussions must be held with the course instructor, faculty project director, and potentially others to secure funding sources. The budget should clearly identify the source of funding for the project.

The budget should itemize required equipment and supplies and include the following pieces of information:

Make
Model
Description
Quantity
Quoted Price
Source of Quoted Price
When Needed
Priority
Total Budget Amount

It might be best to make a table that contains this information.

The *Figures/Tables* Section

A project team may or may not need this section. If several figures, tables, or other illustrations are required, then this section is the place. If plots of data or other scientific graphs are included it is best not to put more than two (2) on one sheet. These types of plots should be as large as possible with the highest resolution possible. If drawings or graphs need to be larger than the sheet size used for the proposal, then larger sheets may be used: fold them neatly and make sure they take up only the space of a standard sheet. If color is used make sure that all official copies of the proposal are in color.

Make sure and follow guidelines for figures and tables that are discussed in the **Engineering Report Format** document.

The *Appendices* Section

The most important function of this section is to include the signed original of the project committee form. Appendices are basically things that need to be included but do not fit into any other section of the proposal. If you have taken minutes of your team meetings - copies of those notes should be included. Copies of pages that have been added to your project notebook should be included.

Any item necessary to document the proposed project and your preparation of the proposal should probably be included.

Appendix A Sample Cover Page for the Project Proposal

(NAME OF PROJECT)

by

(NAMES OF TEAM MEMBERS)

Submitted to the Faculty of the Department of Physics and Engineering of
the University of Central Oklahoma
In Partial Fulfillment of the Requirements for the Degree

BACHELOR OF SCIENCE OF ENGINEERING PHYSICS/BIOMEDICAL
ENGINEERING

(date)

Approved by

(name), Faculty Project Director

(name), Committee Member

(name), Team Member

(name), Team Member