Overview

The primary goal of the thesis proposal is to answer several questions about the work a student plans to complete. These questions include:

- What is the hypothesis?
- Why is the proposed work interesting or important?
- How will your thesis research address the stated hypothesis?

The proposal is written after consultation with your major professor and advisory committee, review of the pertinent literature, and possibly completion of some preliminary experiments. The length of the proposal will be approximately 5-10 pages, excluding figures and references. The proposal should be well organized (see suggested outline below), and carefully written with complete sentences and fully developed paragraphs. References may be done in any format consistent with current civil engineering literature; the CEE department recommends that you follow the ASCE journal standards and the SDSM&T “Thesis and Dissertation Writing Instructions” available on the SDSM&T Graduate Education Office web page.

Much of the proposal may be used directly in your thesis, therefore writing a well-crafted proposal serves two purposes – planning your study and completing your final document.

The SDSM&T CEE department defines a thesis as follows:

A master’s thesis describes independent research activity that includes a clear statement of a hypothesis or proposition, a comprehensive review of relevant literature, collection and analysis of data and scholarly evidence, and critical examination of the hypothesis or proposition in light of the data and evidence. The thesis describes the study and results in clear and effective English and conforms to the standards of the SDSM&T Graduate Education Office.

Students may find the David Holtom and Elizabeth Fisher’s (2000) *Enjoy Writing your Science Thesis or Dissertation!* published by Imperial College Press (ISBN: 1860942075) very helpful. There are also a number of style guides available at the Devereaux Library.
SCHEDULE FOR COMPLETION OF THE THESIS PROPOSAL

The written thesis proposal is required prior to the completion of 18 credits of coursework (not including thesis credits) to be applied toward degree requirements. The written proposal must be submitted to the major professor and advisory committee a minimum of one week before oral presentation to the advisory committee and interested members of the CEE community in a public forum (such as the CEE seminar series).

SUGGESTED PROPOSAL CONTENTS

Abstract:
The abstract is a concisely written summary of the project (less than a page in length) that includes the hypothesis statement, a brief discussion of background information, the scope and objectives of the proposed work, methods to be used, expected results, and the potential significance of the study.

Introduction:
The introduction begins with a general discussion of the topic area and then a statement of your specific hypothesis. The significance of the question(s) to be addressed and the impact the proposed work will have on these questions should be addressed. A short statement about how the rest of the proposal is organized is sometimes included in this section.

Scope:
This section describes what work will be done (and sometimes more importantly, what will not be done). The goals and the objectives of the work to be performed may also be described in this section.

Background Section:
In this section, the background theory and information needed to solve your problem are presented. This section demonstrates to your major professor and advisory committee that you fully understand the subject matter and are competent to undertake the proposed study. Writing this section also helps you solidify your understanding of the underlying principles and theories associated with your topic.

Literature Review:
This section provides a review of the literature that gives an overview of the topic and describes the proposed study in the context of what is already known, and what is not known about the topic. This section should include references from the seminal work in the field as well as the most recent research results related to your project. Journal articles will likely be the most common source cited in this section. This section should convince the reader that more research or study is necessary. This e-learning module provides guidance on how to write this section: http://campaign.sdsmt.edu/CEElitReview/story.html
Materials and Methods:
This section describes the materials and experimental/numerical methods that will be used to complete your study, including a complete explanation of the methods of data collection, experimental set-ups, analysis methods, and statistical tools that will be used to analyze the data. A detailed description of all of the major steps of your study, the assumptions you will make, and the limitations of the methods you will use, should be included.

Expected Results:
A detailed discussion of any calculations or experiments you have already completed, as well as what new results are expected from your proposed study are presented in this section. The significance of the proposed work is restated here.

Work Plan/Timetable:
This section includes a timetable predicting the duration of each step in the process of performing the work and writing the thesis, including completion dates for each major step until you graduate. The plan will likely need modification, but establishing a plan from the outset can help identify potential problems and help you manage your time more effectively.

Required Resources:
This section lists the resources needed to complete the thesis or project work (equipment, supplies, etc.) and the potential sources of equipment and funding if not already determined.

References:
References may be done in any format consistent with current civil engineering literature; the CEE department recommends that you follow the ASCE journal standards (see http://www.asce.org/Content.aspx?id=29605 and the SDSM&T “Thesis and Dissertation Writing Instructions” available on the SDSM&T graduate education web page.

Examples: The velocity was 2.3 cm/sec (Jones, 2002), or Jones (1999) found that the velocity was 2.3 cm/sec. If the author is unknown, cite the corporation or agency: The maximum contaminant level for gribbium is 5 mg/l (EPA, 1999). Figures taken from the internet or other sources must also be referenced with the author’s last name (or the organization) and date, and then listed in the bibliography. If an author or organization has two references from the same year, label them (Bazant and Novak, 2000a) and (Bazant and Novak, 2000b). Do not list references that were not cited in the text.

The list of references should be listed alphabetically and formatted as described by ASCE or the SDSM&T guidelines.

Notes about Figures and Tables:
Figures should be clearly drawn, informative, and accompanied by informative captions and incorporated into the text immediately after they are cited. Every figure and table should be referred to by its proper number (for example: “See Figure 1 (or Table 1)” not “See figure (or table) below”). A numbered figure is always capitalized (Figure 1 (or Table 1)”, not “figure 1
(or table 1)”). You may wish to include maps of study areas or schematics of experimental setups as figures in the body of your proposal.

**CRITERIA FOR EVALUATION OF A THESIS PROPOSAL**

Your thesis proposal will be evaluated by your major professor and advisory committee on the basis of:

- Technical merit
- Contextual relevance to existing subject knowledge
- Clarity and conciseness

**FOR MORE INFORMATION**

Talk to your major professor or contact the CEE Departmental Graduate Coordinator.

**ACKNOWLEDGEMENTS**

This document is based on guidelines developed by CJ Northrup at Boise State University.