OVERVIEW

The primary goal of the dissertation 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 significant?
- How will your 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 15 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 web page: http://www.sdsmt.edu/Academics/Graduate-Education/Current-Graduate-Students/.

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

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

A doctoral dissertation 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 dissertation 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.

SUGGESTED DISSERTATION PROPOSAL CONTENTS

Summary (~ 1 page):
The abstract is a concisely written summary of the project 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. The summary also states the student’s original contributions to the body of work.
Introduction (~ 1-2 pages):
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. The expected significance of the work should be stated. 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. A clear and concise description of the student’s proposed original contributions is presented here.

Background Section (~1-2 pages):
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 (~ 3 pages):
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.

Materials and Methods (~5 pages):
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/numerical 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 (~1-2 pages):
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. The potential for extension to future work is also presented 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 dissertation, 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.

**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 and the SDSM&T “Thesis and Dissertation Writing Instructions” available on the SDSM&T graduate education web page: [http://www.sdsmt.edu/Academics/Graduate-Education/Current-Graduate-Students/](http://www.sdsmt.edu/Academics/Graduate-Education/Current-Graduate-Students/). The list of references should be listed alphabetically and formatted as described by ASCE or the SDSM&T guidelines.

**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. Again, refer to SDSM&T “Thesis and Dissertation Writing Instructions” for details.

**Evaluation Criteria**
Your proposal will be evaluated by your major professor and advisory committee considering:

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

**Acknowledgements**
This document is based on guidelines developed by CJ Northrup at Boise State University and the SDSM&T Nanoscience and Nanoengineering Program Handbook.