

Graduate Education Thesis & Dissertation Writing Workshop

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Maribeth Price, Dean of Graduate Education

Part I: Guidance on writing your thesis or dissertation

The Office of Graduate Education

C 2201

- Maribeth Price
 - Dean of Graduate Education
- Rachel Howard
 - Admissions, applications, assistantships
- Trudy Severson
 - Student progress, POS processing, degree audits, thesis/dissertation processing



What is a research degree?

- **READ** journals to find a question that hasn't been answered or a problem that hasn't been solved
- **DEFINE** a question and methods to answer it
- **DO** the research
- **WRITE** up the answer
- **DEFEND** it publically
- **PUBLISH** it

Who is responsible?

YOU

- However, many others can and will help:
 - Your Advisor/Major Professor
 - Your Program's Graduate Coordinator
 - Your Committee
 - Your Department
 - The Office of Graduate Education(Rachel and Trudy are extraordinarily helpful and knowledgeable.)
- Placing the onus, and “ownership” on you is very much to your benefit—the product is YOURS
- Outstanding training for workplace projects

The process

Where to start, how to proceed

Steps

Where do I start?

- Define a topic area and establish committee
- Review the literature
- Develop and refine research question
- Develop and refine methods
- Collect and analyze data
- Write up the results
- Get approval of document from advisor
- Get approval from committee
- Defend
- Final edits

Process is not as
linear as it appears!

Define a topic area

Many ways to start

- What do you want to be an expert in?
- What skills/knowledge do you want to gain?
- What professional areas interest you?
- What do you think will help you find a job?
- What can your advisor give you funding for?

Ideally, the topic excites and interest you. You will be spending a lot of time on it—it helps if it enjoyable.

Establish a Graduate Committee

- **Purpose:** to guide your coursework selection and research activities
- **Master's committee**
 - Major professor (has at least a master's degree)
 - Graduate Division Representative
 - At least one additional member
- **Dissertation committee**
 - Major professor (must have a PhD)
 - Graduate Division Representative
 - At least three additional members

Who can be on a committee?

- Major professors and Grad Div Reps must be full-time Mines faculty.
- Grad Division Rep must be from a different department/program*
- All committee members must have a minimum of a BS degree.
- Better not to overload committee
 - More members = harder scheduling

* Not on faculty list for interdisciplinary programs

Off-campus committee members

Considerations

- At least 3 members must be full-time Mines faculty
- Larger committees must have a majority of Mines full-time faculty
- Students should defend 1-2 weeks earlier to allow time for signatures to be mailed

Role of the major professor

- Guide your coursework
- Assist you in choosing a committee
- Assist you in developing research problem
- Guide your research
- Review the thesis/dissertation content and format for adherence to Grad Ed requirements
- Chair the committee for exams/defense; manage committee disagreements
- Mentor your development as a research professional

Role of the Graduate Division Rep

- Represent the broad concerns of the Office of Graduate Education and the University with respect to high standards of graduate education and scholarly performance,
- Assure that all procedures are carried out fairly and according to the guidelines of the Office of Graduate Education,
- Participate in conducting final examinations and provide an outcome report to the Office of Graduate Education immediately following the final exam,
- Assist in the resolution of committee disputes.

Role of the committee members

- To assist the major professor and Grad Div Rep in guiding and evaluating you
- To attend and evaluate your performance on exams and the defense
- To provide additional expertise to the research, if appropriate
- To review the quality of the work performed
- To verify that the final thesis/dissertation is an acceptable document in term of technical quality and written English

Review the literature

Everything you can get your hands on

- Learn to use search engines to find journal articles, and the library to get them
- Get a bibliography program such as EndNote
- Read, read, read, every week
- Critically review each paper
 - What was established? What questions were answered?
 - What new questions arose? What is the next step? Could you do that next step?
- Develop a way to organize what you learn
- **Start writing—the lit review is Chapter 1.**

Refine your question

Is it focused? Is it answerable?

- Use your reading and advisor's guidance to develop a research question or hypothesis
- Compare these proposed research problems:

Physiological impacts on intellectual capacity

The effects of caffeine on student performance

College students obtain higher test scores when they consume caffeine before exams.

Is your question a hypothesis?

Or can it be stated as such?

- A good hypothesis
 - Is a statement that can be proved or disproved
 - Defines a question in concrete, definitive terms
 - Defines the scope of the problem
 - May be a portion of a larger problem
 - Suggests the next steps

Develop and refine methods

Think before you collect

- What data are needed?
 - Preliminary versus primary
- How will it be gathered?
 - Consult literature for standard practices
 - Determine if new practices will be tested?
- How will it be analyzed?
 - What statistical or analytical techniques are needed? The design must support the analysis.
- What problems might arise? How can the risks be mitigated?
- What results are anticipated?

WRITE your methods

Before you start collecting data

- **This is Chapter 2!**
- Write the chapter while defining methods
 - The writing process itself helps clarify thoughts
 - You will better anticipate problems
 - Less likely to fail to collect important data
- Include data analysis methods
 - Visualize statistics or figures needed to prove or disprove the hypothesis
- Consult your statistician beforehand

The Proposal

It is to your benefit to complete it as soon as possible

- Required for PhD students as part of the comprehensive exam
 - Reviews the literature
 - Establishes the research question/hypothesis
 - Defines the methods
 - Shows preliminary data, if any
 - Poses alternatives in case of “unexpected” challenges and outcomes
 - Establishes objectives and deliverables that indicate completion of the project (in essence, the contract between you and your committee).

Recommended for MS students too—discuss with your major professor

Collect and analyze data

- Meet regularly with major professor to discuss results and plan revisions, if needed
- Be precise and methodical
- Keep excellent notes—on everything
 - Pictures, drawings, figures, files
 - Experimental details, dates, equipment
 - Data, “good or “bad”, ALL of it
 - Lab books are more reliable than computer files
 - BACK UP all data and notes weekly
- If ethical, legal, or ownership issues arise, these records could be needed to defend your work.

Get approvals

- Consult major professor and committee frequently through the research process
- “Final” draft should be as good as you can make it
 - Review Grad Office formatting requirements
 - Proofread and edit; get help if you need it
- Major professor must approve it before you send to the committee
- Committee must approve it as defensible before you can defend

Committee approvals:

I have reviewed this thesis/dissertation and verified that it appears to be an acceptable manuscript in terms of technical quality and proper expression and usage in American Standard English. (You are encouraged to provide written comments to the student immediately following your review, so that the student may work on revisions prior to the defense.)

Defend

- The defense is the final exam of your degree
- Typically a 30-60 minute presentation, open to the public,
- Followed by an oral examination by your committee in private
- Additional revisions usually suggested
- Details on this process are in the next section of this workshop

The document

Creating and editing

When do you start writing?

- **In your first semester**
- Your proposal is the **first draft** of the thesis or dissertation!
 - Literature review to define the problem
 - Methods to plan how to tackle it
- Add to the draft as you read more papers, get results, create figures, interpret data.
- Put it all in; you can edit later
- For the final draft, you will be selecting, refining and interpreting what is already there

Dealing with writer's block

- Treat it as an ongoing, evolving document
- Everyone's first draft is imperfect!
- Don't worry about writing well the first time
 - Get your thoughts down
 - Revise and edit later
- Write or edit something every week
- Update new lit review results or method changes as you go
- Make regular backups in at least two places

Revising with your major professor

- Check whether he/she prefers individual chapters as you go, or a single document at the end.
- Check preferred format (paper, Word, PDF)
- Perfect your writing so advisor can focus on your research, not your grammar
- Implement revisions before asking for more revisions!!!

More on the editing process

- There will be MANY iterations between you and your major professor, often more than you anticipated.
 - Lots of bold, red edits will come your way
 - Cultivate a positive attitude in response to constructive criticism.
 - Not all faculty as practiced in commending the positive as they are in finding things to fix...
- Allow sufficient time to complete editing
 - The “last draft” should be given to major professor for approval **8-10 weeks** before the end of the semester you intend to graduate.

Thesis/Dissertation Writing Manual

Graduate Office

- Read this document early on
- Saves time if you format the proposal and early drafts correctly
- LaTeX template available
- Learn to use Word styles
- Use a bibliography program for citations

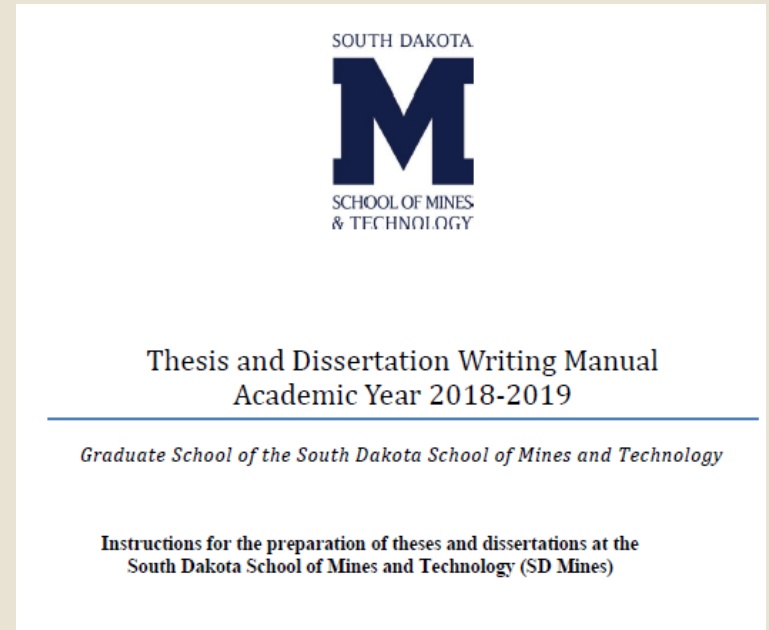


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Two style options

- Traditional Thesis/Dissertation
- Compilation of Journal Articles

No “hybrid” styles are permitted. You must adhere to one or the other of these styles.

Traditional style

The required components of an M.S. thesis or Ph.D. dissertation include the following. ALL components MUST be available for committee review prior to the defense.

- Title Page,
- Abstract,
- Acknowledgements,
- Table of Contents,
- List of Tables,
- List of Figures,
- **Introduction**
- **Theory and/or Literature Search**
- **Methods**
- **Results**
- **Conclusions**
- Bibliography,
- Appendices,
- Vita.

Chapter titles and organization are flexible to accommodate differences in disciplines, but these components should be present and recognizable.

Journal Articles Style

- Title Page,
- Abstract,
- Acknowledgements,
- Table of Contents,
- List* of Tables,
- List* of Figures,
- **Introduction** to the full body of work represented by the articles
- **One or more journal articles,**
- **Conclusions** including a summary of conclusions from the articles and implications from the work as a whole
- Bibliography for references not in the articles,
- Appendices (include documentation for permission to reproduce published/copyrighted articles),
- Vita.

Chapter titles and organization are flexible to accommodate differences in disciplines, but these components should be present and recognizable.

* - Note that the lists of tables & figures refers to tables and figures in the Introduction and the Conclusions.

Previously published material

- If you publish a paper before it is included in the thesis/dissertation, you must obtain permission from the journal
- Applies to accepted or published papers, not submitted ones

Who owns a thesis/dissertation?

- The ownership rights to theses and dissertations created by students is governed by SD [BOR Policy 4:34](#) and the [SD Mines policy IX-2](#).
- Students with questions regarding intellectual property, patents, and inventions are advised to review these policies and contact the SD Mines Office of Research Affairs with questions.

Restricted thesis or dissertation

Restricted-access theses or dissertations are restricted by either:

- (A) Federal Law as (i) *Export Controls*: EAR (Department of Commerce), ITAR (State Department), FAC (Department of Treasury) or (ii) *Antiquities Acts* (some documentation of fossil-bed or Native American sites may need to be controlled, Department of Interior), or
- (B) Intellectual Property concerns, namely proprietary Information (either by contract with a private company, or SDSM&T proprietary information).

Things to know about restricted work

- It shouldn't delay graduation, but it restricts your ability to publish, and may impact your job search.
- Defense of restricted work is attended only by the committee. Library copies are not available until a designated time period is over.
- Restricted work must be declared as such when you apply to defend.
- Discuss whether your work will be restricted with your major professor before you start.

Looking ahead

More info during the next session

- You must stay continuously registered or on leave until you finish
- You must complete the degree in 5 years (MS) or 8 years (PhD)
- The defense process will take longer than you think.
 - Final written draft should be completed by mid-term of your final semester

Questions?

<https://www.sdsmt.edu/Academics/Graduate-Education/Grad-Ed-Forms/>

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Graduate Education Office

South Dakota School of Mines
& Technology
501 East St. Joseph St.
Chemistry Building,
Room 2201
Rapid City, SD 57701-3995

Phone: (605) 355-3468

Fax: (605) 394-1767

[E-mail Graduate Education](mailto:Graduate_Education@sdsm.edu)