Graduate Education
Thesis & Dissertation Writing Workshop
Spring 2023
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

- Leslie Hill
  - Student progress, POS processing, degree audits, thesis/dissertation processing
How you earn 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?

• This is YOUR project
  • Your ideas
  • Your work
  • Your writing
  • Your job to finish

• However, many others will help if you ask:
  • Your Advisor/Major Professor
  • Your Program’s Graduate Coordinator
  • Your Committee
  • Your Department
  • The Office of Graduate Education

• Outstanding training for workplace projects
The process
Where to start, how to proceed
Where do I start?

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

Process is not as linear as it appears!
Define a topic area

- 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 interests you. You will be spending a lot of time on it—it helps if it enjoyable.
Establish a Graduate Committee

- Guides your coursework and research
- Master’s committee (3 or more)
  - Major professor (has at least a master’s degree)*
  - Graduate Division Representative*
  - At least one additional member
- Dissertation committee (5 or more)
  - Major professor (must have a PhD)*
  - Graduate Division Representative*
  - At least three additional members

* Must be full-time Mines faculty

Graduate Division Rep must be from another department/program
All members must have a minimum of a BS degree
Off-campus members OK...
... but committees must have at least three and/or a majority of full-times Mines faculty
Committee roles

• Major professor
  • Guide student’s coursework
  • Assist student in choosing a committee
  • Assist student in developing research problem
  • Guide student’s research and progress
  • Mentor student’s development as a research professional

• Graduate Division Representative
  • Uphold Graduate Education and University scholarly standards
  • Assure that procedures are correctly and fairly applied
  • Participate in examinations and provide outcome reports
  • Assist in the resolution of committee disputes or student concerns.

• Members
  • Assist student to complete research
  • Assist major professor in guiding student as needed
  • Evaluate thesis for technical and written quality
Review the literature

• 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.
Your research question

• Use your reading and advisor’s guidance to develop a research question or hypothesis
  • A good research question can be clearly answered yes or no
  • A good hypothesis is a statement that can be proved or disproved
• Both
  • Define a problem in concrete, definitive terms
  • Define the scope of the problem
  • May be a portion of a larger problem
  • Help you clearly see what to do next
Refine your question

• Is your research question focused? Is it answerable?
• 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.
Plan methods in detail

• What form of caffeine?
• How long before exams?
• What is your control?
• Does student height, weight, or gender matter?
• How is performance measured?
Develop and refine methods

• 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

• 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

Widely used in industry and academia
Required for MS students
Part of the PhD Comprehensive Exam

• A proposal describes the aim, scope, and method, and deliverables for the work
  • 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 for the project (in essence, the contract between you and your committee).
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.
Write the thesis

- Revise literature review and methods if needed
- Add results, discussion, conclusions
- Write an abstract
- Check the formatting
- Polish the writing
Get approvals

• 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.)
• The defense is your “final exam”
• Typically a 30-60 minute presentation, open to the public,
• Followed by an oral examination by your committee in private
• **Revisions** usually suggested
• Details on this process are in the next section of this workshop
How to minimize revisions

• Ask for feedback on early chapters
• Consult with the committee as you work
  • Discuss initial results and get suggestions
  • Explore interpretation and conclusions
• Learn to write well and/or edit well
• Expect at least one round of revisions from your major professor before your committee sees the document
The document
Creating and editing
When do you start writing?

• **In your first semester**

• Your proposal is a **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 at first
  • 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 feedback!!!
Stay determined

- 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 are as practiced in commending the positive as they are in finding things to fix...

- Allow sufficient time to complete final version
  - The “defense draft” should be given to major professor for approval **8-10 weeks** before the end of the semester you intend to graduate.
Thesis/Dissertation styles

**Traditional style**
- 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.

**Journal 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 of all references,
- 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.

- 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
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*

(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
  • Does delay publication
  • May impact your job search.

• Defense attended only by the committee

• Library copies embargoed for defined period

• Restricted work must be declared as such when you schedule the defense.

• 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 within 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
Suggested Writing Resources

• Purdue University [Online Writing Lab (OWL)](https://owl.purdue.edu)
• Purdue University [Using Articles](https://www.purdue.edu)
• Grammarist.com [What are Articles?](https://grammarist.com)
• The Punctuation Guide [Punctuation Guide](https://www.thepunctuationguide.com)
• University of Rhode Island [Becoming a Better Writer](https://www.uri.edu)
• University of Arizona [Preparing for Graduate Writing](https://www.arizona.edu)
Most common writing errors at Mines

• Improper use of commas
• No noun after “this” or “these”
• Wordy or confusing style
• Colloquial phrasing
• Missing definite or indefinite articles “The” or “A/An”
Questions?

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

Writing manual and forms are here

Workshop slides are here