

Geophysics PhD Candidates

Frequently Asked Questions

1. Question: How should a student go about choosing his/her committee members?
Answer: A student should propose to the Department's Graduate Advisory Committee (GAC) a committee that fits the requirements outlined in the Graduate Bulletin and is composed of individuals who are likely to be valuable mentors as the student pursues his/her research. It is valuable for Ph.D. committees to have a member from outside CSM who is expert in the proposed field of research, and who can add valuable perspective and peer review from an external vantage point. Every committee should have a healthy heterogeneity that brings a variety of perspectives to the direction of a research project. This also helps to level the playing field and engender uniform standards of quality and performance across the Dept. To this end, a student should avoid proposing a committee composed dominantly of professors from a single research center.
2. Question: Can a masters thesis be substituted for the research project in the qualifying process for Ph.D. candidates?
Answer: An M.S. thesis can be substituted for the research project in the Ph.D. qualifying process if:
 - (a) The thesis is reformatted as a manuscript to be submitted for publication in a peer-reviewed journal
 - (b) A Geophysics faculty member serves as research supervisor for the project
 - (c) The project is defended according to the guidelines for the Ph.D. qualifying process
3. Question: Must the manuscript for the research project in the qualifying process be submitted for publication?
Answer: Yes, the manuscript must be submitted to a leading peer-reviewed journal. When a student defends his/her thesis proposal and outline in the second part of the qualifying process the first question from his/her committee should be whether the manuscript from the research project in the first part of the qualifying process has been submitted for publication, and where.
4. Question: What format is expected for the thesis proposal and thesis outline.
Answer: The thesis proposal should follow a format required by a funding agency such as NSF, DOE, or a company in industry. Regardless of the format, elements essential for every proposal include, but are not limited to:
 - (a) Statement of the research question
 - (b) Review of previous accomplishments related to this research question
 - (c) Bibliography of important papers published in this research area
 - (d) Explanation of why is this research topic important
 - (e) Outline of approach that will be used to solve the question
 - (f) Timeline for key steps in the research
 - (g) Budget

5. Question: Do Geophysics faculty members who are not on a student's thesis committee participate in the committee deliberations at the end of a student defense of thesis or defense of qualifying exam?
Answer: Yes, all Geophysics faculty members are invited to stay and participate in the committee's discussion after a defense. However, only members of the thesis committee are allowed to vote.
6. Question: What happens if a student does not pass his/her defense of the research project or defense of thesis proposal in the qualifying exam?
Answer: A student must submit a satisfactory manuscript and present a successful oral defense of the work to pass the first part of the qualifying process. The student must submit a satisfactory written thesis proposal and thesis outline and present a successful oral defense of the proposal to pass the second part of the qualifying process. The student must pass both parts of the qualifying process to be admitted as a candidate for the Ph.D. degree. If the student fails either step in the process, the options are the same as when a student fails the defense of a Ph.D. thesis. These options are spelled out in the Graduate Bulletin.
6. Question: If the research project (Part 1) of the qualifying process must be completed within 18 months after a student begins his/her Ph.D. program at Mines, how do the summer months affect this timing?
Answer: Mines students are encouraged to accept summer jobs or internships. Therefore, many graduate students do not stay on campus and work on their research during the summer months. CSM requires that students complete the entire qualifying process within two calendar years after starting their Ph.D. program. The Geophysics Department has divided the qualifying process into two parts and requires that the first part, the research project, be done in 18 months. In order to accomplish this, a student should begin research in parallel with coursework when he/she starts the Ph.D. program. The research project should be completed by end of the third semester in residence, and defended early in the fourth semester. A student should begin writing his/her thesis proposal and outline by the beginning of his/her fourth semester in residence, and defend the proposal before starting his/her third year (5th semester) in the program.
7. Question: Is the qualifying exam (the "comps") intended to be comprehensive?
Answer: The qualifying process is not comprehensive. Breadth in a student's Ph.D. program is expected to stem from diversity of coursework, including the courses used to satisfy any areas of deficiency noted when one gets accepted to the program. Nonetheless, when defending either the research project (Part 1) or the thesis proposal and outline (Part 2) in the qualifying process, a student should be aware that "an oral presentation and successful defense of this research" includes demonstrating sufficient breadth of knowledge in the field of endeavor.
8. Question: What are the benefits of submitting a collection of papers, properly connected together, in lieu of a traditional Ph.D. thesis?
Answer: The Department of Geophysics allows a Ph.D. student to submit either a traditional thesis, or a collection of papers that have been published or submitted for

publication, to satisfy the thesis requirement. If one does a traditional thesis, it is expected that enroute to completing the work there will be 2-3 papers derived from various chapters and submitted for publication. In this approach, one is usually working under a single supervisor on a single research topic. Alternatively, one can choose to work on a variety of interesting research topics, perhaps under various supervising professors, and write one or more papers on each topic. Some students pursuing this approach will submit 4-5 or more papers for publication by the time they complete their Ph.D. and will gain a greater diversity of research experience in the process.

9. Question: How does one combine a collection of papers on diverse research topics into a Ph.D. thesis?

Answer: Under the supervision of his/her advisor and committee, a Ph.D. student can take a collection of papers deriving from research on several different topics and relate them together with an introductory discussion, a concluding discussion, and some text that provides an appropriate transition from one piece of work to the next.

10. Question: The Graduate Bulletin says students must submit their theses to their committees two weeks prior to their defense. Yet I've heard that the Department of Geophysics really expects a student to distribute the thesis to his/her committee three weeks prior. Which is it?

Answer: Although the Graduate Bulletin allows a student to submit his/her thesis to the committee just two weeks prior to the desired defense date, it is generally unlikely that the student can convene all the committee together on such short notice. A student must give committee members an opportunity to read the thesis to determine whether it is ready for defense *prior* to asking committee members to sign the form scheduling the date and time of the defense. Three weeks or more prior to the desired defense date a student, with the approval of his/her advisor, should distribute the thesis to every committee member and the Dept. Head. Two weeks prior, the student should circulate among the committee and solicit feedback and ask for signatures on the defense scheduling form. At least one week prior to the defense a public notice of the date and time of the defense will be sent out by the Dept.

Note that the qualifying process in the Dept. of Geophysics does require that a student submit his/her manuscript (Part 1) and thesis proposal (Part 2) three weeks prior to the desired defense date.

11. Question: What does it mean when a thesis committee member signs a student's form requesting to schedule a defense at a particular date and time?

Answer: The committee member's signature signifies that the committee member has read the student's thesis and agrees that it is ready to be defended.

12. Question: In describing the makeup of the Ph.D. committee, the Graduate Bulletin stipulates that "the fourth 'additional' committee member must be from outside the home and allied departments or divisions and the minor field if applicable." So who is eligible to serve as the fourth member and how is he/she selected?

Answer: In spite of the wording in the Graduate Bulletin, the experience of the Dept. of Geophysics is that the Dean of Graduate Studies allows the fourth additional

committee member to be selected from departments/divisions that are, in fact, allied to the home department.

13. Question: Where can I get guidance in choosing an adviser and research topic, in planning research, in writing publications, and other hands-on research skills?

Answer: The 1-credit course "The Art of Science" (SYGN501) that is offered in the spring semester by Roel Snieder, covers these topics, and much more. This is a valuable course for developing effecting research habits. For more information visit <http://www.mines.edu/~rsnieder/Teaching.html>