

Written Qualifying Exam

Purpose: A written proposal and its oral defense, prepared and presented by the student by the end of the second year in graduate school.

Topic: The topic chosen may be in the same general area as the student's research interests, but must not be closely related to his/her own research, or any research being conducted in the thesis advisor's laboratory. The student is allowed to consult with the thesis advisor regarding the topic, but the advisor is not allowed to provide any help in preparing for the exam. The proposal must reflect the student's own thinking.

Proposal preparation: The student is expected to read in detail in the area of his/her proposition, and then suggest a well-defined experimental approach to one or more questions and an interpretation of results that may be obtained. The proposal is intended to describe an amount of research that would correspond to a solid Ph.D. thesis after 3 to 4 years research.

Format of written proposal: The format of the proposal should follow the NIH R01 grant format and guidelines and so it should contain:

- **Abstract:** Summarize the background, specific aims, and approaches to be used (about 250-350 words).
- **Specific Aims (1 page):** State broad long-term objectives. Describe concisely and realistically the specific hypothesis to be tested and what the research is intended to accomplish.
- **Background and Significance (~ 1 page):** Summarize the background to the present proposal, critically evaluate existing knowledge, identify gaps the proposal is intended to fill. Justify the importance of the research described by relating the specific aims to the broad long-term objectives.
- **Research Design and Methods (~11 pages):** Describe the research design and procedures to be used to accomplish the specific aims of the project. Include the means by which the data will be collected, analyzed, and interpreted. Describe any new methodology and its advantages over existing methodologies. Discuss potential difficulties and limitations of the proposed procedures and alternative approaches to achieve the aims.
 - Describe details of experiments to be carried out – what procedures will be used, what observations or measurements will be made, what data will be recorded, etc.
 - There should also be some rationale for these experiments (why are you doing these? What do you expect to learn from these experiments? How do these help accomplish the specific aims?)
 - Describe details of analyses to be performed on the data collected from these experiments (not enough to say "We will do a statistical analysis").
 - While a hypothesis is not required, it is strongly recommended as it provides a short concise statement of the major emphasis of the work in a way that is testable and which will help focus the proposal.
- NOTE : Background and Significance plus Research Design and Methods are \leq 12 pages
- NOTE : Preliminary Studies section does not apply for this proposal (NO preliminary data is to be generated for this proposal)
- **Literature Cited:** Provide a complete bibliography of literature cited including authors' names, title of publication, year, journal or book title, volume, and page numbers.

- NOTE: Literature Cited is a separate section that is as long as needed and does not count towards the 12 page limit for Background and Significance and Research Design and Methods.

A written copy of the proposal must be provided to all Committee members at least three weeks prior to the scheduled oral defense of the written proposal.

Oral presentation of the proposal: The proposal is presented to the student's Committee, and the examination generally requires 1 ½ - 2 hrs to complete. This includes the student presentation (about 30-40 min) and questions from the committee members during and after the presentation. The exam will cover the proposal as well as general scientific background.

The student will be evaluated on:

- Quality of the written proposal.
- Understanding of background material.
- Originality of the hypothesis and student's defense of the hypothesis.
- Knowledge of the methodology proposed.
- Overall quality of the presentation.

Committee deliberations: At the conclusion of the examination, the student is excused from the room so that the Committee can discuss the student's performance.

Possible Outcomes:

- **Pass.** The student achieved a high standard of scholarship in the written proposal and oral examination.
- **Conditional pass.** The student must rewrite the proposal or perform some other written task, as defined by the Committee. A deadline will be set.
- **Not pass.** If the Committee votes "not pass" and the majority of the Committee so recommends, the oral exam may be repeated once. Written comments will be provided to help the student understand the areas that were deficient.