

## **PhD Credentials Check and Candidacy Exam**

### **New Timeline and Format Changes**

Following guidance from the School of Graduate Studies and input from the faculty, the department has updated both the timeline and format for the credentials check and candidacy exam. The new rules are in effect as of fall 2022 semester. Below is a summary of these changes

#### **Credentials Check**

- **Timeline** complete by end of 2<sup>nd</sup> year

The student should complete their credentials check by the end of their second year. At that point, they should have worked with their thesis mentor for about one year and familiarized themselves with the scientific background of their research area.

Year 1: Students should choose an advisor/lab to work in during the spring semester and join it on a trial basis over the summer of their first year.

Year 2: Students, in collaboration with their advisor, should select a broad topic to work on and start to read up on it. The student should assemble their advisory/thesis committee (three department members and one external member). However, only the physics/medical physics faculty members of their committee are involved in evaluating the credentials check.

- **Format**

The credentials check consists of a written and an oral portion.

#### Written portion

The student will prepare a brief, written literature review that summarizes the current knowledge and open questions in a selected area of research. The literature review will be prepared in close consultation with the faculty mentor; the faculty mentor will suggest (2-5) research/review articles relevant to the student's research area.

The length of the write-up will be determined in coordination of the student and mentor, but a typical length would be 10 pages, including figures but excluding additional references. All references should be properly formatted and plagiarism needs to be strenuously avoided!

The student will receive one round of input/corrections from their mentor on their initial draft. After that, the student will submit the revised write-up to the directed research section for this student (mentors will have to create an assignment for the student to submit to). The mentor will run the plagiarism check on the write-up and then pass the write-up and summary of the plagiarism check on to the physics members of the student's advisory committee. Baring major flaws, the members will then approve the write-up or request substantial revisions. Overall comments/suggestions related to the write-up will be provided to the student (see "Evaluation" section) in the summary statement following the oral exam.

### Oral portion

Once the committee has approved the write-up, the student will schedule the oral examination. The oral examination will consist of a short presentation (20-30 min) by the student of the content of their write-up. This is followed by a question-and-answer period in which the physics/medical physics faculty will ask questions about the research topic and general physics background of the student's research area.

#### • **Evaluation**

The committee makes a decision about pass or fail based on

- The quality of the student's write-up
- The quality of the oral presentation to the committee
- The ability of the student to answer questions from the committee

The mentor will provide the student with a summary of the committee's feedback on both the written and oral part of the exam. A copy of evaluation criteria to consider is provided on the evaluation sheet shown at the end of this document

Students failing the first attempt are allowed to retake the exam once, the latest in the second semester following their failed attempt (summer semester counts)

### **Candidacy Exam**

#### • **Timeline** complete by end of 4<sup>th</sup> year

Student should complete their candidacy exam by the end of their fourth year. Students should take the candidacy exam before completing the 4<sup>th</sup> year in the program. At that time, they have worked on a specific research project and accumulated significant preliminary data and, potentially, publications to put forth a concise research proposal for their subsequent PhD thesis research.

The candidacy exam will be administered by the full student's thesis committee, including the required external committee member.

#### • **Format**

Just as the credentials check, the candidacy exam consists of a written and an oral portion. Its format remains (mostly) unchanged from its previous version.

### Written proposal

Below are guidelines for the structure and preparation of the candidacy proposal

- Proposal title
- Proposal abstract: clearly and briefly state the problem to be studied and the methods to be used
- Research Proposal
  - A. Length: maximum 10 pages, including graphs and figures, with standard margins on 8 1/2" by 11" paper.
  - B. The Research Proposal reflects your thinking and design of an original research project that is within the scope of a typical Ph.D. thesis. The Research Proposal should be innovative, technically sound, and feasible to complete in a 1-2 year period of time. The outcome of the proposed

research should be new information that can be published in the peer-reviewed literature and that will further knowledge in Applied Physics. The proposal must represent the applicant's own intellectual effort; however, it is expected that the research proposal will be developed in consultation with the student's research adviser to improve a proposal's scientific or technical quality.

C. Key Elements:

- i. Statement of the problem: Write a clear and concise statement describing the subject area of your research and what you hope to accomplish.
- ii. Background and relevance to previous work: Briefly review the relevant literature as it pertains to your stated problem. You can incorporate appropriate elements of your credentials check into this section. You should also discuss any of your own preliminary findings relevant to the proposed future research.
- iii. General methodology: Provide sufficient detail of your plan of work i.e. how your proposed work/experiment will be analyzed and how this analysis will answer the research question you pose.
- iv. New or unusual methods: If your research will include new methods or methods that are not likely to be generally known in the discipline, provide necessary details.
- v. Expected results, significance, and application: Describe the anticipated outcomes and how those would advance knowledge in the field. Provide an overall timeline for completion of the research.

D. Literature cited (may be single-spaced)

Provide citations to all published work that is cited in your proposal.

The student will receive feedback on the draft of their proposal from the mentor. After revisions, the student will submit the revised proposal to the directed research section for this student (mentors will have to create an assignment for the student to submit to) for a plagiarism check. Once the mentor approves the proposal, the student will distribute the proposal to all committee members and allow for at least two weeks time for committee members to review the proposal.

Oral portion

The student will schedule the oral examination for some time after the two-week period following the written proposal submission. The oral examination will consist of an oral presentation (30-45 min) by the student of the proposal. This is followed by a question-and-answer period in which committee members will ask questions about any of the aspects of the research proposal.

• **Evaluation**

The committee makes a decision about pass or fail based on

- The quality of the student's written proposal
- The quality of the oral presentation to the committee
- The ability of the student to answer questions from the committee

The mentor will provide the student with a summary of the committee's feedback on both the written and oral part of the exam. A copy of evaluation criteria to consider is provided on the evaluation sheet shown on the last page of this document.

Students failing the first attempt are allowed to retake the candidacy exam once, the latest in the second semester following their failed attempt (summer semester count

## EVALUATION FORM

*Provide copy of completed form to the student and our program specialist.*

CREDENTIALS CHECK                      PASS                      FAIL                      DATE: \_\_\_\_\_

CANDIDACY EXAM                      PASS                      FAIL                      DATE: \_\_\_\_\_

Student's Name \_\_\_\_\_

Admitted (Spring/Fall) of \_\_\_\_\_

Major Professor \_\_\_\_\_

Committee Members \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_

**Feedback:** The major professor will summarize committee feedback. Comments should (concisely) highlight strengths and weaknesses in write up and presentation. Use additional pages, as needed.

- Write-up:                      clarity of write-up; issues with grammar; proper citations and use of references; use of graphics and figures
- Presentation:                      design of slides; use of graphics and figures; presentation skills; ability to answer questions by the committee.