

**Physics Department**  
**University of Illinois at Urbana-Champaign**

***Ph.D. Preliminary Examination in Physics***

**I. Purpose and Timing of the Ph.D. Preliminary Examination**

A Ph.D. Preliminary Examination is required by the Graduate College. Because the Ph.D. is a research degree the general objective of the Preliminary Exam is to determine the competence of the candidate to conduct research in a selected area. *By action of the Physics Faculty, physics graduate students are required to attempt the Preliminary Examination on or before their fourth term with their research advisor.* This firm deadline (see Consequences and Exceptions below) is designed to speed the time to a Ph.D. degree. It means that a graduate student and advisor must be mindful of the rate of progress and research direction *even in the first year of research.*

The Preliminary Examination is not a certification of a guaranteed successful research project. By its nature, research often takes an unpredictable path. Rather, the intention of the exam is to determine if the candidate is capable of identifying a significant research problem and is ready to conduct research in a specialized area of Physics. It is not necessary to have obtained research results or data prior to the exam, although the student is expected to have developed some of the essential tools and background.

The examination committee usually consists of four faculty members, including the student's research advisor and another professor in his or her area of research. A copy of the Graduate College Examination Policies and Procedures is appended at the end of this document.

**II. Choosing a Prelim Committee and Scheduling the Examination**

*To the Ph.D. Candidate:* If you have worked with a research advisor for a semester and agreed to collaborate towards a thesis topic, make an appointment with the Associate Head for Graduate Programs (227 Loomis). Together you will decide on appropriate committee members for your Preliminary Examination. The Preliminary Examination involves your official proposal of thesis research and must be taken before the end of the fourth semester of enrollment in Physics 597 with a



The prelim committee is charged with ascertaining whether the candidate has a sufficiently broad technical training in undergraduate and graduate courses to successfully carry out the intended Ph.D. work. A committee has been known to suggest or require additional course work, although normally such possibilities are usually anticipated by the candidate and research advisor.

## IV. The Written Prelim Proposal

The student must prepare a brief written proposal on his or her chosen research topic in physics. Typically, this paper describes:

- (a) background material for proposed research area or topic,
- (b) a description of research in progress by the student, and, most importantly,
- (c) a proposal for research with well defined objectives and methodology.

An important function of the examination is to assure that the student is reasonably familiar with prior work in the field of his or her thesis. To this end the candidate must include an appropriate bibliography in the written paper and should be generally familiar with the listed papers.

The choice of material and scope of the prelim paper should be determined in consultation between the student and his or her research advisor. The paper must be typed with 1.5 line spacing and 10-point font or larger, and it must **not exceed 15 pages in length**, including figures and bibliography. This rule will be strictly enforced. **The title page must contain the title of the proposed thesis, an abstract, the name of the student and the advisor, and the approximate date of the exam.** The student must provide copies of the prelim paper to *each member of his or her committee*, to the *physics library*, and to the *secretary* in the Physics Graduate Records Office at least two weeks before the proposed date of the examination.

## V. Procedures for the Oral Examination

Prior to the examination, the committee will review the complete academic record of the student, including,

- (a) breadth of study in undergraduate and graduate physics courses and performance therein, and
- (b) performance on the physics qualifying examination.

Also considered is the student's performance in research leading up to the Preliminary Exam proposal. A principal input to this aspect is the judgment of the faculty research advisor.

In the Preliminary Examination, the student is expected to give a short oral presentation on his or her research area and proposed thesis topic. The presentation, when practiced without interruptions, should not exceed 30 minutes. Committee questions typically lengthen the presentation considerably, and the ensuing discussions usually comprise the main body of the examination.

The candidate should know, and the examination committee should ensure, that the examination is not restricted solely to the details of the candidate's paper. Instead it should range generally over the physics that the committee deems basic to the proposed thesis work.

Considering all aspects of the student's performance, the committee will decide whether the student is qualified to pursue a course of independent study and research as a Ph.D. candidate. Three decisions are available to the committee:

1. The student has passed the examination and is admitted to Ph.D. candidacy;
2. The student has failed the examination and will not be admitted to Ph.D. candidacy;
3. The student has not passed the examination, but it is recommended that he or she have the opportunity to remove deficiencies in areas of study, or to improve his or her performance in research or research-related activity, and apply for re-examination in the following semester.

There is normally only one prelim allowed. In unusual circumstances, a student may petition the Associate Head to be allowed to continue with a new advisor. The petition must spell out the unusual circumstances, making the case for a second chance.

After passing the preliminary examination students are expected to register for Physics 599, Thesis Research, and should no longer register for Physics 597, Individual Study, without permission of the Associate Head for Graduate Programs.

## **VI. Consequences and exceptions for exceeding the 4-semester time limit**

If a graduate student does not take a Prelim exam by the end of the fourth semester with his or her research advisor, the Department will not renew the student's RA or TA appointment in the following semester. In those cases, the appointment will be restarted (without back pay) after the tardy exam has been taken (pass or fail). Graduate student status is not affected by this action. If the student fails the prelim, or the committee defers its decision, an appointment can be continued until the student's status is resolved, usually within a semester. Exceptions to these rules are as follows:

(i) Students signed up for independent research (Physics 597) in their first year in the Department will not be required to take the Prelim within 4 semesters, but they must do so before the end of their 3rd year of graduate study (subject to other exceptions stated below).

(ii) If the advisor is on leave when a student's "Prelim clock" is running down, the prelim paper must still be submitted to the committee (and the Physics Grad Office and Library) by the end of the 4<sup>th</sup> semester of research; the oral exam will be administered as soon as the faculty member returns. Such cases must be approved by the Associate Head prior to the 4<sup>th</sup> semester of research.

(iii) If a student's advisor strongly feels that there is a valid reason for delay of a prelim, then the advisor may submit a formal petition before the second week of the student's 4<sup>th</sup> research semester to the Associate Head, who will consider the case in consultation with the prelim committee, the advisor and the student. To initiate this action, the advisor must obtain the appropriate form from the Physics Graduate Office.

(iv) The Department will be sensitive to illnesses and other extenuating circumstances, but these cases must be brought to the attention of the Physics Grad Office as soon as possible.

(v) The Department continues to support flexibility in choosing an advisor. If a student switches advisors, the "Prelim clock" will begin again in that semester, with the approval of the Associate Head for Graduate Programs.

(vi) In cases where the Examination Committee finds a deficiency during a Prelim exam, the Department will, with the advisor's approval, continue the student's appointment while the issues are being resolved, usually within a semester.

(vii) If an unavoidable scheduling conflict exists with the prelim committee, the Physics Graduate Office must be notified *early in the fourth semester of research*, and the Prelim must be held at the earliest available date. In that case the prelim paper must still be submitted to the committee, the Physics Grad Office and the Physics Library before the end of the fourth semester of research.

## Appendix

### **GRADUATE COLLEGE EXAMINATION POLICIES AND PROCEDURES**

Qualifying examinations are optional at the discretion of the department.

A preliminary examination or some other review of progress toward degree is required at the completion of Stage II of graduate study.

A Final/Dissertation Examination is required for each student submitting a dissertation. The Final/Dissertation Committee is responsible for advising the student's research, ensuring the quality of the dissertation, and conducting a final examination based on the dissertation. The Final/Dissertation Committee should be appointed as early as possible and for as long as necessary to achieve these purposes. However, the final examination must occur within five years of the date of successful completion of the preliminary examination.

Committees should include those faculty members who have the most expertise in the student's research area and should include faculty members from more than one area of specialization. Committees must have a minimum of four members, at least three of whom are members of the Graduate faculty and at least two of which are tenured. In some instances, such as interdisciplinary committees, a committee of five or more members may be appropriate. Methodological, theoretical, and/or thematic diversity should be represented on final/dissertation committees. Such diversity may be achieved by including faculty members from two or more sub disciplines within the unit, other departments, or other campuses. Departments might create "ententes" (for example, History, Anthropology, and English) that routinely exchange outside members.

The chair of the committee must be a member of the Graduate Faculty<sup>1</sup> and may or may not be the thesis adviser, according to department policy.

All voting members of the committee must be present at the final examination or participate in the exam via appropriate electronic communication. Non-voting members need not be present.

A unanimous vote, evidenced by signatures on the Certificate of Result, is required. The Certificate of Committee Approval must be signed by all voting members and may be signed by non-voting members. (Only the thesis director must sign the Certificate of Approval of a master's thesis; other committee members may sign.)

<sup>1</sup> A faculty member who resigns or retires is terminated from membership in the Graduate Faculty unless the unit requests that the faculty member continue for a specified period of time. Those retired or resigned faculty members who continue on the Graduate Faculty without current appointment (zero-, part-, or full time) may serve as a voting member and chair a doctoral examination committee.