UIC Physics Departmental Regulations for Graduate Students

Physics Program Requirements

Master of Science

Minimum Semester Hours Required 32

Thesis/Project/Coursework options Two options: 1) Coursework only or 2) Thesis with coursework.

Coursework At least 20 hours must be at the 500-level, of which no more than 4 hours may be in PHYS 596. The rest must be at the 400-level or above. PHYS 598 (Master’s Thesis Research) credit cannot be applied for the coursework only option.

Required Courses PHYS 501, 502, 511, and 512 (16 hours total)

Comprehensive Examination None

Thesis No more than 8 hours of PHYS 598 can be applied to the degree.

Doctor of Philosophy

Minimum Semester Hours Required 96 beyond the baccalaureate

Coursework At least 36 hours must be in 500-level courses other than PHYS 596 and 599

Required Courses PHYS 501, 502, 511, 512, and 561; five semesters of Graduate Seminar, PHYS 595; and at least one complete sequence chosen from among the following: PHYS 513 and 514 or PHYS 521 and 522 or PHYS 531 and 532 or PHYS 551 and 552 (30 hours required)

Examinations Departmental Qualifying Exam (written), Preliminary Exam (oral with written report), Dissertation (Thesis) Defense

Dissertation Required

Other Requirements Each student must serve as a teaching assistant for at least two semesters
Colloquium Attendance: Students are encouraged to attend regularly Physics Department Colloquium throughout their studies at UIC in order to expand their understanding of modern research areas, to aid in choosing a thesis topic, and to provide perspective on public presentations. Ph.D. students must register and pass PHYS 595 for 5 semesters to fulfill their graduation requirements. A passing grade is obtained by attending at least two-thirds of the colloquia offered within the semester. Please note that a maximum of six credit hours (equivalent to 6 semesters) of PHYS 595 can be applied towards graduation.

Registration for Physics 596 (Individual Study): In order to register for Physics 596, a student must first find a faculty advisor for the course. Together with the faculty advisor, the student must develop a brief written description of topics to be studied or a short research project to be completed. This description must be submitted, within the first week of the term, to the departmental Director of Graduate Studies (DGS) for approval, along with a statement of the number of credit hours desired. Both the student and the proposed faculty advisor must sign the statement. Only grades of satisfactory or unsatisfactory can be assigned for the course.

Credit in Physics 596 will not be granted for any of the following:

a) Study for the Ph.D. qualifying examination;

b) Any course of study which strongly overlaps with regularly offered classroom courses, which the student could have taken before or could take in the near future;

c) A research program that could more appropriately be carried out under Physics 599, i.e., research which could be included in the doctoral dissertation.

Typical Timeline for Ph.D. Students

<table>
<thead>
<tr>
<th>Years 1 &amp; 2</th>
<th>Complete most coursework. Talk with faculty and students to identify a research area for your Ph.D. thesis work.</th>
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</thead>
<tbody>
<tr>
<td>Year 1</td>
<td>January – Qualifying Exam</td>
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<tr>
<td>Year 2</td>
<td>January – second chance at Qualifying Exam, if necessary.</td>
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<tr>
<td>Year 1 or 2</td>
<td>Spring or Summer – start Ph.D. research project after passing Qualifying Exam.</td>
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<tr>
<td>Year 3 or 4</td>
<td>Preliminary Exam</td>
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<tr>
<td>Year 6</td>
<td>Thesis Defense</td>
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Graduate Exams

Ph.D. students are required to pass three graduate exams, in addition to exams administered within academic classes. These include the department Qualifying Exam (written), the Ph.D. (Doctoral) Preliminary Exam (primarily oral), and the Ph.D. (Doctoral) Thesis Defense (oral).

Ph.D. Qualifying Exam: Graduate students in the Physics Ph.D. program must pass a comprehensive Qualifying Exam consisting of separate exams in the areas of Electromagnetism,
Classical Mechanics, Quantum Mechanics, and Thermodynamics/Statistical Mechanics. Topics in Modern Physics (e.g., special relativity and condensed matter physics) are incorporated into the four exams. The problems in these exams are at the level of the more challenging physics problems encountered at the advanced undergraduate level at UIC. Further information on the exam content is available on the Department of Physics web site.

The examination is offered every year in January. The examination may be repeated once, but must be passed no later than January of the student’s second year in residence. This timeline for the Ph.D. program in Physics is unaffected by switching from the Ph.D. program into the Physics M.S. program. In other words, the clock for completing the Qualifying Exam starts upon entering the Ph.D. program and does not stop if the student transfers out of the Ph.D. program into the Physics M.S. program.

If the written exam is failed twice, the faculty exam committee may request that a student take an oral examination to successfully complete the Qualifying Exam. The faculty exam committee will consider, but not necessarily grant, a request from a student for an oral examination. Under special cases of borderline performance on one or two individual exams, the faculty exam committee can approve a conditional pass that will require further action by the student such as completing related coursework at a specified level of performance.

Graduate students who enter UIC in the Physics M.S. program are not required to take the Ph.D. Qualifying Exam. However, if they choose to do so, each attempt will be counted towards the allowed total of two attempts if the student transfers to the Ph.D. program. Upon transfer, the Qualifying Exam must be passed no later than January of the student’s second year in residence in the Ph.D. program.

**Ph.D. Preliminary Exam**: Satisfactory performance is required on an oral examination in the general area of the student’s doctoral thesis research. It is strongly recommended that students take this exam within two years after passing the Ph.D. Qualifying Exam, though it can be taken as late as one year before the Ph.D. Thesis Defense. One week prior to the exam, the student should submit a short written research description outlining his or her thesis work to the Examination Committee. The exam will normally start with a brief oral report by the student on the proposed research, followed by questions from the committee. The student may be asked to retake the exam if the performance is only marginally satisfactory.

The Preliminary Exam committee must consist of 5 members: 3 must be Department of Physics faculty with full membership in the UIC Graduate College Faculty and 2 must be tenured. The committee chair must be a full member of the UIC Graduate College faculty. Choice of one member from outside the Physics Department is encouraged, but not required.

A *Committee Recommendation Form* must be submitted to the Graduate Advisor at least four weeks prior to the Ph.D. (Doctoral) Preliminary Exam. You can link to the fillable pdf at [https://grad.uic.edu/cms/?pid=1000363](https://grad.uic.edu/cms/?pid=1000363).

Please view the Graduate College website for more details regarding Preliminary Examinations [http://grad.uic.edu/cms/?pid=1000347](http://grad.uic.edu/cms/?pid=1000347).
**Ph.D. Thesis Defense:** After writing a Ph.D. dissertation, the student will present and defend it during an oral exam.

The Ph.D. (Doctoral) Thesis Defense committee must consist of 5 members: 3 must be Department of Physics faculty with full membership in the UIC Graduate College Faculty and 2 must be tenured. One member must be from outside the Physics Department. The committee chair must be a full member of the UIC Graduate College faculty.

A *Committee Recommendation Form* must be submitted to the Graduate Advisor at least four weeks prior to the Ph.D. (Doctoral) Thesis Defense. You can link to the fillable pdf at https://grad.uic.edu/cms/?pid=1000363.

**Thesis Research**

You are encouraged to learn as much as you can about various subfields of physics before deciding upon a thesis topic. Start doing this as soon as you enter the graduate program. There are many sources of information on the research being conducted in the Physics Department: group web sites, colloquia and seminar presentations, publications and hallway posters. Talk with group members including faculty, postdocs and graduate students; they always like to chat about their research. Tour their laboratory and learn about active and planned research projects. If you think you might be interested in joining a particular group, talk with the faculty member who leads that group to determine the available opportunities for research. A faculty member can become your formal thesis supervisor once you have passed the Ph.D. Qualifying Exam.

All graduate students who have passed the Ph.D. Qualifying Exam must attempt to obtain at least a provisional thesis advisor before the end of their 2nd year in residence as a Ph.D. student.

For any student who is unable to find a thesis advisor before the deadline given above, applying to any two faculty members in the Physics Department will constitute an attempt to find a thesis advisor. It is the responsibility of each student to inform the department’s Director of Graduate Studies as to how he or she has satisfied this requirement. Failure to do so may result in the loss of all financial aid from the Physics Department. One additional year of financial aid will be provided to those students who attempt but are unable to find a thesis advisor.

Nothing in this rule is to be interpreted as interfering with the right of either the student or the thesis advisor to discontinue their student/advisor relationship. In the event that this relationship is terminated, the student will be given one or two semesters to find a new advisor before becoming ineligible for departmental aid.

**Physics 599 / Physics 598 (Academic credit for Ph.D. and M.S. Thesis research)**

A graduate student may register for no more than a total of 8 semester hours of Physics 599 (Thesis Research) before passing the Ph.D. Qualifying Exam. Credit for Physics 598 (Master’s
Thesis Research) will be counted toward an M.S. degree only if the student has completed and successfully defended an M.S. thesis.

**Off-Campus Ph.D. Thesis Research**

A graduate student can carry out Ph.D. thesis research within a project at another institution (e.g., Argonne National Laboratory) if the following conditions are met.

a) The student must have a Physics Department faculty member with full membership in the Graduate College as his or her thesis advisor. The mutual responsibilities between student and advisor are the same as in the case where the thesis work is performed on campus.

b) The thesis advisor must be an active collaborator in the external research project. It is not sufficient that the advisor be an interested party to this research unless consent of the Director of Graduate Studies is obtained in writing.

c) In each case, prior notification must be given to the Director of Graduate Studies.

The intention of this policy is to insure that Ph.D. work performed off campus is properly supervised academically as a legitimate extension of the UIC Graduate Program in Physics.

**Annual Assessment of Doctoral Students**

Doctoral students will complete an annual assessment form each year that will be submitted to the Director of Graduate Studies (DGS). M.S. students are not required to complete this form. The Graduate College policy on Annual Assessments can be found at http://grad.uic.edu/cms/?pid=1001054.

Each assessment covers the period April 1 to March 31 of a given academic year. Doctoral students will be provided with the self-assessment form no later than March 31 and will have until April 15th to complete it. Research supervisors will complete a related assessment form for each student in the research group. The DGS will prepare a written review of each student’s progress by May 15th, which is then provided to the student together with the advisor's assessment (if any). The students will have an opportunity to discuss their review with the DGS (and with his or her advisor, when appropriate) and submit written feedback.