



DEPARTMENT OF  
PHYSICS

# Graduate Studies Guide

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A Guide for Students and Advisors

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## Foreword

To Our Graduate Students:

This booklet summarizes basic information on regulations, courses, procedures, and policies that affect graduate students in physics. It is prepared by our department to aid you and your advisors in planning your program of graduate study and research.

The statements in this booklet are not binding to the University and are therefore subject to change. An attempt has been made, however, to make this summary as accurate as possible. Some details may be altered from time to time as the UMCP Graduate School revises its procedures, but we expect basic features of programs to remain the same. For further information on University regulations, requirements, and courses please refer to the University of Maryland Graduate Catalog, <http://apps.gradschool.umd.edu/Catalog/policy.php>. This guide supplements the catalog by including detailed information particularly applicable to graduate students in physics.

You have the basic responsibility for planning and completing your program of graduate study and research. Our faculty will do all they can to aid you, but you must keep abreast of requirements and regulations as they affect you. We believe you will find University of Maryland graduate programs quite flexible; at any point where rules cause hardship, a student may petition for a waiver. However, you should consult with your faculty advisor and the Associate Chair for Graduate Education before embarking on any plan that departs from the regulations and recommendations summarized in this booklet.

## Departmental Contacts for Graduate Students

Contact	Position	Contact Info
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### Qualifier Committee

Dr. Ian Appelbaum  
Dr. Nicholas Hadley  
Dr. Adil Hassam

### Graduate Student Committee

Allison Carter  
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\*\*\* All deadlines and forms are given on the [Physics Graduate Program webpage](#) and on the [Graduate School's website](#).\*\*\*

## I. Timelines

### Doctor of Philosophy

Almost all physics graduate students at Maryland are enrolled in the Ph.D. program, which prepares them for careers in teaching and research at the highest levels. This program is very flexible and has a minimum number of required courses to allow students to tailor a program suited to their individual needs. For many students the program can be divided into three phases.

Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Years 7+
<b>Pass Qualifying Exam</b>		<b>Advance to Candidacy</b>		<b>Graduate!</b>		
<b>Recommended First-Year Courses</b> Fall: 601, 604, 622 Spring: 603, 606, 623  <b>Foundations and Frontiers of Physics</b> Non-credit required seminar  <b>Find a Research Group</b>		<b>Electives &amp; Seminars</b> <ul style="list-style-type: none"> <li>• Two electives outside your area of specialization</li> <li>• Two semesters of seminars</li> </ul> <b>Complete Preliminary Research Presentation and Scholarly Paper</b>		<b>Doctoral Dissertation Research</b> Two semesters of 899  <b>Finalize Dissertation Committee Members</b>		

- A period of one to two years of coursework and study for the Qualifying Examination. Passing the Qualifying Examination is the most important hurdle to be completed during this phase. However, it is also a good time to begin looking for a dissertation advisor. The sooner you get involved in research, the sooner you will graduate. Try to find a research position for your first summer as well.
- A transition period, ideally about one year, where most course and other requirements are completed, a dissertation advisor is finalized, support for your studies beyond the first two years is identified, and dissertation research is initiated. This phase ends with admission to candidacy for the Ph.D. degree.
- A period where the student is primarily engaged in dissertation research, culminating in the Ph.D.

### Master of Science

The department offers both a thesis and non-thesis M.S. degree option, with the latter being more popular. Some students receive a M.S. degree en route to the Ph.D., some choose to complete their study at that level even though they are enrolled in the Ph.D. program, and some have the M.S. as their goal.

The M.S. program is somewhat less flexible than the Ph.D. with respect to course requirements but generally requires a demonstration of a mastery of basic graduate level physics and some involvement in research or scholarly activity. Either option can usually be completed in approximately two years of full-time work. The M.S. program is more manageable for part-time students. Detailed requirements for both M.S. options are given in Section III.

## II. Monitoring Progress

The Department and the Graduate School monitor each student's progress at various stages in his or her graduate career. The monitoring program is designed to call attention to problems that may be occurring. Failure to make adequate progress may result in loss of a teaching or research assistantship and dismissal from the graduate program.

### *Grades*

Student grades are monitored by the Department and the Graduate School. The Graduate School puts students on probation if their GPA falls below 3.0 (after having taken 9 credits). The Graduate School notifies students and the Department of consecutive semesters the student is on probation. Listed below are the messages students will get from the Graduate School on their grade reports.

#### **Consecutive Semesters on Probation**

#### **Message**

1	Warning: Your graduate GPA is below 3.0. Please see your advisor.
2	Warning: Your graduate GPA continues below 3.0. You must see your Graduate Director.
3 (or more)	Warning: Your graduate GPA has been below 3.0 for at least 3 consecutive semesters. You will receive a letter from the Graduate School that will explain your options.

### *Additional Pre-Candidacy Requirements*

Ph.D. students who have not attended the Departmental Research Seminar or given their Preliminary Research Presentation within the deadlines will be put on departmental probation and so notified. These students should consult the Associate Chair for Graduate Education.

### *Selection of Dissertation or Thesis Advisor*

A Ph.D. student who has not formally "signed up" with a dissertation advisor within one year of passing the Qualifying Examination must submit a written progress report to the Associate Chair for Graduate Education. A student who does not have a research advisor and who does not submit a satisfactory progress report will be put on probation.

Master's degree students should have chosen a suitable advisor for their thesis (or scholarly paper) within a reasonable time following the Qualifying Examination (non-thesis option) or completion of the core courses (thesis option). Exact time limits are treated on a case-by-case basis.

### III. Requirements

#### Doctor of Philosophy

Deadline	Requirement
Semester 5	Pass the written <a href="#">Qualifying Examination</a>
Semester 2	Complete <a href="#">Foundations and Frontiers of Physics research seminar</a>
One year after selecting a dissertation advisor	Make a satisfactory <a href="#">Preliminary Research Presentation</a>
One year after passing Qualifying Examination	Select a <a href="#">dissertation advisor</a>
Before Semester 8	<a href="#">Advance to candidacy</a> , which also requires: <ul style="list-style-type: none"><li>• Complete <a href="#">Scholarly Paper</a></li><li>• Pass <a href="#">PHYS624 or PHYS625</a> with a B or better (theory students)</li></ul>
Before defense	Pass <a href="#">two advanced courses outside student's field of specialization</a> with a grade of B or better
Before defense	Take at least 2 semesters of <a href="#">seminar courses</a>
Before defense	Take at least 12 credits of dissertation research (PHYS899)
9 years after matriculation	Present and successfully defend an <a href="#">original dissertation</a>

### **The Ph.D. Qualifying Examination**

Students must show competence in basic physics by passing a written Qualifying Examination. In case of marginal performance on the written exam the student may be invited to take an oral examination.

The written Qualifying Examination will consist of two parts: one concentrating on Classical Physics (including Special Relativity) and one concentrating on Quantum Physics. Each part consists of five problems and students are required to answer four out of the five. The problems are generally at the level of the core graduate courses.

Both parts are offered twice a year – once in late August, once in late January – and both parts must be passed, with the following stipulations:

1. A student may take one or both parts at any offering. The student will pass or fail each part attempted separately. Whether or not the student passes depends not only on their performance on the exam, but also, to some extent, on their performance in their coursework.
2. Students are required to make their first official attempt at the written examination within one year after matriculation. (August of their second year for students matriculating in August, January of their second year for students matriculating in January) Students are required to complete all attempts within one year (two additional offerings) of their first attempt (see below for exceptions). Students get a maximum of three official attempts to pass the exam. Once they pass one part, they do not have to re-take that part.
3. The Department also allows each student to do one (and only one) “free try” before their first official attempt. Students who matriculate in August usually do their “free try” in January. The student can attempt either one part or both. If the student passes either part, then they do not have to take that part again. If the student passes both parts, then they have satisfied the Qualifying Examination requirement. On the other hand, if the student fails either one or both parts on the “free try” it does not count against their limit of three official attempts.

Especially well-prepared students who have already taken multiple graduate level courses can contact the Associate Chair for Graduate Education to request permission to take the Qualifying Exam as soon as they matriculate (i.e., in August for students matriculating in August).

4. If a student’s performance on the written exam is marginal (one or both parts) he/she may be granted an oral examination. Oral exams will only be offered in cases where the student is positioned to pass the entire written examination, i.e., both parts. In particular, students who have not yet passed one part of the written examination will not be given an oral examination for marginal performance on the other part. The Oral Exam Committee will determine pass or fail for the entire Qualifying Examination and will consider the student’s overall record in making this judgement.
5. If a student has failed at all allowed attempts at the written examination he/she may petition the Qualifier Committee for an appeal oral examination within two weeks of receiving his/her scores. The Committee will only grant an appeal oral exam in cases where it believes the student’s overall record (including the performance on the written examination) warrants obtaining the additional information the oral examination will provide. If an appeal oral

examination is granted the Qualifier Committee will make the final decision on pass or fail evaluating input from the Oral Exam Committee and the student's overall record.

6. A student admitted to the Physics Ph.D. program with a weak background in undergraduate physics may petition the Associate Chair for Graduate Education to extend his or her deadline. In such a case, the Associate Chair for Graduate Education will set a definite final date by which the first attempt must be made, but the delay may not be longer than a year. The deadline for this student's first try will be the final date set by the Associate Chair for Graduate Education, one year after PHYS622 is first taken, or two years after the student first enrolls in the physics graduate program, whichever comes first.

For bona-fide part-time students, deadlines for the Qualifying Examination are generally extended one year beyond those for normally qualified full-time students. You are classified as full-time according to the way you are originally admitted (as indicated on your application for admission). If you wish to change your classification, you should apply to the Associate Chair of Graduate Education, who, if he/she approves the change in classification, will determine the appropriate time limits for taking the Qualifying Examination and finishing degree work. Note that you must be a full-time student to receive an assistantship.

7. Copies of past exams can be found on the [Physics Qualifying Exam webpage](#).

### **Foundations and Frontiers of Physics Research Seminar**

The department offers a weekly seminar (Foundations and Frontiers of Physics) for graduate students at which faculty will be summarizing the status of research in forefront areas of physics. Students will be notified of the time and location of these seminars. Attendance at (most of) these seminars is required to satisfy this degree requirement, and attendance will be recorded. However, these seminars are intended to be relaxed, interesting, and helpful to students by giving them a broad picture of real physics research.

### **Preliminary Research Presentation**

The purpose of this requirement is to move students into research more quickly and to give students experience in presenting their work in standard "seminar" format. The topic of the presentation is to be agreed on between the student and advisor and would typically be a summary of the status of research in a particular area, a description of research the student has done, or a combination of both. This would also be an appropriate means for the student to propose and defend a thesis topic. Consistent with the goal of training students to give standard seminars, the preferred presentation would be approximately one hour in length before a reasonable audience. Two faculty must approve the presentation at least one of which is a tenure track member of the physics department.

[Preliminary Research Presentation form](#)

[Preliminary Research Presentation Delay form](#)

### **Scholarly Paper**

Scholarly writing ability is defined as the ability to present in a clearly organized paper, with proper scholarly documentation, evidence of original research and/or critical analysis and/or evaluation. The paper must be written independently of and in excess of course requirements. However, special problems and/or independent study courses may be used to complete this paper.

Some examples of an acceptable paper include:

1. a substantial extension of a paper prepared for a graduate-level course or seminar;
2. a survey of the current state of research in a particular field;
3. a careful discussion of your proposed dissertation research;
4. a report on research you have conducted;
5. a published scientific paper.

Often this paper will be the first work done with your advisor after you have passed the Qualifying Examination. The paper will be read and evaluated for both style and content by your advisor and one other faculty member of your choosing, these two being the two faculty members who will approve and sign your application for candidacy. At least one faculty member must be a tenure track member of the physics program, normally the one who will supervise your dissertation research.

### [Scholarly Paper form](#)

#### **Dissertation Advisor**

Students are urged to select a dissertation advisor as early as possible. This should be as soon as possible, certainly within one or two semesters after passing the Qualifying Examination. It is best to line up an advisor, at least tentatively, during your first year.

This advisor must be a "Regular or Associate Member of the Graduate Faculty of the University of Maryland College Park." All College Park Assistant, Associate and Full Professors are eligible, as are some adjunct faculty members and research appointees. An exception to this regulation may be made only if the Chair of the Department of Physics requests, in writing, that the Graduate School accept some other person. Except for very unusual circumstances, this letter of request may be honored only at the beginning of a student's dissertation research.

**If your advisor is not a member of the Physics Program, then you should also have a co-advisor in Physics, who should be kept regularly informed of your research progress.** It is preferable that this Physics advisor be a Regular Member of the Graduate Faculty, so that he or she may chair your final oral committee. Students and advisors wishing to waive this rule should contact the Associate Chair for Graduate Education.

The dissertation advisor will generally provide support for the student through a research assistantship and availability of funds for this purpose is an important consideration. Only in extremely rare cases will students working on their dissertations be supported on teaching assistantships.

## Coursework

A possible program for a well-prepared Ph.D. student is as follows:

Courses involved in the Qualifying Examination (PHYS601, 603, 604, 606, 622, 623)	20 credit hours
Advanced physics courses (not in major specialization)	6 credit hours
Courses in major specialization	9 credit hours
Seminars	2 credit hours
Dissertation research	12 credit hours
Total	49 credit hours

### *Sample First Year Program*

A well-prepared student would generally take the following program the first year:

Fall	Spring
PHYS601 – Theoretical Dynamics	PHYS603 – Statistical Physics
PHYS604 – Mathematical Methods	PHYS606 – Electrodynamics
PHYS622 – Quantum Mechanics I	PHYS623 – Quantum Mechanics II

These courses prepare the student for the Qualifying Examination in August of their second year. Students wishing for a slightly lighter load would audit one course, with PHYS603 being the course most frequently chosen. If a student's background is not sufficient for this program he/she should consult his/her advisor and discuss the program and the Qualifying Examination clock.

### *Calculation of Full-Time Status*

The Graduate School uses a unit system in making calculations to determine full-time or part-time student status. Please note that graduate units are different from credit hours. The number of graduate units per credit hour is calculated in the following manner:

- Courses in the series: 000-399 carry 2 units per credit hour.
- Courses in the series: 400-499 carry 4 units per credit hour.
- Courses in the series: 500-599 carry 5 units per credit hour.
- Courses in the series: 600-897 carry 6 units per credit hour.
- Master's Research course: 799 carries 12 units per credit hour.
- Pre-candidacy Doctoral Research courses: 898 carries 18 units per credit hour.
- Doctoral Dissertation Research: 899 carries 18 units per credit hour. (And students who have advanced to candidacy are normally registered for 6 credit hours of 899, so full-time status is easily satisfied.)

Audited courses do not generate graduate units and cannot be used in calculating full-time or part-time status, but tuition is still charged (!)

- A full assistantship (TA or RA) counts for 24 units
- A half assistantship (TA or RA) counts for 12 units
- A fellowship does not carry any units.

**To be certified as full time, a graduate student must be officially registered for a combination of courses and/or assistantship equivalent to 48 units per semester.**

### ***Course Requirements***

All students doing theoretical research for the Ph.D. degree are required to take a semester of advanced quantum mechanics (either PHYS 624 - Advanced Quantum Mechanics or PHYS 625 - Many-Body Quantum Mechanics.) Other students working for the Ph.D. degree often take one of these courses also.

Note that the number of courses taken will depend upon you and your advisor. If you have exceptional preparation, you may skip some of the courses in the first two categories. Or, if your undergraduate preparation is weak, you may need some advanced undergraduate courses to round out your preparation before undertaking the above program. Also, you may well elect to sample several fields of physics. Consequently, your total credit hours may vary considerably in either direction from the example given above.

Students are reminded that graduate courses are far more demanding than undergraduate courses; about ten credit hours per semester are normally considered a full load.

Concerning the graduate courses offered in physics, these can be divided into three main categories:

1. Core courses in general physics
2. Advanced general interest courses
3. Advanced specialization courses

### ***Core Courses***

The core courses in physics include:

- PHYS601 – Theoretical Dynamics
- PHYS603 – Methods of Statistical Physics
- PHYS604 – Methods of Mathematical Physics
- PHYS606 – Electrodynamics
- PHYS622 – Introduction to Quantum Mechanics I
- PHYS623 – Introduction to Quantum Mechanics II

and one or both of:

- PHYS624 – Advanced Quantum Mechanics
- PHYS625 – Many-Body Quantum Mechanics.

No one of these courses is specifically required, but most are generally taken to provide a thorough background in general physics. Competence in all except PHYS624 and PHYS625 is usually necessary to pass the Ph.D. Qualifying Examination. PHYS601, 603, 604, 606, 622, and 623 therefore constitute a typical first-year schedule for well-prepared students intending to take the Qualifying Examination for a Ph.D. degree in physics.

### ***Advanced Courses***

Advanced courses are generally defined as those outside the "core" graduate courses in a particular department. In Physics this includes those courses described as Advanced General Interest Courses and Advanced Specialization Courses. (Mostly 700- and 800-level physics courses, but also PHYS615 and PHYS675.)

PHYS624 or PHYS625 can also be considered outside the "core" for students not pursuing theoretical research. These two courses must not have a direct bearing on the student's thesis research area, as the intent of the requirement is to broaden a student's education. The ideal courses would be Advanced General Interest Courses in areas completely outside one's thesis area (a plasma course for a condensed matter student, for example).

### *Advanced General Interest Courses*

Advanced general interest (non-specialization courses) include:

PHYS615 – Nonlinear Dynamics of Extended Systems	PHYS741 – Nuclear Physics: Survey
PHYS675 – Theory of Relativity: Survey	PHYS751 – Elementary Particle Physics I: Survey
PHYS704 – Statistical Mechanics	PHYS761 – Plasma Physics I: Survey
PHYS715 – Chaotic Dynamics	PHYS771 – Cosmic Ray Physics: Survey
PHYS731 – Solid State Physics: Survey	

### *Advanced Specialization Courses*

These are offered in every area of current departmental research interest. Examples are PHYS752 and PHYS851 in elementary particle theory, PHYS842 in experimental nuclear physics, and PHYS832 in condensed matter physics. There are also many seminar courses, which feature lectures by visiting scientists; numerous special topics courses are also offered. Students generally concentrate on these after their first full year in the physics program.

### **Admission to Candidacy**

The department requires that you must be admitted to candidacy within four years of your admission to the doctoral program; otherwise, your admitted status will lapse. **You must be admitted to candidacy at least one academic year before you can receive your Ph.D. degree**, and all requirements for the Ph.D. degree must be completed within four years of admission to candidacy.

Once you have been advanced to candidacy, you are required to register in the Graduate School at the beginning of each fall and spring semester. Generally, the Graduate School will automatically register you for 6 credits of PHYS899, (Doctoral Dissertation Research). You do not need to be registered during the summer unless you are going to receive a degree during that summer term. If you are not going to be involved with the university in any way during a fall or spring semester, please consult the Associate Chair for Graduate Education about a leave of absence status.

Note that graduate TAs and RAs must be full-time students, as defined in the Graduate School Catalog.

### *Requirements for Admission to Candidacy*

1. Pass both parts of the [Qualifying Examination](#).
2. Pass [PHYS624](#) or [PHYS625](#) with a grade of B or better (theory students).
3. Complete the [Foundations and Frontiers of Physics research seminar](#).
4. Make a satisfactory [Preliminary Research Presentation](#).
5. Complete a [Scholarly Paper](#).

[Application for Admission to Candidacy form](#)  
[Departmental Requirements for Candidacy form](#)

### **Dissertation and Oral Examination**

A basic requirement for the Ph.D. degree is the completion of a satisfactory dissertation involving significant and original research. This dissertation work must represent independent research under approved faculty supervision and must be of the quality normally required for publication in a recognized research journal. Classified research is not acceptable for dissertation work. See the

section on "[Format and Appearance of Theses and Dissertations](#)" for guidelines on preparing your dissertation.

After you complete your dissertation, a special examination committee will administer your final examination and defense of your dissertation. Standard requirements for the committee are imposed by the University and described in the Graduate Catalog, currently at <http://apps.gradschool.umd.edu/Catalog/policy.php?doctoral-degrees>.

Pay particular attention to the Dean's Representative, and to the requirement that everyone on the committee be a Member of the Graduate Faculty; all tenured and tenure-track faculty are, but only some adjunct faculty are. The Physics Department imposes the following additional requirements:

- At least 3 of the committee members must have faculty-level appointments in the Physics Department (i.e., be listed at <http://umdphysics.umd.edu/people/faculty.html>).
- At least 2 of the members with faculty-level appointments in the Physics Department must each previously have served on at least three dissertation committees for Physics Ph.D. students.
- At least 1 member of the committee must be a current tenured/tenure-track (not adjunct or affiliate or emeritus) member of the Physics Department faculty (i.e., be listed at <http://umdphysics.umd.edu/people/faculty/current.html>) who has previously served on at least three dissertation committees for Physics Ph.D. students.

The dissertation committee chair must be a Regular Member of the Graduate Faculty and would normally be a tenured or tenure-track member of the Physics Department, although a Regular Member from another department may chair if they have been the student's research advisor. If the research advisor is not eligible to chair the committee, he or she may still co-chair, at least informally; in that case the other co-chair must be a tenured/tenure-track faculty member with an appointment in Physics. An Adjunct or Research faculty member can request to formally co-chair the committee for a student they have supervised. Please consult with the Associate Chair if you are unsure whether your proposed committee will satisfy all the requirements.

Note that you must give the dissertation defense committee members a minimum of ten days in which to review your dissertation. Notice of the doctoral defense must be widely published at least five days before the scheduled event. Students are responsible for informing the Physics Graduate Studies Coordinator of the time and place of the defense. Doctoral defenses are open to all Members of the Graduate Faculty of UMCP and to others at the discretion of the oral committee chair.

The oral examination is primarily concerned with the content of your dissertation, but questions on any other subject in physics are considered appropriate.

You should allow a reasonable amount of time between the oral examination and the deadline for graduation for the semester in question, as examining committees frequently require modifications in the dissertation.

[Guide to Graduating – Ph.D.](#)  
[Application for Graduation](#)  
[Nomination of Dissertation Committee form](#)  
[Interim Report of Examining Committee form](#)  
[Electronic Dissertation Publication form](#)

**Exit Surveys**

The Graduate School requires all doctoral graduates to complete [two graduation surveys](#) upon submission of the dissertation. The Physics Department also requires the completion of an [exit survey](#) upon graduation.

## Master of Science

In order to earn a master's degree from the University of Maryland, a student must be in residence for the equivalent of at least two semesters. Under Graduate School regulations, up to six credits of course work taken at other recognized institutions may be applied toward the master's degree, but only when such courses have been taken within five years prior to completion of the student's entire master's program.

There is a five-calendar-year time limit to earn a master's degree. This time limit, measured from the date of the student's first enrollment in Graduate School, applies to both full- and part-time students.

### Master's Degree without Thesis

A candidate in the non-thesis option must:

1. Successfully complete a minimum of 30 credits, exclusive of any registration for research, with at least 18 at the 600-level or above. At least four courses in the [general physics sequence](#) (PHYS601, 603, 604, 606, 622 and 623) must be included, unless other evidence (such as passing the Qualifying Examination with a superior grade) demonstrates that the material has been mastered. In consultation with the student's advising committee, the remaining courses may be selected from specialization courses in physics or from other fields such as astronomy, mathematics, chemistry, engineering, and computer science. Ph.D. research credits (PHYS898 and 899) do not count toward the 30 credits needed for a Master's degree.
2. Present one or more scholarly papers written independent of and in addition to course requirements. These papers may be extensions of papers prepared for graduate-level courses or seminars; special problems and/or independent study courses may be used to complete non-thesis papers. These papers should be written in the final semesters of the student's program; they must be read and evaluated by at least two appropriate faculty members. (For additional information about the scholarly paper, see [Scholarly Paper](#).)
3. Pass a final comprehensive examination testing the depth and breadth of his or her knowledge. This is a written examination and for this purpose the student may select whichever section of the [Ph.D. Qualifying Examination](#) he or she prefers. The chosen section must be passed at the master's level. A student who has passed the entire Ph.D. Qualifying Examination is considered to have met this requirement.
4. Maintain an overall grade point of 3.00 (B) or above.

[Application for Graduation](#)

[Approved Program form](#)

[Certification of Master's Degree without Thesis](#)

### Master's Degree with Thesis

A candidate in the thesis option must:

1. Successfully complete a minimum of 30 credits, with at least 18 at the 600-level or above. At least four courses in the [general physics sequence](#) (PHYS601, 603, 604, 606, 622 and 623) must be included, unless other evidence (such as passing the Qualifying Examination with a superior grade) demonstrates that the material has been mastered. Six credits of thesis research (PHYS 799) are required. (Thesis research normally represents about one-third to

one-half of a full-time student's time for one year.) Usually the thesis involves an original investigation in pure or applied physics and must demonstrate the student's ability to carry out independent research. See the section in this booklet on "Format and Appearance of Thesis and Dissertations" for guidelines on preparing your thesis.

2. Maintain an overall grade point average of 3.00 (B) or above.
3. Pass an oral examination defending his or her thesis and covering all course material.

A report of the thesis research is not normally published before the submission of the thesis to the Graduate School. If you desire to publish a portion of your thesis work before you submit your thesis, you must append the following footnote to your publication:

From a thesis to be submitted to the Graduate School, University of Maryland, by  
\_\_\_\_\_ in partial fulfillment of the requirements for the M.S. Degree in Physics.

[Application for Graduation](#)

[Approved Program form](#)

[Nomination of Thesis Committee form](#)

[Electronic Thesis Publication form](#)

## IV. Assistantships

There are numerous graduate teaching and research assistantships available to graduate students in physics. Entering graduate students are usually awarded teaching assistantships; they aid in recitations and laboratories, help grade homework, quizzes and examinations, confer individually with students in their classes who are having trouble, and perform other departmental duties. All assistants must spend approximately twenty hours per week on their assigned duties. Students interested in teaching as a career can arrange to have a broad variety of teaching experiences during their careers as teaching assistants.

Teaching assistantships are awarded for at most one year at a time. Because their number is limited, competition for them can be considerable. The Assistantship Committee regularly reviews assistants' records for renewal consideration. In addition to satisfactory performance in their teaching responsibilities, assistants are expected to show satisfactory academic progress appropriate to their level of study. During the first year or two of graduate study this is normally measured by course grades, and the assistant wishing a renewal is required to enroll each semester for at least six credits of work leading to his or her degree under the Regular (A through F) grading option. A more advanced student may demonstrate satisfactory progress by passing the Qualifying Examination, or by beginning dissertation research. Failure to show satisfactory progress may result in loss of the assistantship. Likewise, failure to perform the teaching functions satisfactorily may result in loss of the assistantship.

First priority in the assigning of teaching assistantship positions is to new students and others who have not yet passed the Qualifying Examination but are otherwise making satisfactory progress. For students with satisfactory teaching records who have passed the Ph.D. Qualifying Examination, the Department will try to provide a teaching assistantship for one or two semesters, during which it is assumed the student is actively looking for a research advisor. Priority is given to the one student per faculty member that receives that faculty member's endorsement. Assistantships for such students are very limited in number.

Students who have decided upon their fields of research are usually considered for research assistantships. These assistantships are supported by research contracts and are contingent on the availability of research funds. Students on research assistantships generally spend part or all of their research time on their own thesis research.

A limited number of fellowships are available to outstanding students. Students who apply for assistantships will automatically be considered for these fellowships. Well-qualified students are also encouraged to apply directly for the many non-university fellowships sponsored by such agencies as the National Science Foundation.

All full-time physics students with teaching or research assistantships are required to register for two to ten credits each semester (excluding the summer). These credits may include research, seminars, audited and reading courses, or whatever is necessary to reflect accurately your full-time involvement.

### English Requirements for Teaching Assistants

No international graduate student (except as noted below) is to begin teaching assistant classroom responsibilities until he or she undergoes the International Teaching Assistant (ITA) Evaluation by the Maryland English Institute (MEI). All such students must participate in the entire MEI ITA evaluation program, except those from countries in which English is the primary language or if the

student received a minimum subscore of 26 on the Speaking subsection of the TOEFL or a minimum score of 7.0 on the speaking subsection of IELTS. See <http://ter.ps/ITAEvalInfo> for detailed requirements.

If the evaluation so determines, the student must enroll in UMEI005 (Advanced English as a Foreign Language), UMEI006 (English Pronunciation), or UMEI008 (Advanced Oral Communication Skills) as specified by the MEI. Any physics graduate teaching assistant evaluated as needing either UMEI005 or 006 who does not enroll in and attend the required course will lose his or her teaching assistantship. If the course is required for a physics graduate student to serve as a TA, the Physics Department will pay the course tuition for one semester. If the student does not reach adequate proficiency after one semester, tuition for any further English courses will need to be paid by the student.

## V. General Regulations

### Registering for Classes

Graduate students must register for classes each Fall and Spring semester. To register, students must:

1. Refer to the [Schedule of Classes](#) for detailed registration information and deadlines.
2. Complete the [Physics Graduate Student Survey](#).
3. Complete the [Graduate Student Schedule Request form](#) and send it to his/her advisor for approval. The student's advisor should then forward the form to the Graduate Studies Coordinator along with their approval. If the student plans to take courses outside of his/her area of specialization he/she should describe why the course is outside the field of specialization in the email to the advisor.
4. Register on [Testudo](#) once the Graduate Studies Coordinator has removed your registration block. The student may need to contact other departments for permission to register for non-Physics courses (Computer Science, Math, etc.).

### Grades

Courses graded on the Regular Grading option are assigned grades A-F and I (incomplete). A grade of C or less is unsatisfactory and all programs require an average GPA of 3.0 (B) for a degree. Note that a B- is equivalent to a 2.7 and is thus below the minimum. You must also achieve a 3.0 average for admission to candidacy. If you repeat a course only the most recent grade is used in computing your overall average. A grade of I, which is not removed, counts the same as an F.

Research courses and seminars are generally graded S (satisfactory) or U (unsatisfactory). If a standard A-F grade is assigned to PHYS799, 898, or 899, this is NOT included in the GPA calculation.

The Graduate School has a formal probation process for students whose GPA is less than 3.0. This is described in some detail in the [Monitoring Progress](#) section of this document and in the Graduate Catalog.

### Withdrawal and Leaves of Absence

For a leave of absence due to medical reasons, childbearing, adoption, or dependent care, please see the requirements specified by the graduate school at their web site:  
<http://apps.gradschool.umd.edu/Catalog/policy.php?doctoral-degrees>.

For non-medical reasons, there is no formal "Leave of Absence" provided by the Graduate School. If you feel the need to withdraw for a period, consult the Associate Chair for Graduate Education.

### Appeals and Grievances

If a student would like to appeal a decision affecting his or her graduate program the recommended course is as follows:

1. First discuss the matter with the person who made the decision. Many problems can be worked out at this stage.
2. If this fails, consult the Associate Chair for Graduate Education and file a written appeal if desired. The Associate Chair for Graduate Education may make a decision on the issue.

Any decision of the Associate Chair for Graduate Education can be appealed to the full Graduate Committee and many appeals go directly to the Graduate Committee.

3. Should you wish to appeal outside the department you have two choices. You can appeal to the Office of the Dean of the Graduate School or the Dean's Office of the College of CMNS. In either case, you should consult these offices concerning procedures, as these are currently in a state of flux.
4. Issues pertaining to sexual harassment or violations of the Human Relations Code may also be brought before the campus Office of Human Relations.

### **Format and Appearance of Theses and Dissertations**

Students should consult the Graduate School concerning detailed instructions on style, format, physical requirements, copyright and literary rights for theses and dissertations. A copy of these instructions is available from the Graduate Studies Coordinator upon request. It is very important to do this before producing your thesis documents.