

Physics Ph.D. Program Guide

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Content

1. Introduction
2. PhD Student Offices
3. Advising and Mentoring Program
4. Financial Support
5. Physics Doctoral Degree Timeline
6. Course Requirements
7. First Year Physics Courses
8. Graduate School Course Credit Requirements
9. Master's Review
10. Master's Degree options
11. Transition into Research
12. Establishing Research
13. Advanced Courses
14. Breath Course Requirement
15. Doctoral Supervisory Committee
16. The General Examination
17. The Final Examination
18. Monitoring Satisfactory Progress
19. On-Leave Status
20. General Policies of the Physics Department

1. Introduction

This document serves as guide, information resource, and how-to-do lists for Physics graduate students at the University of Washington.

The Physics PhD policies and procedures entail two distinct but entwined sets of rules: policies and rules specific to the Graduate School and rules and policies specific to the Physics Department.

The Graduate school rules and regulations are specified on the Graduate school WEB site.

<https://grad.uw.edu/grad-school-policies>

Those rules are quite inflexible and tend to change slowly over time. This Study Guide might not reflect the most recent changes in the Graduate School rules. The Graduate School states: “*A student must satisfy the requirements for the degree that are in force at the time the degree is to be awarded.*”

The Physics Department rules and regulations are summarized inside the *MyPhys* section of the Physics WEB site. Those WEB pages include links to the various online forms mentioned below.

Make sure to consult the Graduate Program Adviser (GPA) and Graduate Program Coordinator (GPC) to seek additional specific information.

The topics in this Study Guide are ordered not by importance but according to the time line you are likely to encounter them.

2. PhD Student Offices

First-year PhD students are assigned desks on the 2nd floor of the B-wing of the Physics building on both sides of the first-year PhD student lounge. Those offices seat three students each. You use your desk during your entire first-year in our program.

In August, before the start of your second year, the outgoing first-year students disperse and move to offices according to research groups. Experimentalists have desks in research labs. Theorists typically have desks in inner offices on the 4th floor. This relocation process starts in early August and needs to be completed before Labor Day. The GPC is in charge of PhD office assignments. Those of you who do not have a definite research adviser yet at the start of the second year will be assigned a temporal desk on the 1st or 2nd floor.

3. Advising and Mentoring Program

- First-year Academic Faculty Advisors

Every incoming PhD student has a specific academic faculty adviser from the first-year PhD advising committee. You meet regularly with this adviser, mostly for general advice and to discuss specific topics such as graduate courses, general progress, and guidance on selecting and how to make contact with research groups.

During orientation, and again during the Spring quarter, every student completes with the first-year faculty adviser an online report.

It is not unusual for you and your first year faculty adviser to contact the GPA and/or GPC with specific questions. At all times you can consider the GPC as your back-up academic adviser and the GPA as back-up mentor.

- First-year Peer Mentoring Program

The department has an evolving peer mentoring program. First-year students are paired with student mentors, typically second-year or a more advanced student, who volunteer to do this. These peer mentors are in regular contact with the first-year students throughout the year and aim to ease the transition to graduate school by sharing their experiences

and provide support and advice. There is usually one social “tea” each quarter to which all peer mentors and mentees are invited. In addition, mentors meet individually with their mentees once or twice each quarter during the first-year. Details can be found on the Departmental Advising and Mentoring Program web site.

- PhD Advisers

Your first-year Academic Adviser remains your primary faculty adviser until you are established in a specific research group with a PhD Adviser. This hand-over takes place typically during your second-year, sometimes earlier. At all times, the GPC acts as your back-up academic adviser and the GPA as your back-up mentor.

- PhD Faculty Mentor

The department expects you to form your doctoral supervisory committee during or before your third year. Your PhD adviser is the chair of that committee. Besides your PhD adviser, you designate one other member of your committee as your faculty mentor.

The faculty mentor’s role is to assist you with broader issues such as planning career choices. The Faculty mentor is typically not directly involved with your research. Having some distance from your research is often beneficial in this role.

4. Financial Support

- Teaching and Research Assistants

TA’s are employed by the University to assist faculty in their teaching activities. TA assignments include: teaching the undergraduate labs, grade homework and exams, design learning exercises, and meet with students during office hours. Students are required to enroll in a training course for Teaching Assistants in Physics during their first-year as TA.

RA’s are employed by the Department to assist faculty with specified research projects, and are funded through the research grants held by members of the faculty. RA’s are generally expected to be full-time students and to be working on specified research related to the grant. A RA is a direct contract between an individual student and a research grant holding faculty member.

A full time TA/RA appointment represents a 20 hours weekly workload. Course credits, including independent study credits represent the second half of your weekly work/study load.

First year students are typically supported as TA’s, as part of their admission offer. Some entering students receive RA support or a special fellowship.

Beyond the second year, students are typically supported in the form of a RA or a RA/TA combination. It is the responsibility of the student to find a research adviser and research (RA) support.

- The Quarterly TA Assignment Process

Quarterly TA and RA appointments are settled well before the end of the previous quarter. The TA Coordinator sends out a TA/RA questionnaire during the second half of every quarter. You are required and it is crucial for your own benefit to respond to this form. The number of TA positions is limited.

The Department aims to provide financial support for all students making satisfactory progress and almost always has been successful in this, for many years, but financial support cannot be guaranteed because this support is based on research grants and state funds.

The number of TA positions is much more limited during the Summer quarter compared to the three academic year quarters. It is important for all students to seek Summer RA opportunities.

TA performance is monitored quarterly. Unsatisfactory TA performance leads to illegibility for further TA support.

A student beyond the 2nd year, not actively involved in research with an identified faculty advisor is deemed to be making unsatisfactory progress and is typically illegible for further TA support.

Self-funding occurs very seldom and could turn very expensive, in particular when you are not (yet) a WA resident. Out-of state tuition is much more costly than in-state tuition. Loss of health insurance is another issue.

- Enrollment and Tuition

Students accepting TA or RA positions at the University are required to register as full-time graduate students. That is defined as being enrolled at a minimum of 10 credits during each academic year quarter, and at a minimum of 2 credits during the Summer quarter.

TA appointments originate from state funds and include an automatic tuition waiver.

RA appointments are not tuition exempt. The UW charges in-state level tuition to the research grant that funds the RA. Tuition increases with the number of course credits but does not change between 7 and 16 credits. Enrollment of around 12 course credits is typical during the Fall, Winter, and Spring quarters.

- Language Competency Requirements and Examinations

Students from English-speaking countries are presumed to be competent in the English language according to the Graduate School, but students from non-English-speaking countries must pass the English Speak Language (ESL) requirements, unless they enter the UW with a degree from an approved English speaking program.

International students must demonstrate a satisfactory command of English for admission to the program and a higher level for appointment as teaching assistants. These are treated by the UW are two separate issues.

A spoken English proficiency test score above 26 on the speaking portion of the TOEFL, or an equivalent ELS test, is required for Teaching Assistant duties. The details are spelled out on the Graduate School WEB site.

International students with low ELS scores are strongly advised to improve their score between admission and the start of classes in September. Otherwise, required AEP courses need to be taken starting in the Autumn quarter. Tuition for some of those ENG courses is included in the tuition covered by TA and RA appointments, but the direct responsibility of the student.

- Academic Student Employees (ASE)

All TA's and RA's at the university are classified as "Academic Student Employees" (ASE).

Such positions are governed by a contract between the UW and the International Union, United Automobile, Aerospace and Agricultural Implement Workers of America (UAW), AFL-CIO and its Local Union 4121 (UAW). The UW/UAW contract can be reviewed at the UW Labor Relations Web site. An union representative will contact you with information about membership and fees.

Salaries and Promotions

Students entering the Physics PhD program are paid at the “Assistant” level (Teaching Assistant or Research Assistant).

Students receive a promotion to “Associate I” level (Predoctoral Teaching Associate I or Predoctoral Research Associate I) after passing the Master’s Review.

Students receive a promotion to “Associate II” level (Predoctoral Teaching Associate II or Predoctoral Research Associate II) after passing the General Examination.

- Summer Quarter Enrollment

Students are required to enroll every quarter of the academic year (Fall, Winter, Spring) to maintain their status as PhD student according to the Graduate School rules; but the Summer quarter is excluded from this rule. You could choose to go on unpaid leave but more likely will seek a Summer RA or TA.

Do not enroll for more than the required 2 credits minimum during any Summer quarter when holding a Summer RA. More credits leads to higher tuition bills charged to the research grants of your PhD adviser. Consult with the Physics GPA or GPC before you enroll for more than 2 credits.

Summer quarter runs one month shorter than academic year quarters. Summer TA employment is likewise compressed by one month, but the monthly TA pay is increased accordingly to compensate for this.

5. Physics Doctoral Degree Timeline

The Physics Department monitors closely satisfactory progress of all graduate students towards the degree.

- Satisfactory Progress Benchmarks

1. Pass the Master’s Review (MR), as early as the end of the first year, but not later than the end of the second year. Students who fail the MR must leave the PhD program. Flexibility is built into the MR process to accommodate for diverse individual backgrounds. See Section 5 for details.
2. Be established in research with a PhD adviser who agrees to be your thesis adviser no later than the end of the second year.
3. Set-up the PhD Supervisory Committee not later than the end of the third year.
4. Pass the General Exam, typically during the 3rd or 4th year.
5. Aim to complete the PhD thesis and pass the Final Exam in the 6th year.

The average time for completing the Physics PhD is currently slightly under 6 years, with variations of about 1 year on either side, depending on research project details and in

consultation with your PhD adviser and your PhD supervisory committee.

- Annual Activity Report

During Spring quarter, every graduate student is required to complete the online Annual Report Form. This is a multi task event.

The student fills out the first part and identifies the specific student faculty adviser. This is your PhD adviser in later years and your first year faculty adviser initially. Your adviser reads your part and meets with you in person. Followed by adding their comments to the Annual Report. Then, the form bounces back to you. You need to push the agree-button to complete the process. The GPC and GPA read all student Annual Reports.

6. Course Requirements

- Physics Departmental Course Requirements

The Physics Department requires all students to take a set of Core Courses and to satisfy the Breadth Course Requirement, as described below.

In addition, the Department offers a whole range of upper level graduate courses, including special topics courses. All students are presumed to take all courses relevant for their research area and do so in consultation with their PhD adviser.

The Graduate School imposes no restrictions on taking courses anywhere else on campus. Departments might impose restrictions, e.g., to allow only their own PhD students to enroll. An override involves typically contacting the course instructor directly.

-Basic Core Courses and Master's Review

The Basic Core Courses are the subset of required courses linked to the Master's Review: the first two quarters of Electro Magnetism (Autumn and Winter), Phys 513-514; the first two quarters of (Quantum Mechanics (Autumn and Winter), Phys 517-518; the first quarter of (Statistical Mechanics (Autumn), Phys 524; and Classical Mechanics (Spring), Phys 505.

The four Master's Review Exams (MRE) are integrated with the final exams of Ph524 (SM, Autumn), Ph518 (QM, Winter), Ph514 (EM, Winter), and Ph505 (CM, Spring). The QM and EM MRE's incorporate materials of the Fall quarters of these course sequences.

-Advanced Core Courses

The following subset of the first year courses are required but not part of the MR: Phys 528 (Fall), Phys 525 (SM, Winter), Phys 515 (EM, Spring), and Phys 519 (QM, Spring).

-Graduate School Course Requirements

The UW wide graduate course requirements are specified on the Graduate School WEB site. Some of those rules are summarized in section 8. Independent study credits are treated as a repeating separate course, Phys-600 (Phys-800 after the General Exam).

Canonical first-year Course Sequence:

Course (credits)	Title
Autumn Quarter	
Phys 513 (3)	Electromagnetism
Phys 517 (4)	Quantum Mechanics
Phys 524 (4)	Statistical Mechanics
Phys 528 (1)	Introduction to Research
Phys 501-503 (1)	Tutorials in Teaching Physics (For students holding a TA)
Winter Quarter	
Phys 514 (4)	Electromagnetism
Phys 518 (4)	Quantum Mechanics
Phys 525 (3)	Statistical Mechanics
Phys 600 (1)	Independent Study
Phys 501-503 (1)	Tutorials in Teaching Physics (For students holding a TA)
Spring Quarter	
	select 3 from first 4:
Phys 505 (3)	Classical Mechanics
Phys 515 (4)	Electromagnetism
Phys 519 (4)	Quantum Mechanics
Phys 600 (1)	Independent Study
Phys 501-503 (1)	Tutorials in Teaching Physics (For students holding a TA)

7. First Year Physics Courses

During the first year you are mostly preoccupied with taking required Core Courses, passing the Master's Review (MR), and starting the process of finalizing your research area and selecting your PhD adviser.

The canonical first year course sequence is listed in the above table.

The purpose of the required core courses is to provide the knowledge basis common to all Physics PhD's, irrespective of their research area. The first year courses are at a higher

mathematical level and with more detail than undergraduate courses you took already in the same topics. Master's degree programs often do not reach this level either.

Disparities in undergraduate preparation among Physics departments is significant. For that reason some of you will have an easier or harder time with these courses than others, irrespective of your abilities. Our first year graduate curriculum is set up with flexibility to address this.

The canonical first year course sequence listed in the above table applies to students entering the PhD program with a typical undergraduate preparation, i.e., similar our own undergraduate program at the UW, with 300 level undergraduate courses in Quantum Mechanics, Electricity and Magnetism, Classical Mechanics, Statistical Mechanics, Mathematical Physics, and a senior-level survey course.

-Deferring First Year Core Courses.

Entering PhD Students with insufficient undergraduate course preparation typically require more time. It is crucial to identify this early.

One solution is to defer one or more of the first-year required courses and corresponding Master's Review Exams, to give you more time to focus on the remaining courses.

Discuss this first with your first-year faculty adviser during orientation and report this on the online advising form. Next, inform the Graduate Program Coordinator (GPC). All defers of basic core courses need explicit approval of the GPC, to make sure we optimize your individual pathway through our program.

Navigating such alternate pathways can be delicate. For example, some of the deferred course credits might need to be substituted since full enrollment requires 10 credits each quarter. One option is to enroll for a few credits Phys-600 (independent research) to attend the weekly group meetings of a research group of your interest. Not passing the MR in the first year is often compensated by entering research earlier.

You might realize only a few weeks into the Fall quarter that you are overworked and lack undergraduate background. You contact your first year faculty adviser immediately, or the GPA, or the GPC. Adjusting course credits remains relatively easy only during the first few weeks. Do not go through denial. Do not feel bad about it. This does not reflect on your abilities nor on your future success in our PhD program.

-Waiving First Year Core Courses.

Entering PhD students with advanced standing, for example, having taken already some graduate courses as an undergraduate, or entering our program with a master's degree, might want to petition for a waiver of a specific graduate course.

All core course waivers need explicit approval by the Graduate Program Coordinator.

Discuss this with your first-year faculty adviser during orientation and report on the online orientation advising form. A positive response by your first year adviser is followed by you contacting the first year course instructor of that specific course, in person. Who will quiz you on your back ground knowledge of the course materials. Final approval has to be given by the GPC.

Waiving a core course does not exempt you from the corresponding Master's Review Exam.

We typically insist you participate in the midterms of the waived class anyway, to avoid unpleasant surprises later in the year, and to familiarize yourself with the course instructor's exam style, who writes that MRE exam.

8. Graduate School Course Credit Requirements

The Graduate School rules for course grades are posted on their WEB site. Here is a summary of some of the most important aspects.

- Graduate Course Credits

Graduate courses are intended for and ordinarily restricted to students enrolled in the Graduate School and are given numbers from 500 through 800.

Some courses at the 300 and 400 levels are open both to graduates and to upper-division undergraduates. Courses at the 300 level are not included in the calculation of the grade-point average (GPA) and will not apply towards the minimum Graduate School requirement of 18 graded credits for the doctoral degree.

18 graded credits must be taken at the UW. These credits must be satisfied before the General Exam. Transfer credits, e.g., from a master degree at another institution, can not be used for this purpose.

- Course grades

A minimum cumulative GPA of 3.0 is required for graduation. The Registrar records grades below 1.7 as 0.0 and no credit is earned. A minimum of 2.7 is required in each course that counts towards a graduate degree. All course grades below 2.7 are still included in the cumulative GPA.

It is quite difficult for your GPA to recover from any very low course grade. Independent study credits (Phys-600 or Phys-800 after your General Exam) are only counted as CR/NC. Our core graduate courses are graded, but almost all our upper-level courses are CR/NC.

You are able to enroll in almost any course offered on campus. Sometimes the workload of such a course turns out to be too heavy in comparison with your ongoing research efforts. Make sure to withdraw from that class well ahead of the end of quarter to protect your GPA. Auditing is another option.

- Course Withdrawal

It is the students own responsibility to withdraw from a course. You may withdraw via MyUW, or in person at the *Office of the University Registrar*.

- Repeated Courses

Graduate students may repeat any course. Both the first and second grades will be included in the cumulative GPA. Subsequent grades will not be included, but will appear on the permanent record. The number of credits earned in the course will apply towards degree requirements only once.

9. Master's Review

The Master's Review (MR) acts as the Qualifying Exam in our Department. Physics PhD students are required to pass the MR before the start of their third year.

The Exam Committee is chaired by the Graduate Program Coordinator (GPC), with all first year instructors and the Chair of the First Year Advising Committee as members, and includes other faculty for balance between research areas and diversity.

The Exam Committee is charged with organizing the four Masters Review Exams (MRE) and monitors also the general progress of students in the core courses during the year.

The four Master's Review Exams (MRE) are integrated with the final exams of the four corresponding first-year graduate courses: Phys 524 (in the Autumn), Phys 514 and Phys 518 (in Winter), Phys 505 (in Spring).

Each MRE is written by the course instructor and approved by the full Exam Committee. The full Exam Committee evaluates the exam papers after the exam and decides who passes that MRE. The results are reported to the Master's Review Committee.

Passing a MRE is based on that final exam only. Course performance during the quarter is not part of this, but reflected in the course grade.

Students who pass all four MRE's automatically pass the Master's Review. A significant fraction of the first-year graduate students pass the Master Review automatically as early as the start of their first-year Summer Quarter.

Students can retake specific MRE's during their second year.

The Master's Review Committee (MRC) decides who passes the full Master's Review. The MRC consists of Physics Departmental Chair, the Graduate Program Coordinator (GPC), and the Chair of the First Year Advising Committee.

The MRC monitors the progress of all second year graduate students who did not pass the MR yet. This review continues throughout the entire second year if needed. A final decision on passing the MR must be made before the start of the third year.

The Master's Review Committee evaluates student performance in a comprehensive manner. Research potential/achievements, MRE performance and course grades play a central role while all other relevant aspects are considered too.

Students who pass three of the four final exams can pass the Master's Review as early as the end of Fall of their second year based on a strong comprehensive record (typically strong research and strong class grades).

Students who do not pass the Master's Review before the start of their third year are required to leave our PhD Graduate program. They are typically allowed to earn a terminal Master's degree, provided their research warrants this and that their grade point average is above 3.0 or close enough to this Graduate School requirement that it can be raised to a 3.0 within one quarter.

10. Master's Degree Options

There are two options to obtain a Master's Degree in the Physics PhD program.

The first option is to pass the Master's Review (MR). All students passing the MR are eligible to receive their Master's degree provided that the Graduate School course credit and grade point average requirements have been satisfied. You do not receive the Master's degree automatically. Students must explicitly apply for the non-thesis Master's degree on

the Graduate School Master's Degree Request web page. You need to be enrolled during the quarter the degree is awarded.

The second option is a terminal Master's Degree for those who leave the program without passing the Master's Review. You present a write-up, similar to a short Master's level thesis, about your research with a specific Physics Faculty member, and present a seminar type talk about this. This will be reviewed by your faculty adviser and the graduate program coordinator. Your work must be found of sufficient quality AND you must satisfy the Graduate School course credit and grade point average requirements. Students must explicitly apply for the non-thesis Master's degree on the Graduate School Master's Degree Request web page. You need to be enrolled during the quarter the degree is awarded.

- Graduate School Master's Degree Requirements

The course requirement for the Master's degree is 36 credits, 30 of which must be taken at the University of Washington. Course grades below 2.7 do not count towards those 36 credits total but are included by the cumulative grade point average (GPA). A minimum cumulative GPA of 3.0 is required for a graduate degree at the University.

At least 18 credits must be in courses numbered 500 and above. 18 credits must be numerically graded in 500 level courses or department approved 400-level courses. No more than 6 graduate level quarter credits can be transferred from other academic institutions to count towards the 36 credits total.

11. Transition into Research

You are pursuing a PhD because you like its focus on original research accomplishments. Still, the transition from coursework to research can be daunting.

While taking courses you act like a consumer and collector. Course materials are prepackaged in lecture size bites where everything looks smooth and logical and everything seems to make sense and works out well. Textbooks carefully trim away all side-branch complexities.

As a researcher you act like an explorer and creator. You stand at the edge of knowledge and your research efforts on a specific project might, or might not, work out. The discovery path is often rough. Publications seldomly present research results in actual real-time discovery order.

The first year of the PhD program is set-up to ease you into this transition. All first-year students begin the process of exploring research opportunities by taking the Physics 528 course during Autumn quarter. Followed by registering for at least one credit of Physics 600 in Winter quarter, e.g., to attend weekly research group meetings (with no obligation from either side to continue the relationship beyond that quarter).

During Spring quarter you sign-up again for at least one credit 600, or expand your research footprint already, e.g. by a reading course with a theorist, or performing lab work with in an experimental group.

Reporting on your research establishing efforts is an integral part of your required first year Annual Spring Report.

During their first Summer quarter, students expand their research and/or efforts to investigate potential research groups. Most students are established in research, having found their PhD adviser, by the middle of the second year.

Some students benefit from pursuing more research during the second half of their first-year. They can contemplate deferring one or more of the *Advanced Required Core Courses* to the second year and replace them with Physics 600 independent research credits during the first-year. Make sure to seek advise and inform the GPC before doing so.

Deferral of *Basic Required Core classes* and their corresponding MRE's for the sole purpose to pursue earlier research is seldomly a viable option. In special circumstances you can meet with the GPC to petition for an exemption.

Deferral of *Basic Required Core classes* and their corresponding MRE's, based on a need for more time for course work during the first year is different, and leads naturally to expanded Physics 600 enrollment during those quarters. That option needs GPC approval as well.

12. Establishing Research

Every student is expected to find a research adviser before the end of the second year, preferably much sooner, and commence independent PhD research under his or her supervision. A student informs the graduate program coordinator when the research home has been established.

Your first-year faculty adviser remains your main faculty consultation resource until you find your research adviser. You inform the graduate program coordinator when you established your research home.

At this point in time, you also select your Physics faculty mentor, a Physics faculty member different from your research adviser, who can assist and advise you about issues not immediately related to your specific research, such as career goals.

The graduate program coordinator is always available for advice. This becomes important in particular when you find yourself still unsure about your research direction early in the second year or when you need to switch research groups then or even later.

Satisfactory progress requires that your research adviser agrees to supervise your PhD before the end of the second year. Switching research groups during the third year is known to happen, but takes place between PhD advisers who agreed and agree to supervise your PhD.

- Research advisers beyond the Physics Department

Physics graduate students typically select a Physics faculty member or Physics Adjunct faculty member, as their PhD adviser, but you can explore research with faculty elsewhere on campus as alternative. It is strongly advised to consult and inform the PGC and GPA of this immediately.

Such a choice enhances the role of the Physics faculty mentor. The GPC act as de-facto faculty mentor until the student identifies a suitable Faculty Mentor within Physics, in consultation with the GPC. That Physics faculty mentor must be knowledgeable already, or willing to become so, with the research area the student proposes to pursue, not in detail but in a general sense.

The Faculty Mentor represents the bridge with the Physics Department. Discusses the proposed research with both the student and the outside Faculty member at the start of the project. The Faculty Mentor stays in touch with both the student and the adviser and

reports to the GPC on a quarterly bases the student progress as well as the prospects for this research leading to a Physics PhD.

13. Advanced Courses.

Students increase their quarterly number of Phys 600 independent study credits steadily during their second and third year, up to a total of 10 credits maximum.

Students start taking advanced graduate courses on top of those research credits, starting the second year. Advanced courses directly linked to your research have priority over satisfying the breadth course requirement.

Graduate students are expected to take all appropriate advanced courses, in consultation with their research adviser. These courses include seminars and journal clubs dedicated to special topics organized by the specific research group, and also special topics courses that are offered regularly. Students are invited to request and suggest specific special course topics. Contact the GPC for this.

All graduate students are expected to attend the weekly departmental colloquium and also the seminars in their fields of specialization.

Research Area Specific Breadth Courses

Course	Title
Phys 506	Numerical Methods
Phys 507	Group Theory
Phys 511	Topics in Current Physics
Phys 550	Atomic Physics
Phys 554	Nuclear Astro physics
Phys 555	Cosmology, Particle Astrophysics
Phys 557	High Energy Physics
Phys 560	Nuclear Theory
Phys 564	General Relativity
Phys 567	Condensed Matter Physics
Phys 570	Quantum Field Theory

14. Breadth Course Requirement

Students are expected to seek broad knowledge in areas of physics outside their direct research, and encouraged to explore related fields such as mathematics, engineering, biological sciences, and philosophy as well.

The Physics Breadth Course Requirement can be full filled by taking two advanced Physics Graduate course outside your own research area. They need to be Physics courses. You are

encouraged to take courses offered in other Departments on campus as well, but they do not count for this. The Breadth course requirement represents “breadth within Physics”. Consult with the GPC and your PhD adviser on which courses to take towards the breadth requirement.

The advanced courses listed above are taught in a non-specialized manner ensuring accessibility to all graduate students. Some of them are offered only every other year.

15. Doctoral Supervisory Committee

Every Physics PhD student is expected to establish a doctoral supervisory committee within one year of finding the research adviser, when research is well on its way, and not later than the end of the third year.

The Graduate School recommends this be done least four months before the General Examination be scheduled.

The doctoral supervisory committee guides and assists the student in working towards a doctoral degree and is expected to evaluate the student’s performance throughout the program.

The Graduate School lists on their WEB site the specific roles and responsibilities of all members of the supervisory committee; the chair, graduate school representative (GSR), and also the responsibilities of the student.

- PhD Supervisory Committee Composition

The Graduate School WEB site lists the UW wide rules details regarding the composition of doctoral supervisory committees. The Physics Department has adopted the following policy regarding the standard composition of Physics Supervisory Committees:

- The Committee Chair, typically your PhD adviser.
- Another faculty member in the same research field.
- A theorist from the same flavor as your own experimental research, or an experimentalist of the same flavor when you are a theorist.
- A faculty member from another area of Physics (can be a theorist or experimentalist).
- One member, other than your Research Adviser, should be designated as your Faculty Mentor. This can be one of the members listed above or an additional member of the committee.
- Faculty outside the Physics Department, or outside the University can be added to the committee, provided at least three committee members are UW Physics faculty.
- The GSR (Graduate School Representative), who cannot have a faculty appointment in the Physics Department. It is your responsibility to find a GSR for your committee. The process of finding a GSR can take a few hours or a few weeks. This often depends on contacts that your Committee Chair or other committee members have with faculty from other departments.

It is good practice to overload your committee beyond the 3+GSR minimum quorum requirements imposed by the Graduate School for the General and Final Exams.

Your faculty mentor must be a regular Physics Faculty member, and acts as official Chair of the Supervisory Committee if needed. This can arise, e.g., when the PhD adviser is not regular of adjunct faculty in the Physics Department.

Your faculty adviser and your mentor form the core of your doctoral supervisory committee. The Department encourages you to select your mentor well before you set-up your doctoral supervisory committee. Make sure this faculty member agrees to be your mentor.

- PhD Supervisory Committee Formation Process

- You discuss with your research adviser and mentor the composition of your doctoral supervisory committee. The GPC is often consulted for additional advice.
- You meet with each proposed faculty member in person to ask they are willing to serve on your committee.
- After gaining consent from the faculty members to serve on your committee, you complete the online Supervisory Committee Form on the Physics Department WEB site and submit it electronically.
- This form is received by the GPC. The graduate program coordinator checks that all required courses have been taken and checks that the composition of the proposed committee satisfies the Physics and Graduate School policies.
- On approval of the committee, the GPC informs both the student and the graduate program adviser (GPA).
- The GPA creates the committee on MyGrad.. Once this has been processed, the student, the committee members, and the graduate program assistant receive an email from the Graduate School confirming the formation of the doctoral supervisory committee.

16. The General Examination

General Examinations in the Physics Department take the form of a public presentation of research already completed and research proposed, followed by a closed examination with the members of the Supervisory Committee. Other graduate faculty are allowed to be present too.

Students should schedule the General Examination at the earliest time agreeable with the Supervisory Committee, and not later than the end of the fourth year.

- Scheduling the General Examination

- The student arranges with the members of the Supervisory Committee, the date, time, and location of the exam (often room C520 in the Physics Tower).
- The student reserves the room using the Physics Main Office online tools.
- The student applies for the General Examination on the MyGrad WEB site. The Graduate School checks whether all requirements are satisfied. They expects to receive requests to schedule exams 3 weeks beforehand.
- Send a reminder to all committee members the day before the exam, including details of the location.

A minimum quorum of 3+GSR is required to proceed with the exam. The Chair of the committee (your PhD adviser) and the GSR are required to be in attendance. Zoom online type attendance is allowed.

- Take the exam.
- The result of the exam is recorded on the Exam Paper, signed by all committee members in attendance, received by the GPA, and then reported to the Graduate School.

The Graduate School confirms Candidacy status not until the end of the quarter.

- Research credits after passing the General Examination

Students need to register for Physics 800, thesis Research credits, instead of Physics 600, independent research credits.

The Graduate School rules stipulate: “A minimum of 27 dissertation credits (Physics 800) over a period of at least three quarters be completed, in which at least one quarter comes after the student passes the General Examination.”

It also states: “With the exception of Summer, students are limited to a maximum of 10 dissertation credits (Physics 800) per quarter.”

These rules imply that the Final Examination can not take place until 3 quarters after the General Exam, unless pre-planned by switching to 800 credits before the General Exam.

17. The Final Examination

The Final Examination is an oral presentation and defense of a student’s dissertation. In the Physics Department, the format is similar to that of the General Examination.

- Reading Committee

Reading committees in the Physics Department consist traditionally of three members of the doctoral supervisory committee. The research adviser acts as reading committee chairperson. The GSR cannot be a member of the reading committee. The Reading Committee must include at least 2 Physics faculty members.

- Establishing a Reading Committee

After gaining the consent of the faculty to serve on the reading committee, the student completes the online Departmental Reading Committee Form and submits it electronically. The request is received by the GPC for Departmental approval, and when approved, the GPA sets-up the Reading Committee in MyGrad.

The student, the committee members, and the graduate program assistant receive an email from the Graduate School confirming the reading committee has been officially established.

- Graduate School Doctoral Degree Course Requirements

The course requirement for the doctoral degree is 90 credits, 60 of which must be taken at the University of Washington. With the approval of the degree-granting unit, an appropriate Master’s degree from an accredited institution may substitute for 30 credits. Numerical grades must be received in at least 18 quarter credits of course work taken at the UW prior to scheduling the General Examination. Only courses numbered 400, 500, 600, 700, and

800 can be applied to enrollment or course credit in the major field for advanced degrees. A minimum cumulative GPA of 3.0 is required for a graduate degree at the University.

- Scheduling the Final Examination

- The student prepares a draft of the PhD thesis in consultation with the Research Adviser.
- The student arranges with the members of the supervisory committee, the date, time, and location of the Final Examination (often room C520 in the Physics Tower).
- The student reserves the room using the Physics Main Office WEB tools.
- The student applies for the Final Examination on the MyGrad WEB site. The Graduate School checks whether all requirements are satisfied.

You must be enrolled during the quarter of your Final Examination and when you submit the thesis. They expect to receive requests to schedule exams 3 weeks before hand.

- The student submits the final draft of the PhD thesis to all reading committee members at least two weeks before the Final Exam date.
- The GPC gives Departmental approval of the Final Exam request on MyGrad, but only after all members the Reading Committee confirm by email directly send to the GPC that the draft thesis is complete (no missing chapters, etc), in good shape, and ready to be submitted to the Graduate School before the end of the same quarter as the Final Exam.
- Send a reminder to all committee members the day before the exam, including details of the location.

A minimum quorum of 3+GSR is required to proceed with the exam. The Chair of the committee (your PhD adviser) and the GSR are required to be in attendance. Zoom online type attendance is allowed.

- Take the Final exam.
- The result of the exam is recorded on the Exam Paper, signed by all committee members in attendance, received by the GPA, and then reported to the Graduate School.
- The completed dissertation must be submitted to the Graduate School by the last day of the quarter to have the degree conferred in the same quarter as the Final Examination.
- Remind your Reading Committee Members to approve your Thesis explicitly on the MyGrad WEB site. This Graduate School Approval is distinct from the above Physics Draft of Thesis approval.

The Graduate School does not confirm your PhD degree before the end of the quarter

18. Monitoring Satisfactory Progress

The Physics Departmental rules for satisfactory progress are outlined already throughout the previous sections. This section highlights some of the processes in place to monitor satisfactory progress. Early detection makes it possible to initiate timely corrections.

Unsatisfactory process in later stages of enrollment in the PhD program tends to show-up first in the Annual Reports and failures to meet the benchmark progress steps listed in section 5. Followed at the research level by an inability to secure or loss of RA funding. Culminating at the departmental level in illegibility for TA funding.

- Annual Report Requirement

Every PhD student is required to submit their Annual Report during Spring quarter as described in section 5.

This is a multistep online form that requires input from both the student and Faculty Adviser, and for them to meet in person to discuss research progress and research goals, as well as broader issues such as career choices. The student has the option to include the Faculty mentor, as well as other members of their PhD advisory Committee in this process.

The GPC, GPA, and the Physics Department Chair have access to these reports.

- Role of the PhD Advisory Committee

The doctoral supervisory committee is responsible for monitoring student progress. Every member of the supervisory committee is responsible for the progress of the student and for the quality of the degree being sought.

The GPC checks on the progress at least once a year, typically in Spring, at the time of the Annual Activities Reports. The GPC can order a special meeting of the full PhD committee in case lack of progress seems an issue.

Students enrolled for six or more years are required to meet annually with their research adviser, mentor, and a quorum (at least two voting members) of their doctoral supervisory committee. The GSR is not expected to attend the meeting. Students are required to submit a report signed by those committee members to the graduate program coordinator. A failure to meet annually represents unsatisfactory progress.

- Special reporting requirements for students with non-physics PhD advisers

Students with a non-Physics PhD adviser must meet quarterly with the Faculty Mentor.

Before the formation of the PhD committee, the student is required to include both their outside PhD adviser and their Physics faculty mentor in their Annual Report. (In some cases the PhD adviser needs to be added to the list of faculty members in the software.)

After the formation of the PhD Committee the three regular Physics Faculty members on the PhD Supervisory Committee must report in the Student Annual Report on the progress of the research and how it fits within Physics.

- Graduate School Rules

The Graduate School requires that students complete all work for the doctoral degree within ten years of admission to the Graduate School. This includes quarters spent On-Leave (or out of Graduate Student Status) as well as time for a Master's degree from the University of Washington, or a Master's degree from another institution (if used to substitute for credits of enrollment).

The Graduate School requires a minimum grade point average (GPA) of 3.0 for Master's and PhD degrees.

The Graduate School sanctions the following formal actions in the absence of satisfactory progress, after all more informal approaches have been unsuccessful.

- The lowest level of formal action is a "Warning". This has no long-term consequences yet, and is not reported officially to the Graduate School.

- The second formal level is “Probation” status. This is reported to the Graduate school and usually comes with a schedule for completion of various requirements.
- The third level is “Final Probation” status. This is also reported to the Graduate school. This can come only after “Probation,” and leads to termination of enrollment if the requirements are not met by the end of the quarter. If a student is placed on “Probation”, a definite timetable for remedying the situation is required. Only “Final Probation” can lead directly to termination from the program.

19. On-Leave Status

The Graduate School rules for maintaining status in the PhD program are different from for full enrollment. Maintaining status requires only enrollment, at any number of credits, every quarter of the academic year (Fall, Winter, Spring). Summer enrollment is not required.

Students who need to take one quarter or several quarters off can apply for On-Leave status. Failure to maintain either continuous enrollment or On-Leave status constitutes evidence according to the Graduate School that the student has resigned from the Graduate Program. Returning from that status requires a costly formal petitioning for reinstatement to the University of Washington.

On-leave status needs to be approved by the Department, is awarded on a quarterly basis, and is typically limited to a total of one year maximum.

Students request On-Leave status online in MyGrad. The request can be submitted as early as two weeks prior to the first day of instruction or during the quarter until the last week of instruction. Pre-registered students must officially withdraw via MyUW prior to the first day of the quarter. Being registered at any time during the quarter creates illegible for On-Leave status. On-Leave status requires the graduate student to be in good standing.

20. General Policies of the Physics Department

The following additional general policies are specific to the Physics Department.

- Teaching

In recognition of the importance of teaching experience in the education of a physicist, the Physics Department requires such experience of all prospective candidates for the Doctoral degree. Most students serve as teaching assistants at some point in their graduate career to fulfill this teaching requirement. Students who want to apply for a waiver because of previous relevant teaching experiences should contact the graduate program coordinator.

- Positive Work Environment

The Physics Department is committed to ensure that students experience a positive and productive work environment in their labs, offices, and classrooms. Graduate students are expected to avoid behavior that could be considered offensive or improper by fellow graduate students. Students are encouraged to consult with the graduate program adviser, the graduate program coordinator, or the department chair when issues arise. The same confidentiality policy applies for consultations as for complaints.

- Student Conduct Code

Graduate students are required to behave in accordance with the Student Conduct Code for the University of Washington.

- Complaint Policy

The Physics Department is committed to ensure that students have a positive graduate school experience. To this end, the department makes every effort to prevent and respond to problems. Refer to the current Physics Department Policy and Procedure for Reporting and Handling Graduate Student Complaints document for details.