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Preface

The Physics Graduate Handbook clarifies departmental requirements, policies, and practices that apply to physics graduate students. Care has been taken to ensure that all information contained in this departmental Graduate Student Handbook is in compliance with the Rules and Policies of the University Graduate Handbook. In situations where there are discrepancies with the University Graduate Handbook, the University Graduate Handbook will have precedence.

Objectives of the Graduate Program: Graduate students in Physics at the University of Cincinnati will:

(1) Increase their facility with physical principles and applications, beyond the Baccalaureate level and focused toward particular areas of physical research.
(2) Develop their (mathematical, laboratory, reading, writing, publication, presentation, computational) tools for analyzing and communicating physics.
(3) Learn to creatively solve problems.
(4) Master the skills of research and scholarship.
Registration Information

A standard full-time registration consists of 12 graded graduate credits and from 0 to 6 undergraduate, audited graduate, and other credits. Unless permission has been granted, all students should take 12 graded graduate credits each term. (Schedule changes must have equivalent drop/adds and be on the same onestop transaction. Be careful of changing a course from graded to audit - as this is not equivalent.)

At the beginning of each year, students are informed of the appropriate registration procedures. Students who are without an official research advisor and/or those who have not fulfilled their course requirements must consult the Graduate Program Director before registering for the next semester. Otherwise, students should consult with their advisor about their registration.
Graduate Coursework

Course levels

1000 to 5000 level courses may be taken by graduate students, but not for graduate credit. Graduate students usually register for 12 hours of graded graduate credit, which allows up to 6 credits total of undergraduate and audited graduate courses. Common undergraduate courses taken by graduate students are exercise courses and languages.

Depending on prior background, graduate students may need to register for 6000 level courses, which can carry either undergraduate or graduate credit. Graduate students registered in these courses may be required by the instructors to complete additional academic work (reading and reviewing additional books, presenting reports) to that required of undergraduates in the same courses. 6000 level courses offered by the Physics Department are introductory Quantum Mechanics, Quantum Computing, and Computational Physics.

Courses intended for graduate students are ranked at the 7000, 8000, or 9000 level, with 7000 level courses focused at the first year master’s level and 9000 level the most advanced.

Pre-Qualifier Courses

These six classes are each 4 graduate credit hours, are graded on a quality point scale (as explained later in Grades), are at the 7000 level, are required of all MS and PhD candidates, are usually taken in the student’s first year, and are the primary source of material for Part II of the Qualifying Exam. Half are offered in the Fall term and half in the Spring, as listed:

<table>
<thead>
<tr>
<th>Fall</th>
<th>Spring</th>
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</thead>
<tbody>
<tr>
<td>Mathematical Physics (PHYS7001)</td>
<td>Statistical Physics (PHYS7002)</td>
</tr>
<tr>
<td>Classical Particles and Fields I (PHYS7005)</td>
<td>Classical Particles and Fields II (PHYS7006)</td>
</tr>
<tr>
<td>Quantum Mechanics I (PHYS7010)</td>
<td>Quantum Mechanics II (PHYS7011)</td>
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</table>

A student who does well on the Qualifying exam upon entry to the program or has strong prior background can negotiate with the Graduate Director for waivers on one or more Pre-Qualifier courses.

Specialization Lecture Courses

Because a prerequisite for Specialization courses is completion of the Pre-Qualifier courses, Specialization course are usually started in the second year. Specialization course are 3 credit hours and graded on a quality point scale. Thesis master’s students need not take specialization courses but usually do take one or more from their research field. Coursework option master’s students are required to take two specialization courses but usually take more
to maintain full time student status. Doctoral students are required to take six Specialization Courses, of which two courses should be outside the student’s research specialization.

Introductory sequences in the primary departmental research fields are offered fall, then spring each year: Particle Physics (PHYS8015/8016), Astrophysics (PHYS8025/8026), and Condensed Matter (PHYS8035/8036).

Additional courses include a Quantum Field Theory sequence (PHYS 8010/8011), Advanced Statistical Physics (PHYS8030), Many Body Theory (PHYS8031), Experimental Methods in Condensed Matter (PHYS8038), and numerous 9000 level advanced topics courses. Advanced and special topics courses change from year to year depending on faculty and student interest.

In addition to the courses listed, students can request for other courses be counted as Specialization courses. This is usually done by students who choose research projects in physics related disciplines (biophysics, medical physics, physical chemistry, engineering physics, etc). Specialization courses must be approved by the student's advisor and by the Graduate Director.

Other Course Offerings

Advanced Problems (PHYS8071) is individualized study in a particular field. The course professor assigns a supervisor (usually a departmental faculty member) who assigns readings, library research, and/or problems to the student. The supervisor recommends a grade to the course professor who then assigns the grade. Advanced Problems has flexible credit hours and can be repeated multiple semesters for any quantity of total credit.

Research for the Master's (PHYS8072R) is done in a few semesters by those students interested in a thesis master's degree. It is graded P (for pass) or F (for fail). After reaching agreement with a professor to supervise the master’s research, a student should register in any open section of PHYS8072R and then request the academic director to assign the chosen professor to the registered section. The credit hours of master's research is flexible and is usually set to ensure 12 graduate credits of registration each term.

Research for the Doctorate (PHYS9071R) is a multi-semester course culminating in a thesis defense. Most PhD graduates have many more credits of PHYS9071R than the minimum 7 required for the degree. Doctoral Research is graded P (for pass) or F (for fail) until candidacy. Once the student passes the Oral exam to enter candidacy and a clear PhD research project has been chosen and approved, Research is graded SP (for satisfactory progress) or UP (for unsatisfactory) until a student's final registration semester when the PhD research project is graded P (for Pass). In the scenario that the final registration term is not the term of graduation, the grade should be SP (for satisfactory progress) or UP (for unsatisfactory progress) and then changed to P upon successful defense of the thesis. Students register for doctoral research under their advisor’s section number and with a credit hour count usually set to ensure 12 graduate credits of registration each term.

Graduate Colloquium (PHYS8090) and Advanced Seminar (PHYS8091) are offered every term. These one credit hour courses offer students the opportunity to experience research thrusts
beyond those offered at or concurrent with the research thrusts in the department. All physics graduate students must register for Colloquium and Advanced Seminar in each academic year term, unless permission not to is granted by the Graduate Director. The grade P (for pass) or T (for audit) is awarded for acceptable attendance and participation.

Physics Education Seminar (PHYS8054) is offered occasionally to supplement the curricular and pedagogical advancements of the teaching assistants and the department. As with other seminars, P grades are awarded for acceptable participation. Associated with the Physics Education Seminar are Physics by Inquiry I and II (PHYS8051C and 8052C), which are graduate physics courses for current elementary and middle school level science teachers. Physics by Inquiry may not be taken by physics graduate students, although students may observe course activities.

Grades

Grading in Pre-Qualifier courses, Specialization courses, and Advanced Problems is submitted by the course instructor using the following rubric:

- A = excellent work.
- B = acceptable work.
- C = below average work.

A student needs a 3.0 average to stay off of probation and to graduate.

In addition, the following grades may appear on a student’s transcript:

- P = satisfactory. Because a course graded P is not awarded quality points, any course graded P cannot be used toward the department’s Pre-Qualifier, Specialization or formal coursework requirements or the graduate school’s formal coursework requirements.
- SP, UP = Satisfactory or unsatisfactory progress in Research for the Doctorate. An SP or UP is not an acceptable grade for graduation unless the last term of registration is graded P to confirm completion of progress.
- T = Acceptable audit.
- U = Unsatisfactory attendance in an audited graduate course.
- I = Incomplete. An incomplete is given to students who fail to complete one or more course requirements (e.g. the final examination, a paper). All I grades must be completed and replaced with valid grades before a student will be permitted to receive any degree. Course work must be completed or the grade will automatically be changed to an I/F one calendar year after the initial I grade is submitted.
- W = Official withdrawal after some attendance.
- WX = Official withdrawal with no attendance.
- NG = No grade. Contact the professor to inquire about grade submission. An NG grade must be corrected by submission of a grade or waived by the graduate school prior to awarding of a degree.
- F, I/F, UW, X = 0 = Failures. Graduation with an F (failure), I/F (failure to complete an incomplete), UW (failure after improper withdrawal), or X (failure to neither attend nor withdraw) on the transcript will not be permitted unless the grade is superseded by a
grade of C or better in the same course retaken by the student or (under special circumstances) by substituting another course approved by the Graduate Committee and receiving a grade of C or better.
Major Program Examinations

Assistantship salaries are based on successful completion of these exams. All but the Master's Thesis Exam must be passed at an acceptable level by PhD students.

OEPT: Oral English Proficiency Test

Administered by the Center for English as a Second Language, the OEPT is a 20-minute video recorded interview. See www.cech.uc.edu/cesl/oept/ for information about the test.

Taken by: Required for non-native English-speaking students on Physics departmental assistantships. Encouraged for other international students.

Exemptions: Students with citizenship in an approved English speaking country or with a TOEFL IBT speaking score of 26 or above are exempt from the OEPT exam.

Taken when: The test should be taken at the first opportunity. Students should continue to take the test when offered until passing. A student will make an attempt during any term in which (s)he is taking an ESL (English Second Language) class.

Penalty for not passing: Assistantship students will continue to receive the lowest pay level until the OEPT is passed. Students on departmental assistantships who have not passed the OEPT by the start of their second academic term must take ESL classes. Students who have not passed OEPT by the end of the Fall semester of their second year are not eligible for an assistantship until they have passed the test.

Master Thesis Examination

Taken by: Thesis master's students. Students must pass their MS thesis defense examination in order to receive a thesis MS.

Taken when: Usually in the semester of graduation. Must be within the 5 yr time limit allowed by the graduate college.

When a professor agrees to direct the student's MS research, a MS thesis Committee of 3 or 4 faculty members will be constituted. The student will write a thesis based on at least 6 credits of work in research for the Master's Degree (PHYS 8072). After completion of the thesis the student must pass the oral defense examination conducted by his or her thesis committee. The student is to give a typed final version of the thesis to the committee at least two weekd before the oral examination. The examination covers the subject matter of the student's thesis and any other material related to the field of interest.

Qualifying Examination

Taken by: Required for PhD and coursework MS students.

The qualifying exams (Part I and Part II) are written exams administered immediately before the fall semester and early in the spring semester of each year. Students pursuing the PhD degree or a
non-thesis MS degree must pass these exams at the appropriate level by the end of the spring semester of their second year. All students are allowed and encouraged to take either or both parts of the exam in the fall before the beginning of their first year, and then may take each part only two more times to pass the exams. In exceptional circumstances (e.g., involving serious health problems) the student may petition the graduate director for an extension to the deadline for passing the exams.

The Part I exam and the Part II exam are each of four hours duration and are administered on two separate days. They may each be taken and passed (or failed) independently.

- The Part I exam (qualitative) consists of a series of about 15 short questions testing knowledge of classical mechanics, electrodynamics, quantum mechanics, statistical mechanics and thermodynamics at an undergraduate level.
- The Part II exam (quantitative) consists of two questions in each of classical mechanics, electrodynamics, quantum mechanics, and statistical mechanics at the level of the material covered in the Pre-Qualifier courses. The student is asked to answer only one of each pair of questions, showing his/her detailed calculational work.

Selected qualifying exams from past years can be found on the department’s web site.

Coursework MS students. Passing the Qualifying Exam at the MS or PhD level is a program requirement for a non-thesis Master's. Students who choose to not take the exam or who do not pass the exam at the MS level may opt for a thesis master’s degree. The MS passing level will vary from exam to exam, but is typically around 60% for Part I and 50% for Part II. Passing the Qualifying Exam at the MS level is not sufficient for continuing on to PhD candidacy.

PhD students. Students must pass both parts of the exam at the PhD level. The passing level will vary from exam to exam, but is typically around 75% for Part I and 65% for Part II.

TAKEN WHEN: All students are allowed and encouraged to take either or both parts of the exam in the fall before the beginning of their first year, and then may take each part only two more times to pass the exams. Not counting the "free" try at the beginning of entering the program, most students will have their first attempt usually before the start of the second year. Students must pass both parts of the exam at the appropriate level by the end of the spring semester of their second year in order to receive a coursework option MS or to continue in the PhD program. In exceptional circumstances (e.g., involving serious health problems) the student may petition the graduate director for an extension to the deadline for passing the exams.

Penalty for not passing: Students who do not pass at the PhD level by the deadline will not be able to continue to pursue a PhD in the department, and are not eligible for departmental assistantships beyond the spring semester of their second year. Students who fail to pass at the MS level will not receive the coursework option MS.

**Candidacy Examination**

Taken by: PhD students. A student must pass the Candidacy examination in order to enter PhD candidacy.
Taken when: This is usually taken in a student’s third year. It must be completed within 18 months of a student’s passing the Qualifying exam or the end of the spring semester of his/her third year, whichever is the earlier date of the two. Any extension must be approved by the Graduate Director. Extensions are usually not granted to students who passed their Qualifying exam after their first year, or who had advanced degrees upon entering the program, or who are ready to take the exam as opined by the adviser. Students who don’t pass their Candidacy exam by the end of their 4th year (end of 3rd for students who start the program with a US Master degree) will have to request an extension from the College and Graduate Deans.

Penalty for not passing: A student who fails the Candidacy exam will not be able to continue in the PhD program.

In consultation with the advisor and graduate program director, the student will invite faculty to serve on the student’s PhD dissertation committee. The committee will normally consist of 3 to 4 physics faculty, and chaired by the student's advisor. The examination will be scheduled by the student in consultation with the doctoral committee. The graduate program coordinator is to be notified of the time and date about two weeks prior to reserve the room, prepare the candidacy form, and start the approval process for any committee member not currently eligible for doctoral committee work. At least one week prior to the exam, the student is to submit a written report describing his/her proposed thesis project to the committee members. This report should be approximately five pages in length and include an abstract and references. The exam will last approximately an hour, beginning with a 15-20 minute informal presentation highlighting background the proposed project. Such a presentation might include background science, a description of the student's initial efforts, the proposed effort, and anticipated difficulties. Following the presentation, the student will be asked questions on topics included in his/her proposal and on other topics within the same general area. The oral examination is open to all faculty members. Only the committee will vote on the student’s performance on the examination. A student's performance is satisfactory if the student has an understanding of the basic physical ideas which are at the root of the proposed research, if the ideas and plan in the written report are expressed correctly and clearly, and if the proposed research is appropriate for a Ph.D. in physics.

**Final Defense of Dissertation**

Taken by: PhD students.

**TAKEN when:** After the student has completed his/her PhD research, and has written the dissertation. Usually this is in a student’s 6th year. If a student takes more than 5 calendar years after the Candidacy exam, the student will have to request an extension from the College and Graduate Deans. Students who do not defend their dissertation by the end of their 7th academic year will normally be ineligible for assistantships or scholarships.

Penalty for not passing: A student who fails to defend his/her thesis will not receive a PhD.

- When the dissertation is completed, a valid copy must be submitted to each dissertation-committee member for critical evaluation. If it is considered to be satisfactory with respect to form and content by the committee, a final defense of dissertation will be scheduled. The dissertation must be given to the committee members at least one week before the dissertation defense.
• The final defense of dissertation will be open and members of the academic community and other persons may attend. The Graduate College will circulate public announcements of the final defense.

• Under the standard procedure, following an oral presentation of the dissertation, the candidate shall answer pertinent questions asked by members of the committee. After the committee has completed its questioning, other persons will have an opportunity to submit questions or comments.

• At the conclusion of the defense, the committee will withdraw, make the decision forthwith with regard to the acceptability of the dissertation and its defense, and report to the candidate. If the decision is favorable, the appropriate form will be signed by the committee members and submitted to the Graduate College. The form is scanned and becomes a page in the student’s electronic thesis.
Dismissal and Corrective Action Policies

For the purposes of defining acceptable academic progress, graduate students will be divided into two groups, “Pre-candidacy” and “advanced students”. An advanced student is one who has passed the oral Candidacy exam.

Dismissal without Probation

A student will be dismissed from the program without a probationary period, if his/her grades for any one quarter fall below a C (2.0) average, or if he/she receives an F in any two courses at any time.

Precandidacy Academic Progress Requirements

The progress of students in this group will be reviewed by the Graduate Committee twice a year, at the end of the fall and spring semesters after graded for that semester have been reported. Students who fail to maintain an overall B (3.0) average will be placed on academic probation.

Progress of students on probation for grades will be reviewed after every semester, at which time several actions are possible: being taken off probation, continuation of probation, or dismissal. If a student raises his/her overall average to a B (3.0) or above, the student will be taken off probation and reinstated into the program. If a student's term grades are at the B (3.0) average, but the overall average is still below a B (3.0) average, the student is allowed to continue in the program, albeit on probation. A student continuing on probation for more than one semester will likely not receive departmental financial support while on probation. A precandidacy student on probation, whose term grades are below a B (3.0) average, will be dismissed.

For doctoral students: In addition to grades, the committee reviews courses taken and progress toward starting research. Students must meet the various deadlines for progressing towards candidacy shown in this Handbook. Students who fail to meet those deadlines or who do not make sufficient progress in starting research will be placed on probation.

Students placed on probation for lack of pre-candidacy research progress will need to agree to a plan with the Program Director to get caught up. Students that do not meet plan goals will be removed from the program at the discretion of the Program Director.

Advanced Student Progress Requirements

Progress of "advanced students" may be reviewed at any time by their Ph.D. dissertation committee.

Once a year, all students who have passed their oral exam must submit an annual progress report to the Department before the end of the spring semester. The Department will not reappoint students for the next year without the report. All annual progress reports must be read and approved by the members of the student's PhD committee and placed in the student's file. The progress report will discuss the student's progress towards completion of his/her Ph.D. thesis, and will indicate whether that progress is satisfactory. Any student who is not making satisfactory progress in his/her research will be placed on probation.
The PhD committee will periodically review the progress of the student on probation. The period between each review, which will be no longer than six months, will be determined by the committee and communicated to the student. At that time of each review, the committee may recommend to the Director of Graduate Studies that

- The student is making satisfactory progress, and probation should be lifted,
- The student should remain on probation, with or without assistantship.
- The student should be dismissed.

The progress report for a student in his/her sixth year should present a credible plan, approved by the committee, for completion of the PhD in the seventh year. Absence of such an approved plan will disqualify the student from Departmental financial support for that summer semester and in his/her seventh year.

The progress report for a student in his/her seventh year should present a credible plan, approved by the committee, for completion of the PhD by the end of the summer semester. Absence of such an approved plan will disqualify the student from Departmental financial support for that summer semester. No support will be given by the department to students in their eighth year.

After approval by their PhD committees, all sixth and seventh year students' annual reports will be reviewed by a subcommittee of the graduate committee for final approval of any requested departmental support.

**Petition and Appeal**

- A student dismissed from the program may file a written petition with the Director of Graduate Studies for readmission. This petition must be filed no more than five (5) working days after receipt of the written dismissal notice. The petition will be considered by the full Graduate Committee. In making a decision on readmission, the Graduate Committee may consider extenuating circumstances surrounding the reasons for dismissal.
- If a previously dismissed student is readmitted, all previous grades will be considered in computing the overall grade averages.
- Students on probation are encouraged to meet with the Director of Graduate Studies (and their Ph.D. research advisor, if applicable) to discuss the reasons for being on probation and possible solutions.
- Students will be fully informed of all decisions affecting their status in the program.
- Students have the right to appeal any decision to the Graduate Committee and then to the Department Head. Grievance procedures are available from the Physics Department Office or the office of the Dean of Graduate School.
Requirements for a Master’s of Science in Physics Degree

A student pursuing a terminal Master's degree must complete all requirements no later than five years from the date of entering the MS degree program. The normal time is two years. After a student receives an MS, (s)he can decide to continue on to the PhD only if accepted into the PhD program. In this scenario, contact the Graduate Director for permission.

A student in the PhD program is encouraged to apply for a MS after eligibility. The student can receive the MS after the coursework option MS requirements described below are met but before the student has taken the ORAL exam to enter formal PhD candidacy. Because of special processing of PhD students requesting an MS, the student should contact the Program Coordinator before the start of the term in which (s)he intends to receive the degree. After the Program Coordinator opens the MS processing, the student will apply for the degree on-line at www.grad.uc.edu about one week after the start of the graduation term.

Requirements Common to both the thesis and non-thesis options

Pre-Qualifier coursework

All Master of Science in Physics students must complete all the Pre-Qualifier courses: Statistical Physics, Mathematical Physics, Classical Particles and Fields I, Classical Particles and Fields II, Quantum Mechanics I, and Quantum Mechanics II.

On occasion, a student enters the graduate program with exceptional preparation in one or more of the Pre-Qualifier courses, and may wish to be excused from taking those courses. In this situation, the student should contact the Graduate Director to petition for a waiver. The decision of whether to grant the waiver will be made by the Graduate Director with consultation of the faculty teaching said courses.

Colloquium and Seminar

All Master of Science in Physics students must demonstrate attendance in Colloquium and Seminar. Attendance is demonstrated with a minimum six total registration records (audited or graded).

Graduate School Requirements

A student must also meet all graduate school requirements for a degree, as outlined in the university Graduate Handbook. These include but are not limited to: A minimum of 20 formal graduate credits; an overall GPA of 3.0 or better at time of graduation; and no unacceptable grades.

Coursework Option

Students in the non-thesis track will develop a broad knowledge in multiple areas of physics at a level appropriate to the Master's degree through extensive advanced coursework. The additional requirements for the non-thesis option are as follows:

Additional Coursework: The student must earn 6 credits of graduate Specialization courses.
Qualifying Examination: The student must perform satisfactorily on the qualifying examination. What constitutes satisfactory performance at the master's level is determined by the exam graders, but the expected master's level performance is typically 60% for Part I and 50% for Part II.

Thesis Option

Students in the thesis track will develop expertise at a level appropriate to the Master's degree in an area of physics through substantive work on an original research project. The additional requirement for the thesis option is as follows:

Additional Coursework: The student must earn 6 credits of Research for the Master's Degree.

Thesis Examination: When a professor agrees to direct the student's MS research, a MS thesis Committee of 3 or 4 faculty members will be constituted. The student will write a thesis based on at least 6 credits of work in research for the Master's Degree (PHYS 8072). After completion of the thesis the student must pass the oral defense examination conducted by his or her thesis committee. The student is to give a typed final version of the thesis to the committee at least two weekd before the oral examination. The examination covers the subject matter of the student's thesis and any other material related to the field of interest.
Requirements for the doctor of philosophy degree

Admission to Candidacy

A student must satisfy the items listed below before he or she can be admitted formally into candidacy for the Ph.D. program. Application forms for admission to candidacy are available in the Department Office.

Course of Study

The student must complete all Pre-qualifier courses and six Specialization courses. (These are explained in detail in the handbook under “Courses”.)

Colloquium and Seminar

Attendance in Graduate Colloquium and an Advanced Seminar section is required in any term that the student is in residence for. This requirement can be waived in special circumstances with the permission of the graduate director.

Ph.D. Qualifying Examination

Students must pass both parts of the exam at the PhD level. The passing level will vary from exam to exam, and is determined by the exam graders, but is typically around 75% for Part I and 65% for Part II. A student who has not passed both parts of the qualifying examination at the Ph.D. level by the end of the spring semester of their second year will be asked to withdraw from the Ph.D. program. For students with less than a B average in the core courses, their performance on part II of the exam will be used to determine final mastery of all the core subjects at a minimum of a B level.

Research

A student must earn a minimum of 10 semester credits of PHYS9071 Doctoral Research, and complete original research whose quality and quantity is appropriate for a physics PhD.

Choosing a Research Advisor

Before choosing a research advisor, the student should consult with as many of the faculty as possible and discuss with them their current research activities. After the student has decided on a research area, he or she should inform the Program Coordinator with his choice of advisor and the list of faculty he or she consulted. The Coordinator will then confirm with the student’s advisor. A student who does not choose an advisor by the end of the spring semester of the second year will not have time to prepare to take the Orals in time and may be removed from the program.

Dissertation Committee

In consultation with the advisor and graduate program director, the student will invite faculty to serve on the student’s PhD dissertation committee. The committee will normally consist of 3 to 4 physics faculty, and chaired by the student's advisor.
Oral Examination

The Oral examination is the examination for the student to officially enter into PhD candidacy.

This is usually taken in a student’s third year. It must be completed within 18 months of a student’s passing the Qualifying exam or the end of the spring semester of his/her third year, whichever is the earlier date of the two. Any extension must be approved by the Graduate Director. Extensions are usually not granted to students who passed their Qualifying exam after their first year, or who had advanced degrees upon entering the program, or who are ready to take the exam as opined by the adviser. Students who don’t pass their Candidacy exam by the end of their 4th year (end of 3rd for students who start the program with a US Master degree) will have to request an extension from the College and Graduate Deans.

The examination will be scheduled by the student in consultation with the doctoral committee. The graduate program coordinator is to be notified of the time and date about two weeks prior to reserve the room, prepare the candidacy form, and start the approval process for any committee member not currently eligible for doctoral committee work.

More details on the Oral examination can be found under the "Examinations" section in this handbook.

Additional Requirements for the Ph.D. Degree

University Credit Hour Requirements

The student must complete at least 90 semester credit hours at the graduate level, 30 of which must be completed under the direction of University of Cincinnati graduate faculty.

Time-to-Degree

The doctoral degree will be granted for no less than the equivalent of three years of full-time graduate study. A period of seven (7) months must elapse between admission to doctoral candidacy and receipt of the degree. All requirements for the doctoral degree must be completed within nine (9) consecutive years of initial enrollment. This period includes a maximum of four years before achieving candidacy and a maximum of five years beyond candidacy. If either deadline is not met, a student must petition the Graduate School for an extension.

Final Defense of Dissertation

After the student has satisfied all of the above requirements, a final open defense of dissertation shall be held, according to the following procedure:

- When the dissertation is completed, a typed copy must be submitted to each dissertation-committee member for critical evaluation. If it is considered to be satisfactory with respect to form and content by the committee, a final defense of dissertation will be scheduled by the
Physics Department. The dissertation must be given to the committee members at least one week before the dissertation defense.

- The final defense of dissertation will be open and members of the academic community and other persons may attend. The Office of the Vice President for Research and University Dean for Advanced Studies will circulate public announcements of the final defense.
- Under the standard procedure, following an oral presentation of the dissertation, the candidate shall answer pertinent questions asked by members of the committee. After the committee has completed its questioning, other persons will have an opportunity to submit questions or comments.
- At the conclusion of the defense, the committee will withdraw, make the decision forthwith with regard to the acceptability of the dissertation and its defense, and report to the candidate. If the decision is favorable, the appropriate form will be signed by the committee members, given to the Physics Department office, and transmitted to the Division of Research and Advanced Studies Office.

**University Dissertation and Graduation Requirements**

University graduation requirements are detailed at [Doctoral Degree Policies and Procedures](#) and at [Graduation](#).
MS and PhD degree checklist

Ask the Graduate Coordinator for any necessary details.

Red = University requirements. Black = Departmental requirements.

Requirements for all graduate degrees awarded through Physics Department:

1) Online graduate application and processing submitted before deadlines.
2) Contiguous annual fall enrollment for at least one PHYS credit.
3) Overall minimum 3.0 GPA.
4) No F, I/F, UW, or X grades without repeat or approved substitution.
5) No NG grades without waiver.
6) No uncompleted I grades at time of graduation.
7) No SP or UP grades still in progress upon graduation.
8) Colloquium: attendance required for all registered physics graduate students. Non-attendance must be approved in advance by Program Director.
9) Credits or Program Director approved waivers of each of the six Pre-Qualifier courses: Quantum I&II, Statistical Physics, Classical Particles and Fields I&II, and Mathematical Physics. Waivers are granted based on coursework and/or Qualifying exam performance prior to program entry.

Additional Physics Master of Science requirements:

Notify graduate coordinator prior to graduation term with type of MS: thesis option MS or coursework option MS; terminal MS or continuation toward PhD.

1) Maximum 5 academic years from start of program.
2) Overall minimum 20 formal (with quality points) graduate semester credits.
3) Overall minimum 30 graduate semester credits from Pre-Qualifier courses, Specialization lecture courses (may be substituted subject to approval by Program Director with courses from physics related disciplines), and Master’s Research.
4) Successful thesis defense for thesis option. Qualifying exam passed at at least MS level for coursework option.

Additional Doctor of Philosophy in Physics requirements:

1) Minimum 6 graded (P) semester credits of physics Doctoral Research prior to Oral exam.
2) Minimum 90 graduate semester credits if no US Master’s (or equivalently advanced international) degree, otherwise minimum 60 graduate credits.
3) Qualifying exam passed at doctoral level by the spring semester of the student's second year of program entry. In exceptional circumstances (e.g., involving serious health problems) the student may petition the graduate director for an extension to the deadline for passing the exams.
4) Candidacy (oral) exam passed within 18 months of passing Qualifying exam or the end of the spring semester of the student's third year, whichever is the earlier date of the two. The Graduate Director may grant an extension of the Candidacy exam, but not past the start of the fourth year. A student who does not choose an advisor by the end of the spring semester of the second year will not have time to prepare for the Orals and may be removed.
from the program. A student not entering formal candidacy within 4 years of program entry must petition the Graduate School for an extension.

5) A student must defend the dissertation by the end of the 7th academic year. The student can petition the Graduate Program Director for additional time, but the student will not receive departmental support after the 7th year. A student not defending within 5 calendar years of the Candidacy exam must petition the Graduate School for an extension.

6) Six Specialization courses, including two outside research specialty. Specialization courses from physics related disciplines must be approved by the Program Director and research advisor.

7) Doctoral dissertation accepted, properly formatted, and electronically published.