UNIVERSITY OF HAWAII
DEPARTMENT OF PHYSICS AND ASTRONOMY

PHYSICS GRADUATE DEGREE PROGRAMS

(Numbered items are explained in this document. Rev. 12/2003)

ENTERING GRADUATE STUDENT

(1) Admission and Appointment of Academic Advisor

(2) Diagnostic Examination

(3) Program Conference

(4.a) M.S. Plan A
Course Requirements
Thesis Requirement
Final Oral Exam
Fail
Pass
M.S.

(4.b) M.S. Plan B
Course Requirements

(4.c) M.S. Plan C
Grad Prog Comm
Approve
Disapprove
Residency Requirement

(4.d) Ph. D
Course Work

(5) Written Qualifying Examination
Fail
Pass
Pass*
M.S. (**)
M.S. (**)

(6) Completion of Courses
(7) Dissertation Committee

(8) Advancement to Thesis Program Exam
Pass
Fail

(9) Advancement to Candidacy

(10) Completion of Dissertation

(11) Final Oral Examination
Pass
Fail
Ph. D.

(** For Plan C students, an Oral Exam is also required for a M.S. degree)
1. **Admission.** All requirements for admission as a classified graduate student in physics or astronomy must be met. These include:

   a. Satisfactory scores in the Graduate Record Examination (Verbal, Quantitative and Physics Subject).

   b. Removal of undergraduate deficiencies.

   An academic advisor will be assigned to the student when the student first arrives at the campus to enter the graduate program. The student is responsible for contacting the advisor prior to registration. The advisor may be changed at the student’s request at any time.

   A student who has been admitted provisionally will become a regular classified student when deficiencies, as determined by the diagnostic examination and the student’s undergraduate record, have been corrected to the satisfaction of the student’s advisor and the Graduate Division.

2. **Diagnostic Examination.** The diagnostic examination is designed to reveal the quality of the student’s preparation for advanced work and ability to pursue graduate work in the student’s chosen field. The physics diagnostic examination is required prior to the first semester of residence as a regular classified graduate student. The examination covers undergraduate physics and is given prior to the Fall semester. The examination is diagnostic so there is no question of passing or failing. However, for an intended PLAN-C MASTER student, his/her diagnostic examination result will be used toward determining the approval or disapproval into the PLAN-C Program.

3. **Program Conference.** The program conference serves the purpose of selecting initial courses and providing general guidance. This conference will take place before enrollment in first semester courses, following the diagnostic examination. The student is responsible for arranging this conference with his or her advisor.

   The academic advisor will use the results of the diagnostic examination and other materials to counsel the student, in selecting an objective: the M.S. degree (either Plan A, B, or C) or the PhD degree. At this point, an exceptionally well-prepared graduate student may, through the advisor, petition the chairperson of the Department of Physics and Astronomy for a waiver of some required courses.

   All general requirements of the Graduate Division, as described in the current catalog, must be met. In addition, all students are expected to acquire at least one year experience as a teaching assistant, or equivalent. The degree program selected determines specific course requirements, enumerated below.
4.a  **MASTER OF SCIENCE DEGREE – PLAN A:**

Credit Hour Requirement:  30 credits are required, including:

(i) A minimum of 18 credits from Physics courses numbered 600-798 including:

- Phys 610, Analytical Mechanics I (3)
- Phys 650, Electrodynamics I (3)
- Phys 690, Seminar (0)
- Phys 670, Quantum Mechanics I (3)

(ii) Thesis Research (Phys 700) - A minimum of 6 credit hours (candidates must be registered for Phys 700 during the entire semester in which the work for the degree is completed).

(iii) Approved electives determined by academic advisor. (Directed Research, Phys 699, may only be included for a maximum of 2 credits.)

Thesis Requirement:

(i) Thesis Committee - The student must assemble a thesis committee consists of three members of the Graduate Faculty. The chair of this committee will serve as the student’s thesis advisor and must be a Full Member of the Graduate Faculty in Physics.

(ii) Thesis Proposal - The thesis proposal submitted by a Plan A Master’s degree student must be approved by the student’s Thesis Committee. Once the thesis proposal has been approved, a **Student Progress Form II** (approval of thesis topics) must be signed and sent to Graduate Division.

Final Oral Examination:

The final oral examination covers the thesis and related areas. Passing the final oral examination completes the requirements for the Master Plan A. Students failing the final oral examination may repeat it only once upon petition approved by the Thesis Committee and the dean of Graduate Division.

Please refer to the current General Catalog for any additional limitations and requirements.

4.b  **MASTER OF SCIENCE DEGREE – PLAN B:**
Credit Hour Requirement: 30 credits are required, including:

(i) A minimum of 18 credits from Physics courses numbered 600-798 including:

- Phys 610, Analytical Mechanics I (3)
- Phys 650, Electrodynamics I (3)
- Phys 690, Seminar (0)
- Phys 670, Quantum Mechanics I (3)

(ii) Approved electives as in Plan A.

Final Examination: See **Written Qualifying Examination** under Item 5.

A PASS or PASS* completes the requirements for Master Plan B. A PASS* also allows the student to enter the PhD program.

Please refer to the current General Catalog for any additional limitations and requirements.

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**4.c  MASTER OF SCIENCE DEGREE – PLAN C:**

Credit Hour requirement: None

(Master Plan C is intended for students who have completed equivalent course work for master program prior to entering this department.)

Minimum Residency Requirement: Two semesters or four six-week summer sessions.

General Examination: The diagnostic examination will serve as the general examination for a Master Plan C student.

Admission to Plan C requires the approval of the Physics Graduate Program Advisory committee. The student’s diagnostic examination result, course transcripts, and GRE scores will be used for as basis for approval or disapproval into the Plan C program.

Final Examinations: Students selected Plan C will demonstrate their comprehension of a body of knowledge at the level of the Master’s degree by passing the **Written Qualifying Examination**, described in Item 5, and an **Oral Examination**. The Oral Examination will be conducted by the Physics Graduate Program Advisory Committee. The student has two chances to pass the Oral Exam within one year of passing the Written Qualifying Examination. The Oral Examination must be
announced in the weekly News@UH, at least two weeks prior to the date of the examination.

For further details on Plan C, consult the Department office and the General Catalog.

4.d **DOCTOR OF PHILOSOPHY DEGREE - PHYSICS:**

Course Requirements:

In addition to the courses required for the Master’s degree, students in the PhD program are responsible for the material covered in the following courses:

- Phys 651, Electrodynamics II
- Phys 671, Quantum Mechanics II

The student’s thesis advisor may require additional courses and/or directed research (Phys 699) before a dissertation proposal will be considered.

Examinations: There are three examinations for the Physics PhD program.

- **Written Qualifying Examination** - A student must obtain a PASS* on the Written Qualifying Examination to remain in the PhD program, see Item 5 for details.

- **Thesis Program Examination** - This examination is formatted as a thesis program exam. A student must pass this examination before applying for advancement to candidacy and a **Student Progress Form II** must be signed and submitted to Graduate Division, see Item 8 for details.

- **Final Oral Examination - Dissertation Defense.** This exam must be announced in the weekly News@UH at least two least two weeks prior to the date of exam. More details in Item 11.

Dissertation: A majority of the members of the doctoral committee, including the committee chair, must approve both the dissertation and the oral defense of the dissertation. The committee members express their approval on the signature page of the dissertation and on **Student Progress Form III**.

Please refer to the current General Catalog for any additional limitations and requirements.

5. **Written Qualifying Examination.** The qualifying examination is ordinarily given in the fall semester only and serves two purposes:

a. Final examination for the Master of Science degree. (Plan B and C only).

b. Prerequisite to the advancement to PhD candidacy.
The examination is therefore required of all Plan B and C Master’s degree candidates and of all students undertaking the PhD program (whether or not they already hold a M.S. degree).

Time Line - A student has two attempts to PASS (or PASS*) the Written Qualifying Examinations within the student’s first six semesters as a regular classified graduate student. The student’s first attempt must be within the student’s first four semesters as a regular classified graduate student. Registration beyond the fourth semester will, if the examination has not been taken, require consent of the Department chairperson on advice of the academic advisor. If the student must delay this examination, the student is required to submit to the Department chairperson via his/her academic advisor a request for extension in time prior to the beginning of the fourth semester. If the examination is not taken before the end of the fourth semester without an approval of an extension in time, failure to pass the examination will be recorded.

Three grades are possible on the qualifying examination:

PASS*, PASS, and FAIL

NOTE: Although the Written Qualifying Examination consists of four parts, a single overall grade is given to the entire exam. Any student who needs to re-take the exam must re-take all four parts.

A student who passes the examination with a grade of PASS* is eligible to proceed with the PhD program. At this time, a Student Progress Form I must be signed and submitted to Graduate Division. (Student Progress Form I is no longer required effective 2010).

A student enrolled in the Plan B Master’s degree program completes the requirements for that degree upon attaining a grade of either PASS OR PASS* on the Written Qualifying Examination. A grade of PASS* entitles the student to continue in the PhD program, as noted above, if he or she so desires.

A student enrolled in the Plan C Master’s degree program completes the requirements for that degree upon attaining a grade of either PASS or PASS* on the Written Qualifying Examination and an Oral Examination, see Item 4.c. A grade of PASS* on the Written Qualifying Examination alone entitles the student to continue in the PhD program, as noted above, if he or she so desires. However, if the Oral Examination is not taken within a year, a master degree is not granted, see Item 4.c.

6. Completion of Course Requirements. Prior to advancement to candidacy for the PhD degree, a student must complete all course requirements, see Item 4.d.
7. **Dissertation Committee.** The student must secure acceptance for research by a member of the Graduate Faculty of the Department of Physics and Astronomy. With the help of the thesis advisor, the student selects a doctoral committee composed of at least five members of the Graduate Faculty, including the thesis advisor. At least four members must be from Physics and at least one member from outside the Department. The chair of the committee and the outside member must be Full members of the Graduate Faculty.

If the student’s interests are such as to require that the thesis research be directed by a member of the Graduate Faculty in a unit of the University other than the Department of Physics and Astronomy, the student shall submit his or her program for approval by the Graduate Program Advisory Committee. If the proposal is approved, a member of the Graduate Faculty of the Department of Physics and Astronomy shall serve as a co-chairperson of the dissertation committee to represent the Department’s graduate training program. In addition to duties as member of the dissertation committee, the co-chairperson will advise the candidate and the thesis director on matters of procedure.

8. **The Thesis Program Examination.** This examination serves as the PhD comprehensive examination. It is conducted by the student’s doctoral committee. All PASS* students will be required to take an Oral Exam, the Thesis Program Exam, within one year after the Written Exam. The Thesis Program Exam will focus on their specialized area of study. The student will make a short presentation 20-30 minutes long pertaining to his/her proposed area of research. This will be followed by questions about the talk as well as about the general area of research. *Failure to take the Thesis Program Examination within 12 months after attaining the PASS* grade will be recorded as a failure to pass the examination.*

If the student does not pass the Thesis Program Examination the first time it is taken, or should have been taken, the examination may be repeated. The scheduling of the second examination will be determined by conference, immediately following the failure, between the student and the examining committee or representatives of the examining committee. *A student who fails the second examination is irrevocably dropped from potential candidacy.*

A student who passes this examination can apply for approval of advancement to candidacy. At this time, a **Student Progress Form II** must be signed and submitted to Graduate Division.

9. **Advancement to Candidacy.** Formal approval of advancement to candidacy can be obtained only after completion of both the requirements listed herein for students of the Department of Physics and Astronomy and the requirements listed in the current catalog for all graduate students of the University of Hawaii. The student’s entire record as a graduate student, and potential for research, as well as the student’s
performance on the Thesis Program Examination will be used in determining whether the student is recommended for advancement to candidacy. Advancement to candidacy must normally be completed before registration for the student’s eighth semester as a graduate student. If the student does not complete the requirements for advancement to candidacy before registration for the eighth semester, he or she must submit before the end of the seventh semester a request for an extension in time to the Graduate Program Advisory Committee. If this is not done or if the request is not approved, the student will be dropped from potential candidacy. The candidate may register for thesis research (Phys 800) at the next registration following advancement to candidacy.

10. **Completion of Dissertation.** During the entire semester in which work for the PhD is completed, the candidate must be enrolled in Phys 800. Enrollment in Phys 800 is contingent on the existence of a properly constituted and approved dissertation committee (Item 6).

11. **Final Examination.** The final oral examination is in defense of the dissertation and covers topics related to the field of specialization. If the student fails the final examination, he or she may be allowed to repeat it once, upon petition approved by the thesis committee chair and by the Dean of the Graduate Division. This examination must be announced in the weekly *News@UH* at least two weeks prior to the date of examination.

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