Requirements for the Ph.D. Degree in Physics

Course work:

At least 48 credits of graduate course work (6xxx or 7xxx) must be passed with a grade of B- or higher.

Required courses (36 credits):

PHYS 6010  Theoretical Physics I
PHYS 6020  Theoretical Physics II
PHYS 7060  Theoretical Mechanics
PHYS 7100  Statistical Mechanics
PHYS 7170  Quantum Mechanics I
PHYS 7180  Quantum Mechanics II
PHYS 7230  Electromagnetic Theory I
PHYS 7240  Electromagnetic Theory II
PHYS 7910  Research I (3)
PHYS 7920  Research II (3)
PHYS 7930  Research III (3)
PHYS 7940  Research IV (3)

Elective courses (12 credits): The remaining 12 credits should be graduate level physics electives, or graduate level courses in a related field with approval of the research supervisor and graduate advisor. Required courses in one track may serve as electives in the other track.

Grades:

The minimum satisfactory grade in a graduate course is B. A grade of C+ or less is not passing and the course must be repeated for credit toward a Ph.D. or M.S. degree. A grade of B- is considered an unsatisfactory but passing grade, so it counts toward the degree but may trigger academic probation or other consequences determined by the graduate advisor and/or the dean. A student who does not maintain the minimum 3.0 GPA in graduate course work will be subject to disenrollment.
Qualifying Exam:

The Ph.D. qualifying exam is a 6-hour written examination covering classical and modern physics, given by the department once per semester. It covers the typical U.S. undergraduate physics curriculum with an emphasis on classical electrodynamics and quantum mechanics. The qualifying exam must be attempted no later than the fourth semester of graduate study. Students who are sufficiently prepared are strongly encouraged to take it during the first year. The standard passing score is 60%, subject to modification by vote of the faculty. Students who fail the qualifying exam must retake it until passed. There is no limit on the number of attempts. Any student who has not passed the qualifying exam by the end of the fifth semester of graduate study will be disenrolled from the program (exceptions due to extenuating circumstances may be granted by vote of the faculty).

Students who have met course requirements and have passed the qualifying exam become degree candidates.

Faculty Dissertation Committee:

Prior to the prospectus defense, the student and research supervisor form the faculty dissertation committee, which consists of the research supervisor (chair) and at least two other faculty members. One member may be from another Tulane department or other appropriate institution. The faculty dissertation committee (henceforth the committee) examines the student at the prospectus defense and oral dissertation defense, and approves the final written dissertation.

Prospectus Defense:

The prospectus defense demonstrates to the committee that the student has acquired sufficient knowledge in the specific research area and can effectively express that knowledge orally and in writing. A student must pass the qualifying exam before undertaking the prospectus defense. The prospectus defense consists of a written proposal and an oral defense:

The written research proposal (10-15 pages) contains an introduction, proposed research and justification, methods, preliminary results, and discussion. It must be reviewed and approved by the committee before the end of the sixth semester of graduate study.

The oral defense is a two-hour oral examination, including a research presentation (about 45 minutes) prepared by the student, given by the committee. The examination includes specific questions about the student's research as well as broadly focused questions on the general area of research. The oral defense must be attempted following approval of the written proposal, no later than the sixth semester of graduate study. If failed, the student is normally given a second attempt in the following semester. After two failures the student will be disenrolled from the program (exceptions due to extenuating circumstances may be granted by vote of the faculty).

Students who are sufficiently prepared are strongly encouraged to take the prospectus defense early.
It is expected that, after completion of the oral prospectus defense, the Ph.D. candidate will obtain a Research Assistantship (RA) in the same research group. In order to encourage this, the faculty have adopted a policy for allocating graduate students on TA's to research groups.

**Annual Report:**

In April of each year, every Ph.D. student will submit a brief annual progress report (1-2 pages) to the research supervisor (and committee, when formed) summarizing research progress and accomplishments over the previous year, and future plans and milestones. This requirement is waived in the years when the prospectus and thesis defenses are completed.

**Dissertation:**

The final requirement for the Ph.D. degree is a written dissertation based on original research, approved by the committee, and its defense in an oral exam by the committee.

**Masters Degree:**

The master's degree is not a requirement for the Ph.D. in physics. Admission with financial aid is only for doctoral students. However a graduate student may receive an M.S. based on 30 hours of approved graduate credit, or (if the research supervisor agrees to offer this option) an M.S. based on 24 hours of approved graduate credit plus a thesis deemed acceptable by the research supervisor. Research I-IV credit does not count toward the M.S. degree.