

# Proposal for Master's Degree Requirements

## *Motivation and Format*

The Master's Degree guidelines in the Physics Handbook are out of date and confusing for our students. Below is one proposal to update, clarify, and consolidate the text. The guidelines were described in two sections: section 14 and section 15. It seems natural to consolidate text into one section.

There are two paths for obtaining a Master's Degree: in-flight (or course-based), or thesis-based. Most of our PhD students obtain a Master's Degree under the course-based requirements. In the current text of the Handbook, section 14 describes the thesis-based version. Section 15 is titled "Master's oral comprehensive examination" and attempts to address both an in-flight and a thesis-based Master's. The proposal is to merge the text into one section, section 14, which describes the two paths. In the following proposal, red indicates new text (e.g. **This is new text.**). If there is an explanation for the change, then it appears as follows. **Explanation: This is an explanation.** The explanation will not be included in the Handbook.

## *Proposed Text*

### 14. Master's Degree

To qualify for a Master's degree, a student has two options. One, the student may obtain an in-flight, or course-based, Master's degree, or two, the student may obtain a thesis-based Master's degree.

14.1 Course-based Master's Degree requirements. The student must:

**Explanation:** For clarity, this is a concise list of the requirements.

- Complete and pass at least 33 hours of relevant courses, 21 of which are letter graded
- Complete and pass at least four graduate core courses, one in Quantum Mechanics (PHY 5645 or PHY 5646), with an average grade of B or better. **Explanation:** The old requirement was "...with a grade of B or better." However, the requirement for the PhD is six core courses with an *average* of B or better. The old language meant that the Master's requirement could present a higher bar to surpass compared to the PhD requirement.
- Maintain a 3.0 GPA
- Take credits in residence for at least 2 semesters
- Teach at least one lab section
- Complete these requirements in seven years **Explanation:** This rule will not change; seven years sounds like a long time, but our PhD students can get a course-based MS degree in flight, and if they forget to apply for this until late in their PhD degree, we do not want this time limit to deny them an MS degree.
- Submit an application for graduation

14.2 Thesis-based Master's Degree. The student must:

**Explanation:** Again, this is a concise list of the requirements, which are described later.

- Complete and pass at least 33 hours of relevant courses, 21 of which are letter graded
- Complete and pass at least three graduate core courses, one in Quantum Mechanics (PHY 5465 or PHY 5466)
- Complete six hours of thesis credit (PHY 5971)
- Take and pass the Defense of Thesis (PHY 8967)
- Maintain a 3.0 GPA
- Establish a Major Professor and Supervisory Committee by the end of the summer of their first full academic year
- Take credits in residence for at least 2 semesters
- Teach at least one lab section
- Complete requirements in seven years Explanation: This rule will not change; seven years sounds like a long time, but our PhD students can get a course-based MS degree in flight, and if they forget to apply for this until late in their PhD degree, we do not want this time limit to deny them an MS degree.
- Submit an application for graduation

14.2.1 Thesis defense. To obtain a thesis Master's degree a student must carry out, under the direction and supervision of their Major Professor, an independent research project, and prepare a thesis, that is, a written account of the research and its results. Following this, the student will have a thesis defense examination. The first portion of this examination is in open session and the second portion is open to graduate faculty only.

#### 14.2.2 Supervisory Committee

The supervisory committee is composed of three members, the major professor and two other physics faculty. One of the other members should represent a discipline other than the student's discipline. The student shall form this supervisory committee by the end of the summer of their first fall academic year as a master's student.

#### 14.2.2 Schedule

If the Major Professor and the other members of the Supervisory Committee consent to the exam, then the student should arrange an exact time and place for the examination. The Physics Graduate Office will be glad to help the student schedule the examination, however it is the student's responsibility to insure that the oral schedule is satisfactory to every committee member. Once a time has been established, the Major Professor should inform the Physics Graduate Office that the examination will take place and when it will take place.

#### 14.2.3 Grade

Thesis degree. At the conclusion of the oral exam the student will be asked to step out of the room and the Supervisory Committee will discuss and evaluate their performance. The student will then be recalled and informed whether or not their thesis and the defense of the thesis were satisfactory. The Supervisory Committee may at this time also indicate if further changes should be made in the thesis.

#### 14.2.4 Certification of Results

The certification of the results are now handled by the Manuscript Clearance Online Portal (see instructions at <https://gradschool.fsu.edu/academics-research/thesis-treatise-and-dissertation>). You may ask the Graduate Coordinator for help in setting up clearance for your thesis. After the defense of the thesis is completed and passed, the student will submit the manuscript to the Manuscript Clearance Portal. Then the Supervisory Committee members will receive an email requesting a signature on the Manuscript Signature Form. The student must then obtain University approval of their thesis as discussed in Section 14.2.8.

#### 14.2.5 Thesis Content.

The question as to whether the content of a specific thesis meets the standards of the Physics Department is the responsibility of the student's Supervisory Committee. However, a well written thesis should generally contain the following information: (i) A clear statement of the problem addressed by the thesis and its significance; (ii) A review of previous related published work; (iii) Definitions of any specialized technical terms employed; (iv) A review of the theoretical, computational, and/or experimental techniques to be used in solving the problem; (v) A thorough presentation of the student's solution of the problem; (vi) A discussion of the results of the thesis and an analysis of the impact of the results on the body of Physics; (vii) A summary of what was original and significant in the research, and suggestions for future research in the area.

14.2.5.1 Thesis Abstract. Every thesis must include an abstract, that is, a concise but complete and independently intelligible summary of the contents of the thesis normally placed just prior to the first page of text. As long as it is concise, there is no limit to the length of the abstract.

14.2.5.2 FSU Abstract. In addition to the above abstract which forms an integral part of the thesis, a second independent abstract limited to 250 words must be submitted to the University Graduate Office for use by Florida State University. If the Thesis Abstract is 250 words or less in length, then with appropriate reformatting it may be used for the FSU Abstract.

14.2.5.3 Format and style. The particular form and style of the thesis customarily follow the guidelines in the American Institute of Physics Style Manual. The Major Professor may allow variations from these guidelines. However, whatever style is chosen must be consistent with the University clearance guidelines, as described in the brochure Guidelines and Requirements for Thesis, Treatise, and Dissertation Writers, a copy of which may be obtained from the Graduate Dean's Office.

#### 14.2.6 Thesis Credits.

A student working on a thesis must register for thesis credits each term in which a substantial amount of work is being done on the thesis. A student who has completed the required coursework and continues to use campus facilities and/or receive faculty supervision but who has not made a final thesis submission shall include in the required full-time load of twelve (12) hours, a minimum of two (2) thesis hours per term. Those with underload permission must register for at least two (2) hours of thesis credit per term. The exact number of hours shall be determined by

the Major Professor based on the proportion of faculty/staff time, facilities, and other resources needed to support the student. At least six (6) thesis hours must be earned to qualify for a thesis Master's. (See Section 8.1.2).

#### 14.2.7 Departmental approval of thesis.

When a student's thesis has been completed, he or she should submit a copy to each member of their Supervisory Committee. This should be done at least three (3) weeks prior to the time he or she plans to take the Master's Thesis Defense. After at most two (2) weeks, the student should check with all members of the committee for any criticisms they may have. After any changes suggested by the committee are made the student should provide each member of the committee with a revised copy of the thesis. The revised copies should be in the hands of the committee at least one (1) week before the date set for the Master's Thesis Defense. **If the committee approves the thesis after reviewing the revised thesis and questioning the student during their Master's Thesis Defense, then the student will submit their manuscript to the Manuscript Clearance Portal. An automatic request will be sent to the Supervisory Committee members for approval.**

If a student wishes to graduate at the end of the semester in which he or she has obtained approval of their thesis, then it is necessary for him or her to make sure that all of the above has been completed in ample time to meet the pertinent University deadlines.

#### 14.2.8 University approval of thesis

After approval by the oral examining committee, the student should submit the final version of the thesis electronically to the manuscript clearance adviser. The final approved version of the thesis must be submitted electronically to the university manuscript clearance adviser in The Graduate School within 60 days of the defense date or the student must be re-examined. A manuscript processing fee is charged. Consult the Registration Guide for the deadline dates.

As a condition of undertaking a thesis master's program, the student agrees that the completed thesis will be archived in the University Libraries system. The student will make the electronic thesis available for review by other scholars and the general public by selecting an access condition provided by The Graduate School.

# Proposal: Requirements for the PhD Program

The Graduate Affairs Committee discussed, unanimously approved, and proposes the following new rules:

(1) All graduate students in the PhD program must form a committee by the end of their second summer / beginning of the third Fall semester and are expected to pass the prospectus by the end of the third Fall semester. This step should be independent of their coursework.

(2) An important goal of the prospectus is the formation of the PhD committee. The student should demonstrate some basic knowledge in the field and the paper should simply outline a potential idea for the dissertation.

(3) All students need to go through an annual evaluation with the first review at the end of their second year.

(4) All students who plan to work with an advisor who is not a tenured or tenure-track Physics professor must choose a Physics co-advisor who is upon joining the research group.

# Some Statistics for the Graduate Program

	FA 2019	SU 2019	SP 2019	FA 2018	SU 2018	SP 2018	FA 2017
# Students (active) in the program	147	137	144	149	134	140	141
# Women in the program	40	41	44	45	44	45	46
# Minority students							
# Students with external fellowships							
# Appointed as TA's (+ bridge students)	92 (+4)	52.5 (+3)	70 (+4)	71 (+4)	41.0 + 2*0.5	66	71
# Size of incoming class (all students)	27	-	2	24	-	1	21
# Bridge students (incoming)	4	-	-	4	-	-	5
# Graduating students (PhD)		11	4	5	7	4	1
# Graduating & leaving with Master's		0	1	1	1 Bridge	1	
# Leaving without a degree		2	2	1	2	1	1

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## Discussion items for the future:

1. Projected number of TAs for the Spring:  $\approx 90+$
2. Current TA stipend starts at a very low USD 20,900.