

MASTERS STUDENT HANDBOOK

USU Physics Department

(Updated March 10, 2008)

Introduction

Each graduate student is responsible to be knowledgeable about the policies, regulations, and procedures of the School of Graduate Studies and of his or her department or program. This handbook is designed as a resource for planning and guiding students through their graduate careers. It is not intended as a substitute for frequent meetings between the student and the Physics department faculty and staff, especially with the Department Advisor, Temporary Advisor, Graduate Student Tracking Committee, the student's major professor, and/or Graduate Supervisory Committee.

Utah State University Masters Program General Requirements (Summarized from the USU General Catalog)

The Utah State University General Catalog is the most complete source of information on Masters requirements. It may be found online at <http://www.usu.edu/generalcatalog>. This section of the handbook summarizes some of the most important information found in the General Catalog. Keep in mind that if a conflict exists between the information found in this handbook and the General Catalog, the General Catalog is the authoritative source.

I. FULL TIME STATUS

A **full-time matriculated graduate student** must be one of the following:

1. Registered for 9 or more graduate credits; or
2. Registered for 6 or more graduate credits if employed as a graduate assistant for 15 hours per week or more; or
3. Registered for 3 graduate credits with all required coursework completed and only the research component of the degree remaining (the student's Program of Study must have been submitted to the School of Graduate Studies); or
4. Registered for at least 3 graduate credits during the semester of the final thesis/dissertation defense or, in a nonthesis degree program, the last semester of coursework required on the student's Program of Study.

Note: To defer a loan or to receive student loans, graduate students must be registered for *at least 6 credits*.

II. CREDIT REQUIREMENT

The minimum requirement for a master's degree is 30 semester credits, except for a Plan C degree for which the minimum is 33 semester credits. (See more details below.)

III. SUPERVISORY COMMITTEE

A master's degree supervisory committee must include at least three faculty members who are approved by the department head and the dean of the School of Graduate Studies. At least one member must represent the student's area of specialization, and at least one must be from outside the specialization area. Adjunct faculty can be members with the approval of the dean of the School of Graduate Studies. Upon recommendation of the department head, emeritus faculty may serve on supervisory committees, but may not chair new committees.

IV. PROGRAM OF STUDY

The original Program of Study form with signature in ink should be submitted to the School of Graduate Studies by the student before the end of the second semester following matriculation. Amendments to the Program of Study require the signature of the major professor and written notification to each member of the supervisory committee. Submission of a new Program of Study is not necessary.

A. Plan A

The Plan A option for a master's degree requires preparation of a thesis. From 6-15 semester credits of thesis research are required. The semesters during which a student registers for thesis credit should correspond as closely as possible to the semesters in which the thesis work is done and faculty supervision is provided. The thesis for a Plan A master's degree is to be a contribution to the field of knowledge, based on the student's own research or a treatment and presentation of known subject matter from a new point of view. The student and major professor should decide upon a problem or subject for the thesis study by the end of the student's first semester of graduate study. A Thesis Proposal cover page, signed by the entire committee, should be submitted by the student to the School of Graduate Studies along with the Program of Study form. The student and all committee members are required to sign a Data and Copyright form and a Plans for Publication form. The forms are given to the student with his or her copy of the approved Supervisory Committee form and must be submitted to the School of Graduate Studies prior to the final defense.

A. Plan B

The Plan B option requires the production of a paper or a creative work of art. At least 2 credits of thesis research are required, but no more than 3 credits of thesis credit can be included on the Program of Study. The Plan B paper is usually a review of literature, with conclusions drawn after conceptualizing an area of inquiry, planning a systematic search, and analyzing and critiquing the acquired information. The summary and conclusions developed should enhance knowledge in the discipline. Plan B papers and reports should follow the same format specifications as theses and dissertations and are expected to reflect equivalent scholarship standards, even though they may be less intensive and not demand the originality of a Plan A thesis. Plan B papers are defended, but are

not reviewed by the School of Graduate Studies assistant dean or signed by the graduate dean. Plan B papers must be submitted to the Merrill-Cazier Library to be microfiched, and the binding receipt must be returned to the School of Graduate Studies.

C. Plan C

A master's degree option with no thesis or Plan B paper is available in some programs. A departmentally approved program that includes a culminating creative or integrative experience must be filed in the School of Graduate Studies. Generally, a course or seminar on research methods is required, but thesis credits are not accepted. Plan C students should contact their department early in their final semester to be certain that all degree requirements, including completion of graduation forms, will be met, and that all appropriate paperwork has been sent to the School of Graduate Studies.

Physics Department Masters Program Requirements and Guidelines

I. INTRODUCTION

The purpose of this document is to help students and faculty understand the requirements associated with the Physics Department's Masters degree program. Section II summarizes the steps involved in obtaining the Masters degree. Sections III - IX describe each aspect of the Masters program in detail. The information in this document describes Physics Department requirements for PhD students and elaborates upon the general Graduate School requirements that are found in the University Catalog and the preceding section. If a conflict exist between the information found here and the General Catalog, the General Catalog is the authoritative source.

II. SUMMARY OF THE MASTERS PROGRAM

The Masters program consists of the following elements, in roughly chronological order:

- (a) Matriculation and an initial advisement meeting with the departmental advisor (DA) and the Graduate Tracking Committee (GTC) to acquaint student with the program and decide upon course work during the first semester.
- (b) Continued advisement/tracking through the GTC, DA, and temporary advisor or major professor (throughout the student's time at USU).
- (c) A set of required core courses and a Program of Study to be filed with the Graduate School.
- (d) Colloquium (attendance) requirement.
- (e) Establishment of the student's major professor and Supervisory Committee.
- (f) Fulfillment the requirements of research, written and oral presentations of that research, which vary according to whether the student is doing a Plan A, Plan B, or Plan C Masters degree.

III. MATRICULATION AND INITIAL ADVISEMENT

Matriculation into the program will include an initial meeting with the DA and/or the GTC to determine the Masters program that the student will undertake (Plan A, Plan B, or Plan C) and to determine the appropriate courses for the student in the first semester. **This initial meeting should take place in the week before the start of classes.**

IV. CONTINUED ADVISEMENT AND TRACKING

The purpose of continued advisement and tracking is to make sure that the student is satisfactorily progressing toward a Physics Masters degree. Advisement and tracking of the graduate students takes place continually while the student is in the program. Before the student has established his/her Supervisory Committee the majority of advising is done by the DA and/or temporary advisor. After establishment of the Supervisory Committee the primary advising role falls naturally on the student's major professor. In order to help ensure that the student is making satisfactory progress the GTC will meet with each student on at least a yearly basis, typically early in the Fall semester. **These meetings are mandatory for each student.** If the student is located away from the university during the scheduled time of the meeting, a phone interview with the GTC will be conducted.

V. COURSES AND ASSOCIATED REQUIREMENTS

A. Required Courses

The course credit requirements for the three Masters programs are as follows:

Plan A: Any 4 of the 9 "core" Ph.D. courses. (30 credits required, 6 – 15 of research, 15 – 24 of class work)

Plan B: Any 5 of the 9 "core" Ph.D. courses. (30 credits required, 3 for report, 27 of class work)

Plan C: Any 6 of the 9 "core" Ph.D. courses. (33 credits required, all class work)

The 9 "core" course from which the Masters student may choose are: 5340, 5350, 6010, 6110, 6210, and 6410; one State of Matter course; and two courses in Advanced Topics. The State of Matter requirement can be fulfilled by taking any one of 6330, 6530, or 6930. The specifics of the Advanced Topics requirements (two courses) are delineated in Table I.

Table I. Courses required for the physics PhD program.

Required of all students (9)	Courses to fulfill requirement
Methods Theoretic Physics I and II (2)	Phyx 5340 and 5350
Classical Mechanics I (1)	Phyx 6010
Electrodynamics I (1)	Phyx 6110
Quantum Mechanics I (1)	Phyx 6210
Statistical Mechanics I (1)	Phyx 6410
A State of Matter I (1)	one of Phyx 6330, Phyx 6530, or Phyx 6930
Advanced Topics (2)	chosen from Phyx 6020, 6120, 6220, 6420, 6340, 6540, or 7500; Phyx 6310 and 6320 may be substituted for space science students; Phyx 6550 and 6560 may be substituted for condensed matter students; Phyx 6910 and 6920 may be substituted for theory students

B. Possible Waiver of Course Requirements

Students who have previously taken courses at another institution that are equivalent to courses required in Sec. V (A) may (1) ask to have their Supervisory Committee petition the graduate school to transfer up to 12 credits as part of their Program of Study and/or (2) ask that the previously taken courses fulfill appropriate course requirements in Sec. V (A). **Any such waivers should be discussed with the DA, TA, and GTC upon entering the graduate program.**

C. Program of Study

A Program of Study form must be filled out and filed with the Graduate School. This form is filled out with help from the DA and/or the student's major professor. **The Program of Study must be approved by the student's Graduate Supervisory Committee before submission to the Graduate School. It must be filed with the Graduate School by the end of the student's second semester.**

VI. COURSE TEACHING SCHEDULE

In Table II a typical plan for teaching the "core" physics courses is shown. The six specific courses that are required for all students are scheduled to be taught yearly. Three other slots, labeled State of Matter I, Advanced Topic (Fall), and Advanced Topic (Spring) will be filled with courses that can be used for the other required courses. This schedule, which may change depending upon departmental needs, is presented here so that the student and departmental advisors can effectively plan the student's Program of Study. **Note that student input will have a large impact on the specific courses that are offered in the State of Matter and Advanced Topics slots.**

Table II. Typical teaching schedule

Fall	Spring
Methods Theoretical Physics I (5340)	Methods Theoretical Physics II (5350)
Classical Mechanics I (6010)	Quantum Mechanics I (6210)
Electrodynamics I (6110)	Statistical Mechanics I (6410)
State of Matter (6330, 6530, or 6930)	Advanced Topic (<i>as needed</i>)
Advanced Topic (<i>as needed</i>)	

VII. COLLOQUIUM ATTENDANCE REQUIREMENT

Each student is required to pass the Physics Colloquium Course, Phyx 5800, for four consecutive semesters, beginning with the first semester after matriculation. This course is available on a pass/fail basis only.

VIII. STUDENT'S SUPERVISORY COMMITTEE

The student's Supervisory Committee consists of a major professor (who usually is the main advisor to the student during the research phase of Ph.D. degree) and at least two other faculty members. The student's Supervisory Committee is the key connection between the student and the student's successful completion of the research part of the degree.

The basic procedure regarding the student's Supervisory Committee is outlined as follows:

- (1) The student chooses a major professor **during the second semester** after matriculation.
- (2) The student forms the Supervisory committee **no later than the end of second semester** after matriculation. The Supervisory Committee Approval Form must be filled out and submitted to the School of Graduate Studies.
- (3) The Committee approves the Program of Study, which must be filed with the Graduate School.
- (4) For Plan A and Plan B students the Committee approves the thesis or report proposal, respectively.
- (5) The Committee, especially the major professor, mentors the student in his/her research.
- (6) The Committee reads the thesis or report (or paper, if Plan C) and participates in the student's Defense Examination (Plan A or Plan B).

Many of the above steps require that a form be submitted to the School of Graduate Studies. These forms can be found at http://www.usu.edu/graduateschool/apply/current_forms.cfm.

IX. RESEARCH PROGRAM

There are research aspects to all three Masters degree programs. These are delineated below.

A. Plan A

The first stage of the research process is to become acquainted enough with a specific area of research that a Thesis Proposal can be drafted and submitted to the student's Supervisory Committee. **The Thesis Proposal must be approved by the student's committee and filed with the Graduate School. Approval of the Thesis Proposal should occur no later than the end of the third semester after matriculation.**

After approval of the Thesis Proposal (or some modified version) the student should focus on his/her research project. Completion of the research project can take anywhere from one to two years, typically. Utah State University has a policy of 6 years maximum for completion of the M.S. degree from the date of matriculation.

The Physics Department requires each Plan A student to present at least one research seminar associated with his/her research. **At a minimum there is a mandatory seminar associated with the Thesis Defense** (see below). Students are also urged to present a talk to a local research group, or at a regional, national, or international conference, or at another institution.

After completion of the research the student is required to write a thesis on the research. As part of the Thesis Defense, a public seminar on the material in the thesis will be presented. Immediately following the public seminar, the thesis is defended before the student's Supervisory Committee.

B. Plan B

The first stage of the research process is to become acquainted enough with a specific area of research that a Report Proposal can be drafted and submitted to the student's Supervisory Committee. **The Report Proposal must be approved by the student's committee and filed with the Graduate School. Approval of the Report Proposal should occur no later than the end of the third semester after of matriculation.**

After approval of the Thesis Proposal (or some modified version) the student should focus on his/her research project. Completion of the research project can take anywhere from one to two years, typically. Utah State University has a policy of 6 years maximum for completion of the M.S. degree from the date of matriculation.

The Physics Department requires each Plan B student to present at least one research seminar associated with his/her research. **At a minimum there is a mandatory seminar associated with the Re-**

port Defense (see below). Students are also urged to present a talk to a local research group, or at a regional, national, or international conference, or at another institution.

After completion of the research the student is required to write a thesis on the research. As part of the Report Defense, a public seminar on the material in the report will be presented. Immediately following the public seminar, the report is defended before the student's Supervisory Committee.

C. Plan C

The Plan C has a minor research component. The student must present a seminar and a paper to his or her supervisory committee on a topic related to educational or managerial aspects of physics graduate education. The topic must be approved in advance by the student's Supervisory Committee.