

**Student Handbook
Master's Degree**

USU Physics Department

(Updated June 6, 2018)

INTRODUCTION

It is the responsibility of each graduate student to understand the policies, regulations, and procedures of the School of Graduate Studies and his/her department and 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 (DA), graduate student Tracking Committee (TC) and the student's Supervisory Committee (SC) (which includes the student's major professor).

This handbook is divided into the following sections.

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USU MASTER'S PROGRAM GENERAL REQUIREMENTS

(Largely summarized from the USU General Catalog)

The USU requirements for master's degree programs are summarized below. Most of this information has been gleaned from the Utah State University General Catalog, which is available online at <http://www.usu.edu/generalcatalog>. Some of the information here has been obtained from various Graduate School documents. Keep in mind that if a conflict exists between the information found here and that provided by the General Catalog or Graduate School, then the General Catalog and Graduate School are the authoritative sources.

I. FULL TIME STATUS

The following summarize the requirements for maintaining status as a full-time master's student.

- Acceptance by the Department with the concurrence of the Graduate Dean.
- Registered for 9 or more semester credits; or
- Registered for 6 or more credits if employed as a graduate assistant for 15 or more hours a week; or
- Registered for 3 graduate credits with all required coursework completed and only the research component of the degree remaining (the **Full Time at Three Credits Form** must have been submitted to the Graduate School); or
- Registered for at least 3 graduate credits during the semester of the final thesis defense or, in a nonthesis degree program, the last semester of coursework required on the student's Program of Study.
- Registered for at least 3 graduate credits during the semester a thesis or Plan B paper is defended.
- Domestic students will be given until the last day of the next semester (spring, summer, or fall, known as a grace semester) following the defense to finish degree requirements. If a student has not completed all degree requirements by the end of the grace semester, the student must pay a

\$100 Late Completion Fee for each semester following the grace semester. If working with faculty involves more than routine submission of the thesis or dissertation to the assistant dean, registration for 3 or more credits is required. After one year redefense may be required. **If all degree requirements are not complete within two years of a successful defense then the major professor must submit to the graduate dean a letter, signed by all members of the supervisory committee, justifying why the student should not be required to re-defend the thesis or Plan B paper, or dissertation.**

- An equivalent of the grace period is available to international doctoral students. Please see the USU General Catalog for details.
- Graduate students who desire to defer a student loan should consult with the Financial Aid Office with regards to full-time-status requirements.

II. CREDIT / RESIDENCY / GRADE REQUIREMENTS

The minimum requirement for either a Plan A or Plan B master's degree is 30 semester credits. For a Plan A degree between 6 and 15 credits of thesis research credit are required. For a Plan B degree between 2 and 3 credits of thesis research are required.

Master's degree residency requirements are as follows: at least 24 semester credits for a master's degree must (i) be from USU and (ii) appear on the student's Program of Study form for the master's degree.

Provided these USU residency requirements will be met, a student's supervisory committee may recommend transfer of graduate credits earned at another accredited institution. The credits must **not** have been used for another degree. Up to 12 semester credits may be transferred into a graduate program at USU and used in the student's program of study. Transfer credits **cannot** replace the 24 USU credits required for residency. Credits more than eight years old are generally not acceptable. Transfer credits will be shown on official USU transcripts upon completion of the degree.

Graduate students are required to maintain at least a 3.0 GPA for courses in their degree program. Grades of C- or lower will not be accepted for a graduate degree.

III. SUPERVISORY COMMITTEE / PROGRAM OF STUDY

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.

Within School of Graduate Studies and departmental requirements, the supervisory committee determines the courses for the student's Program of Study; conducts departmental qualifying examinations (if required); supervises the student's thesis research or Plan B paper; and conducts the defense or final examination. The defense or final examination must be scheduled through the School of Graduate

Studies. The major professor, who serves as the chairperson of the committee, usually directs the thesis (Plan A) or report (Plan B).

A completed **Supervisory Committee Approval Form** should be submitted to the School of Graduate Studies [via the Graduate Program Coordinator (GPC)] for final approval **by the end of the second semester**. Committee changes are not to be made during the six weeks prior to the final defense.

The original **Program of Study Form** should be submitted to the School of Graduate Studies (via the GPC) **before the end of the second semester** in the program. Changes to the Program of Study can be made by submitting a Program of Study Revision form to the School of Graduate Studies.

IV. DEGREE TRACKS

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 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 **Master's Proposal Approval Form**, signed by the entire committee, should be submitted to the School of Graduate Studies after the committee approves the research proposal. This form is also used to document that the student has obtained the necessary regulatory approvals and safety training, so it should be submitted before the student conducts the majority of the thesis research.

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 at his or her final defense and must be submitted to the School of Graduate Studies prior to degree completion.

B. 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. If a Plan B option includes research beyond a review of literature, the student should submit a Master's Proposal Approval Form after the committee approves the research plan. This form is also used to document that the student has obtained the necessary regulatory approvals and safety training, so it should be submitted before the student conducts the majority of the thesis research.

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, and the binding receipt must be returned to the School of Graduate Studies.

PHYSICS MASTERS PROGRAM REQUIREMENTS AND GUIDELINES

I. INTRODUCTION

The purpose of this section is to help students and faculty understand the specific requirements associated with the Department of Physics master's degree programs. Section II summarizes the steps involved in obtaining the master's degree. Sections III - VIII describe each aspect of the master's program in detail. The information elaborates upon the general Graduate School requirements that are found in the preceding section. If a conflict exist between the information found here and that provided by the Graduate School, the Graduate School is the authoritative source.

II. SUMMARY OF THE MASTER'S PROGRAM

The Physics Department's master's degree programs consist of the following elements, in roughly chronological order:

- Matriculation and an initial advisement meeting with the departmental advisor (DA) and the graduate student Tracking Committee (TC) to acquaint student with the program and decide upon course work during the first semester.
- Establishment of the student's major professor and Supervisory Committee.
- Continued advisement/tracking through the TC, DA, and temporary advisor or major professor (throughout the student's time at USU).
- A set of required core courses (including Colloquium) and a Program of Study to be filed with the Graduate School.
- Fulfillment of the requirements of research, including written and oral presentations of that research.
- The time limit for completion of a master's degree is six years after matriculation.

III. MATRICULATION AND INITIAL ADVISEMENT

Matriculation into the program will include an initial meeting with the DA and/or the TC to determine the master's program that the student will undertake (Plan A or Plan B) 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 master's degree. Advisement and tracking of 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. 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 TC will meet with each student on at least a yearly basis, typically early in the Spring 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 TC will be conducted.

V. COURSES AND ASSOCIATED REQUIREMENTS

A. Required Courses and Colloquium

The course credit requirements for the Physics master's degree programs are as follows.

- Plan A: A total of 30 credits are required, with 6 – 15 as thesis research and the remaining credits coming from course work. A minimum of 4 (out of 10) core Ph.D. courses must be taken. The balance of course work must comprise graduate-level courses.
- Plan B: A total of 30 credits are required, with 2 - 3 (as thesis research) for writing the Plan B report and the remaining credits coming from course work. A minimum of 5 (out of 10) core Ph.D. courses must be taken. The balance of course work must comprise graduate-level courses.
- Each master's degree student is required to attend the Physics Colloquium for four consecutive semesters, beginning with the first semester after matriculation. If the student finishes the master's degree in fewer than four semesters, then this requirement is truncated to the number of semesters that the student is in the master's program.

Table I lists the PhD program core courses.

Table I. PhD Core courses. Each course is worth 3 credits

Course Title	Course Number
Methods Theoretical Physics I and II	Phys 5340 and 5350
Classical Mechanics I	Phys 6010
Electrodynamics I and II	Phys 6110 and 6120
Quantum Mechanics I	Phys 6210
Statistical Mechanics I	Phys 6410
Plasma Physics	Phys 6330
Solid State Physics	Phys 6530
Relativity	Phys 6910

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). Such utilization of previously obtained credits are subject to Graduate School rules, discussed in detail above. **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. It must be filed with the Graduate School by the end of the student's second semester.**

VI. COURSE TEACHING SCHEDULE

Table II indicates the teaching schedule for graduate physics courses. The schedule is designed so that a student can easily start in the fall semester of either an odd or even calendar year.

Table II. Sequence of physics graduate courses

Fall (odd years)	Spring (even years)	Fall (even years)	Spring (odd years)
MTP (5340)	MTP (5350)	CM I (6010)	QM I (6210)
E&M I (6110)	E&M II (6120)	SM I (6410)	SS I (6530)
	Plasma I (6330)		Rel I (6910)

VII. 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 timeline regarding the student's Supervisory Committee is outlined as follows:

- The student chooses a major professor **during the first or second semester** after matriculation.
- 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.

- The Committee approves the Program of Study, which must be filed with the Graduate School **by the end of the second semester.**
- For Plan A (Plan B) students the Committee approves the Thesis (Report) Proposal **no later than the end of the third semester.**
- For Plan A students the Thesis Proposal coversheet is signed by the Committee and submitted to the Graduate School (before defense of the thesis).
- The Committee, especially the major professor, mentors the student in his/her research.
- The Committee reads the thesis or report and participates in the student's Defense Examination.

Many of the above steps require that a form be submitted to the School of Graduate Studies. These forms can be found at <https://rgs.usu.edu/graduateschool/forms/>.

VIII. RESEARCH PROGRAM

There are research aspects to both master's 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. **Approval of the Thesis Proposal should occur no later than the end of the third semester after matriculation.** After approval, the **Master's Proposal Approval Form** is to be submitted to the Graduate School.

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.

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.** 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 submitted to the student's committee no later than the end of the third semester after of matriculation.**

After approval of the Report Proposal (or some modified version) the student should focus on his/her research project. Completion of the research project nominally takes one semester, during which the student is should also be engaged in coursework.

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 Report Defense. 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 report 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.

GRADUATE-SCHOOL FORMS

During a master's student's tenure, there are a myriad of forms that must be filled out and submitted along the way. The forms are summarized in Table III below. These forms are filed with the Graduate School via the Physics Department's GPC.

Table III. Graduate School forms associated with a master's degree.

Form	Timeline
Supervisory Committee Approval	By end of second semester
Program of Study Signature	By end of second semester
Master's Thesis/Project Approval	By end of second semester, after thesis/project is approved
Appointment for Examination	At least 2 weeks before proposed defense date
Record of Examination	At thesis/report defense
Authorship (Plan A)	After Application for Candidacy; typically near time of dissertation defense
Data and Copyright (Plan A)	After Application for Candidacy; typically near time of dissertation defense
Committee-Signed Title Page	After thesis/report has been approved by SC
Thesis/Dissertation Format and Style (Plan A)	After dissertation is approved by departmental reader; before submitting dissertation to Graduate School
Electronic Thesis/Dissertation (Plan A); or Plan B Report/Creative Project Submission (Plan B)	When submitting thesis/report to USU Library