

**STUDENT HANDBOOK
PhD DEGREE**

USU Physics Department

(Updated November 14, 2013)

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.

- USU PhD Program General Requirements (p. 2)
- Physics PhD Program Requirements and Guidelines (p. 5)
- Candidacy Examination Requirements and Guidelines (p. 10)
- Candidacy Exam Checklist and Presentation Guidelines (p. 14)
- Physics Department Forms
 - Application for Qualification (AQ) (pp. 15-16)
 - Intent for Candidacy Exam (ICE) (pp. 17-18)

USU PhD PROGRAM GENERAL REQUIREMENTS

(Largely summarized from the USU General Catalog)

The USU requirements for any PhD program 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. Certain information (credit hours requirements, e.g.) is specific to the Physics Department. 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 PhD 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 (.375 FTE); or
- 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
- Registered for at least 3 graduate credits during the semester of the Dissertation Defense Examination.
- Domestic doctoral students will be given until the last day of the next semester (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, registration for 3 or more credits is required. **If all requirements are not completed within one year of the Dissertation Defense Exam, the dissertation will need to be redefended.**

- An equivalent of the grace period is available to international doctoral students. Please see the USU General Catalog for details.
- Note: To defer a loan or to receive student loans, graduate students must be registered for **at least 6 credits**.

II. CREDIT / GRADE REQUIREMENTS

The following summarizes the semester credit requirements associated with the PhD program.

- 72 credit hour minimum (including 18 hours dissertation research) beyond a bachelors degree; or
- 42 credit hour minimum (including 12 hours dissertation research) beyond a master's degree;
- Up to 12 semester (or 18 quarter) credit hours post master's degree obtained prior to USU matriculation may be transferred from another accredited institution. Transfer credits are subject to approval of the supervisory committee and the of Graduate Dean. Transfer credit must not have been used for a previous degree. Generally, these credits cannot be older than 8 years at the time of matriculation.
- Class credits must be revalidated if more than 8 years have elapsed before completion of degree.
- Graduate students are required to maintain at least a 3.0 GPA for degree-program courses. Grades of C- or lower will not be accepted for a graduate degree.

III. RESIDENCY REQUIREMENTS

The following summarizes the residency requirements associated with the PhD program.

- Of the credits on the approved Program of Study, either 50% or 33 semester credits, whichever is fewer, must be from USU. The balance of credits may be from USU or from other institutions, subject to transfer credit limits and the approval of the student's supervisory committee.
- Meeting the residency requirement also means that doctoral students must take part in the academic community of their program. Participation could include collaborative scholarship with faculty or peers, working as a research assistant or graduate instructor, attending professional meetings, being involved with student or professional organizations, and participating in colloquia, orientation programs, etc. This participation may or may not coincide with the period of concentrated study. Departments have the responsibility to determine appropriate ways for their doctoral students to participate in the academic life of their field and to provide opportunities for this participation.
- Residency is certified by the graduate supervisory committee. The required credits and the student's participation in the academic and intellectual life of the program are noted as acceptable by signatures on the Application for Candidacy form. (This a Graduate School form, see Sec. VI below.)

IV. SUPERVISORY COMMITTEE (SC)

The supervisory committee specifies the student's Program of Study; supervises the student's qualifying examination (if there is one) and Comprehensive Examination (known as the Candidacy Exam in the Physics Department); approves the dissertation proposal and supervises the student's research and preparation of the dissertation; and conducts the final Dissertation Defense Examination. The major professor is the chairperson of the committee and usually directs the student's research. Continuation in a doctoral program is contingent upon the availability of a major professor. Below the requirements associated with the composition of the committee are elucidated.

- The student's **Supervisory Committee (SC)** must include five faculty with doctoral degrees who are approved by the Department Head and the Dean of the School of Graduate Studies.
- At least three members of the SC must be from within the student's department.
- At least one member of the SC must be from outside the student's department.
- Adjunct faculty can be committee 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.
- The SC approval form (available on the Graduate School's website) must be approved by both the Department Head and Graduate School.
- Changes to the SC **cannot** be made within the six week period prior to the student's Dissertation Defense.

V. PROGRAM OF STUDY

The following summarizes details associated with the **Program of Study** form (available on the Graduate School's website).

- The Program of Study form is completed by the student, signed by the student's SC and Department Head, and submitted to the Graduate School for approval.
- It must be submitted when the coursework plan is established and approved by the student's SC. **This must be done by the end of the student's third semester.**
- Amendments to the Program of Study form can be made with an e-mail from the major professor to Joan Rudd (joan.rudd@usu.edu) with copies (in the cc: field) to all committee members. Submission of a new Program of Study is **not** necessary.

VI. APPLICATION FOR CANDIDACY

The following summarizes details associated with the Graduate School's **Application for Candidacy** form (available on the Graduate School's website). This form is distinct from the Physics Department's Intent for Candidacy Exam (ICE) form, which is on the last two pages of this handbook.)

- The **Application for Candidacy** form is completed by the student, signed by the student's SC and the Department Head, and submitted to the Graduate School for approval. A cover page of the dissertation proposal (signed by the members of the student's SC) must accompany this form.

- Submission of the candidacy form is a major step in the student's program, because the committee and department head thereby attest that the student is ready to conduct independent dissertation research.
- Submission of the form should occur shortly after the student has passed the Comprehensive Exam. (In the Physics Department the Comprehensive Exam is known as the Candidacy Exam.)
- Submission of the form must occur a **minimum** of three months before the dissertation defense.

VII. THE DISSERTATION

No research is complete until it is published. In many cases the PhD work of the student will be published as articles in journals and/or presented at conferences and meetings appropriate to the field of study. In addition, the student is required to write a dissertation on his/her research.

VIII. DEFENSE OF DISSERTATION

The PhD candidate must defend his/her dissertation before his/her supervisory committee. This is an oral defense. The following summarizes details regarding the defense.

- **No** changes in the supervisory committee are allowed during the **six** weeks prior to defense.
- The student must register for a minimum of three credits during the semester of the defense.
- The student should distribute the dissertation to the SC such that the committee members have sufficient time to review the dissertation before they commit to the proposed time and place of the defense.
- An **Appointment for Examination** form must be completed by the student and signed by the committee, indicating approval of the proposed time and place for the examination and defense, and submitted by the student to the School of Graduate Studies a **minimum of ten working days** prior to the exam.
- All SC members must attend the defense and sign the **Record of Examination Completion** form.
- **Failure to complete degree requirements within one year of the defense requires the student to redefend his/her dissertation.** The student must register for at least 3 credits the semester of the redefense of the dissertation.

IX. TIME LIMIT

All work for the PhD degree should be completed within eight years of entry into the program. Any course work older than eight years must be revalidated.

PHYSICS PhD PROGRAM REQUIREMENTS AND GUIDELINES

I. INTRODUCTION

The purpose of this section is to help students and faculty understand the specific requirements associated with the Physics Department's PhD program. Section II summarizes the steps involved in obtaining the PhD degree. Sections III – X describe each aspect of the PhD program in detail. The

information in this document describes Physics Department requirements for PhD students and elaborates upon the general Graduate School requirements discussed in the preceding section.

II. SUMMARY OF THE PHYSICS PhD PROGRAM

The PhD program consists of the following elements, in roughly chronological order.

- Matriculation and an initial advisement meeting with the Department Advisor (DA) and the graduate student Tracking Committee (TC) to discuss PhD course requirements and outline a preliminary program of study.
- Continued advisement/tracking with the TC, DA, and Supervisory Committee (SC) (throughout the student's time at USU).
- A set of required courses [10 core courses plus Graduate Research in Physics (two semesters), Profession of Physics (one semester), and Colloquium (4 semesters)] **to be completed during the first two years of graduate study.**
- Qualification, which consists of an evaluation of the student's performance in physics graduate courses taken during the first year.
- Establishment of the student's major professor and Supervisory Committee (SC).
- A Program of Study to be filed with the Graduate School.
- A research-format Candidacy Examination.
- Research with the student's major professor, including the dissertation proposal, actual research, writing of the dissertation, presentation of two public research seminars, and defense of the dissertation.
- The time limit for completion of a PhD degree is eight years after matriculation.

III. MATRICULATION AND INITIAL ADVISEMENT

Matriculation into the program includes an initial advisement meeting with the DA and TC. A preliminary Program of Study is outlined at that time. **This initial meeting shall 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 PhD 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 SC the majority of advising is done by the DA. After establishment of the Supervisory Committee the primary advising role is naturally assumed by 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 spring semester, a phone interview with the TC may be conducted.

V. PhD COURSES AND ASSOCIATED REQUIREMENTS

A. Required Courses

A total of 10 core physics courses are required of all PhD students (see Table I). In addition to the 10 core courses, PhD students must take five credits of the course Graduate Research in Physics (Phys 5900), one credit of Profession of Physics (Phys 5500), and four credits of Colloquium (Phys 5800).

In Graduate Research in Physics (GRP) (Phys 5900) the student will be involved in research with a faculty member. The goal of the course is to give the student exposure to research that currently takes place in the department. The student has the option to work on one project with one professor for the whole semester or two smaller projects with two professors for a half-semester each. Students are required to take GRP during the fall semester of their first year (for two credits) and the fall semester of their second year (for three credits). It is the student's responsibility to find a faculty person or persons to supervise them in this course. A mandatory writing component is a key element of this GRP. [Note that GRP is different from both Thesis Research (Phys 6970) and Dissertation Research (Phys 7970)].

Profession of Physics (Phys 5500) addresses a number of timely topics for graduate students, which might include graduate-student fellowship applications, research ethics, career basics, and other topics germane to the profession of physics.

Four credits of Colloquium (Phys 5800) are also required, one credit each for the first four semesters.

All required coursework will normally be completed in the first two years of graduate study. Table I summarizes the required courses.

Table I. Courses required for the physics PhD program. Core course are each 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 |
| Graduate Research in Physics | Phys 5900 (2 + 3 credits) |
| Profession of Physics | Phys 5500 (1 credit) |
| Colloquium | Phys 5800 (4 credits) |

B. Grade Requirement for PhD Courses

A minimum B average (GPA \geq 3.0) is required in the PhD courses listed above.

C. Possible Waiver of Course Requirements

Students who have previously taken graduate 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 (see Sec. X below) and/or (2) ask that the previously taken courses fulfill appropriate course requirements in Sec. V.A. Any credits transferred to the Program of Study cannot have been used towards a previous degree. Such a student should assemble a Supervisory Committee as early as possible so that the Program of Study can be completed. The student should not assume that any previously taken graduate courses will automatically be substituted for USU courses. It is entirely up to the student's SC to make this determination. **Any such waivers to taking USU graduate courses should be preliminarily discussed with the DA and TC upon entering the graduate program.**

D. 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, TC, and the Supervisory Committee (which includes their major professor). **It should be filed with the Graduate School by the end of the student's third semester.**

VI. COURSE TEACHING SCHEDULE

In Table II indicates 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) |
| GRP (5900) | Plasma I (6330) | GRP (5900) | Rel I (6910) |
| PoP (5500)* | | PoP (5500)* | |
| Colloquium (5800) | Colloquium (5800) | Colloquium (5800) | Colloquium (5800) |

*Only taken fall of the first year.

VII. QUALIFICATION

Each student enrolled in the PhD program is evaluated for qualification for PhD work. Generally, consideration of qualification occurs at the **end of the spring semester of the first year**. Qualification of the student is primarily based on coursework taken during the first year. The qualification process may also include an evaluation of the student's work as a teaching or research assistant. **A standardized *Application for Qualification (AQ)* form must be submitted to the faculty by the student before the faculty meet to discuss the student's qualification.**

If satisfactory progress is being made by the student, the student shall continue in the PhD program. If not, the faculty may (i) decide to reconsider qualification the following semester or (ii) remove the student from the Ph.D. program, in which case the student may apply to the masters program.

VIII. THE SUPERVISORY COMMITTEE (SC)

The student's SC consists of a major professor (who usually is the main advisor to the student during the research phase of PhD degree) and at least four other faculty members. Details of the composition of this committee can be found in section above entitled USU PhD Program General Requirements. The student's SC is the key connection between the student and the student's successful completion of the PhD degree.

The basic timeline regarding the student's SC is outlined as follows.

- The student chooses a major professor and forms his/her SC **near the beginning of the third semester** (if not earlier). The student holds typically meets with the SC to discuss the **Program of Study**, including, perhaps, the transfer of credit or waiver of certain course requirements as discussed in Sec. V.C.
- **No later than the end of third semester** the SC approves the Program of Study, which must be filed with the Graduate School.
- During the **fourth semester** the SC selects the specific material to be the focus of the Candidacy Examination.
- After successfully passing the Candidacy Exam, the student prepares a Dissertation Proposal, which must be approved by the SC. Following this approval, the Dissertation Proposal cover-sheet (signed by the SC members) and Application for Candidacy form are filed with the Graduate School.
- The SC, especially the major professor, mentors the student in his/her dissertation research.
- The SC reads the dissertation and participates in the student's Dissertation 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 the School of Graduate Studies website.

IX. CANDIDACY EXAMINATION

The Candidacy Exam consists of (1) a written report and (2) an oral presentation, and (3) deliberation and voting by the faculty. Detailed requirements and guidelines for the examination can be found in subsequent sections of this document.

X. RESEARCH PROGRAM

The major component of the PhD degree is the undertaking of original research. Usually this occurs as part of the major professor's overall research program, but often has significant input from the student with regards to the scope and direction of the research. There are four formal components associated with this aspect of the student's program, as discussed in the following subsections.

A. Dissertation Proposal

The first stage of the research process is to become acquainted enough with a specific area of research that a Dissertation Proposal can be drafted and submitted to the student's Supervisory Committee. Part of this acquaintance may come via preparation for the Candidacy Examination. **The Dissertation Proposal must be approved by the student's committee and the signed coversheet submitted to the Graduate School along with the Application for Candidacy form. Approval of the Dissertation Proposal should occur no later than the end of the third year of study.**

B. Research with the Major Professor

After approval of the Dissertation Proposal the student should focus on his/her research project. Completion of the research project can take anywhere from one to four years, typically. Utah State University has a policy of 8 years maximum for completion of the PhD degree from the date of matriculation.

C. Seminar Requirement

The Physics Department requires each PhD student to present at least two research seminars associated with his/her research (neither of which can be the Candidacy Examination oral presentation). One of these is associated with the dissertation defense (see below). The other seminar can be a local seminar given to members of a local research group, a presentation at a regional, national, or international conference, or an invited talk at another institution.

D. Dissertation and Defense

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

CANDIDACY EXAMINATION REQUIREMENTS AND GUIDELINES

I. OVERVIEW OF THE EXAM

The Candidacy Exam is the Physics Department's last evaluation of the student's suitability to pursue a PhD degree. It is designed to provide the department a means to evaluate the student's ability to participate in the world of physics research. The exam does this by having the student study the research literature on a particular physics topic and then educate the Physics faculty about that topic.

There are three components to the exam:

- a written report of the material that will be presented in an oral presentation

- an oral presentation (including time for faculty questions) on a research topic
- deliberation and voting by the faculty.

II. PRIOR TO THE EXAMINATION

It is suggested that the student schedule two to three months of preparation time for the examination. The summer between the student's fourth and fifth semesters is the standard time for exam preparation.

A. Setting the Topic

In the **fourth semester** the student's Supervisory Committee shall set, in writing, the research topic to be explored. The PhD candidate, the major professor, and Supervisory Committee may all participate in the topic selection process. There are no constraints on who chooses the topic as long as the committee ratifies it unanimously.

However, the topic is constrained by the following: (i) The topic should **not** be material that is normally taught at the 6000 or 7000 level. (ii) The topic should **not** be esoteric to the point that the majority of the USU Physics Department faculty are unable to participate in the Exam. Assessment of this guideline is the responsibility of the Supervisory Committee. (iii) The topic can, **but need not**, be a future aspect of the candidate's research.

The Supervisory Committee plays a key part of the student's preparation for the Candidacy Exam. In addition to setting the topic, the committee is responsible for helping the student understand the difference between course-based learning and research, the latter being the topic of the Candidacy Exam. The candidate may discuss his/her readings and thoughts as often as necessary with the major professor and committee in preparing the oral presentation.

At the time that the topic is set by the committee, the student shall give the signed *Intent for Candidacy Exam* form (ICE form) to the Department Advisor. The form must be signed by all Supervisory Committee members.

B. Oral Presentation Prerequisites

To proceed with the oral phase of the Candidacy Exam the student must meet the following prerequisites.

- The required PhD courses have been completed.
- A minimum 3.0 GPA has been maintained in these courses.
- The student has passed Qualification at the PhD level.
- A Program of Study is on file with the Graduate School.
- The written report component of the exam is completed.

As the Candidacy Exam is a formal examination of the candidate, **only** the candidate and faculty members may be present during the oral presentation.

If all 5 of these prerequisites have been met, then with the help of the Department Advisor the student will schedule the oral exam. **Seven days before the oral exam the Department Advisor will distribute (i) the student's ICE form and (ii) the written report to all Physics faculty and Supervi-**

sory Committee members. The ICE form shall indicate the scheduled date, time, and place of the oral presentation. Both the ICE form and written report must be distributed 7 days in advance of the oral presentation in order for the oral presentation to proceed.

III. WRITTEN REPORT

As part of the examination the candidate shall prepare a written summary of the material that is to be discussed during the oral presentation. The written report should include an abstract, appropriate figures and/or tables (including captions), and references. It is strongly recommended that the APS style manual,¹ AGU style guidelines,² or other appropriate style guidelines be followed when writing and formatting the document. The length of the document should be sufficient to lucidly convey the subject matter to the faculty.

The major professor and committee may not write nor rewrite any parts of the written report. However, if the committee finds a working version of the report unsatisfactory, they may certainly guide the student in making improvements to the document.

In order that the faculty have sufficient time to evaluate the report, it shall be made available to the faculty a minimum of 7 days before the oral examination. As discussed above, it shall be distributed with the ICE form, which announces the date and time of the oral-presentation component of the Candidacy Exam.

IV. ORAL PRESENTATION

The oral phase of the exam shall normally take place during the fifth semester that the student is in the Graduate Program. The Physics Department faculty-meeting time slot (3:30 p.m. on Thursdays during the fall or spring semester) is the standard time for these examinations, and the exam is normally held in the Physics/CASS conference room. **Only Physics Faculty, the student's Supervisory Committee, and the candidate may attend the oral examination.**

Visual aids of the standard type are acceptable – viewgraphs, slides, or computer-aided presentations. A white board is available in the conference room. In the case of a handicapped candidate, the department will comply with all Federal regulations and common sense.

The oral presentation formally consists of two parts:

- 1. An uninterrupted 45-minute talk by the candidate on the subject set by the Supervisory Committee.** The student begins the oral part of the exam by making an **uninterrupted** 45-minute presentation. The one exceptional interruption will be a "three-minute" warning by the Exam Chairperson, so that the candidate may make concluding remarks.
- 2. A 30-minute period of questions (from the faculty) addressed directly to the candidate.** At the end of 45 minutes, which will be the maximum time allotted by the chairperson, a 30 minute question session begins. Questions must be germane to the subject presented by the student in

¹ <http://www.apsstylemanual.org/>

² http://www.agu.org/pubs/authors/manuscript_tools/journals/style.shtml

the written report and/or the oral presentation, and **must be directed at the student** only. The chairperson will control the time permitted for each faculty member's questions. At exactly the 1 hour, 15 minute mark the oral presentation is over and the student leaves the room.

The oral presentation requires a quorum of faculty members to be present. A quorum consists of the following:

- The student's major professor.
- The Supervisory Committee external member.
- Two of the remaining three Supervisory Committee members.
- The chairperson of the exam, who is normally the Department Head. The Assistant Department Head **must** substitute for the Department Head if the Department Head is the student's major professor. The Assistant Department Head **may** substitute for the Department Head if the Head is unavailable.
- Three other physics faculty members.

To ensure that a quorum is available, tenured and tenure-track faculty are required to attend if they are not on travel leave. The quorum is hence 8 faculty members with balanced graduate-committee and general-faculty representation. If the exam chairperson is on the student's supervisory committee, then the quorum consists of 7 faculty members. The exam chairperson may not be the student's major professor.

V. DELIBERATION AND VOTING

The deliberation and voting phase of the Candidacy Exam commences immediately following the oral presentation. This part of the exam formally consists of two parts:

- **A 15-minute discussion among the faculty to clarify the Candidacy Exam performance of the candidate.** This discussion is limited to aspects of the Candidacy Exam – the written report and the oral presentation. The single goal of the discussion is to clarify the correctness of (i) the material presented and (ii) the student's responses to questions from the faculty. The discussion may **not** digress to other aspects of the student's performance in the PhD program.
- **An anonymous *pass/fail* vote by the faculty.** Each faculty member in attendance then marks a secret pass/fail ballot that is immediately given to the chairperson. **All faculty present are required to vote either pass or fail.** The chairperson tallies the ballots and informs the faculty and student of the result before the 1 hour, 35 minute mark. A **majority** of passing votes or a **tie vote** is required to pass the exam.

The faculty present are to make their judgments based on the written report, the oral presentation, responses to the questions, and the subsequent interfaculty discussion. In order to help the faculty assess the student's performance on the exam, it is suggested that the faculty judge the exam using the following criteria:

- Both the report and talk had a proper balance of introductory and in-depth material.
- The level of the material presented in both the report and talk was appropriate for all faculty present.

- The candidate demonstrated mastery of the material presented, **especially an understanding of the physics germane to the topic.**
- The report and talk contained assessment, discussion, conclusions, and summaries that represent the candidates own interpretation of the subject.

VI. EXAM FAILURE

If the student fails the exam, it is the task of the faculty to decide the student's fate, which may include another attempt at the exam or expulsion from the graduate program.

CANDIDACY EXAM CHECKLIST / PRESENTATION GUIDELINES

I. CHECKLIST

The following list summarizes details associated with Candidacy exam.

- During the fourth semester of graduate study, meet with your Supervisory Committee to set the exam topic. **Make sure that all prerequisites for taking the oral exam are on track.**
- Submit the ICE form to Department Advisor (to be done **immediately** after the topic is set).
- Schedule 2 to 3 months for exam preparation, including the writing of the written report.
- Work with the Department Advisor to schedule the oral presentation. The presentation should occur during the your **fifth semester.**
- Make sure that the written report and the ICE form (with time, date, and location) are distributed **7 days** in advance of the oral presentation.
- Get a good night's sleep before the oral presentation!

II. GUIDELINES

The following list summarizes the components that are critical for a successful candidacy exam.

- Your job is to educate the faculty on your assigned topic, of which you should be the expert. The level of both the written report (oral presentation) should be at that of a review article (colloquium), **not** a high-powered research paper (research seminar).
- As you prepare both aspects of the exam, frequently consult the criteria that the faculty will be using to judge the written report and the oral presentation (see the ICE form below).
- Carefully follow APS, AGU, or other appropriate style guidelines when writing the report.
- The length of the report should be sufficient to lucidly convey the subject matter to members of the faculty.
- For the oral presentation use 15 – 20 minutes for introductory material and 25 – 30 minutes for in-depth discussion.
- When using viewgraphs or slides for the oral presentation, make sure that each one has on it exactly what you want. **Try to base a 45-minute talk on no more than 15 viewgraphs.** Often the best talks have the fewest viewgraphs.
- Do not introduce any material that you do not understand or cannot defend. **Anything** that you present in the written report or oral presentation is fair game for questions.
- **Practice, practice, practice** your oral presentation!

Application for Qualification Form (AQ)

1. To be filled in prior to Qualification attempt by Department Advisor with input from student and/or major professor.
2. Attach graduate and undergraduate transcripts and class evaluation forms.

Candidate:

Date of Matriculation:

Advisor:

Date of Qualification Application:

GRE Scores

| Date | Verbal | Analytical | Quantitative | Physics Subject |
|------|--------|------------|--------------|-----------------|
| | | | | |
| | | | | |

Graduate Record Prior to USU Physics

| University | Major | Years Attended | GPA | Degree |
|------------|-------|----------------|-----|--------|
| | | | | |

Graduate Core Courses

| Course | Semester | Instructor | Grade |
|---------------------------------|----------|------------|-------|
| Phys 5340 – Meth Theor Phys I | | | |
| Phys 5350 – Meth Theor Phys II | | | |
| Phys 6010 – Classical Mech I | | | |
| Phys 6110 – Electrodynamics I | | | |
| Phys 6120 – Electrodynamics II | | | |
| Phys 6210 – Quantum Mech I | | | |
| Phys 6410 – Stat Mech I | | | |
| Phys 6330 – Plasma Physics | | | |
| Phys 6530 – Solid State Physics | | | |
| Phys 6910 – Relativity | | | |
| Core GPA | | | |

Other USU Graduate Courses

| Course | Semester | Instructor | Grade |
|-------------------------------|----------|------------|-------|
| Phys 5000 – Prof. of Physics | | | |
| Phys 5900 – Grad. Res. Phys. | | | |
| | | | |
| | | | |
| Total USU Graduate GPA | | | |

Teaching and/or Research Assistantship Positions

| Position | Supervisor | Semester(s) | Notes |
|----------|------------|-------------|-------|
| | | | |
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Any other Relevant Details:

**Previous Qualification Attempt? Yes No : Date:
Action Taken:**

Result of this Qualification Attempt: Pass Fail

Remarks:

Department Head Signature:

Date:

Intent for Candidacy Exam Form (ICE)

1. Page 1 to be filled in, signed by Supervisory Committee, and filed with Physics Department Advisor immediately after Exam topic is set.
 2. Pages 1 and 2 filled in and distributed to faculty 7 days in advance of oral exam.
-

Candidate:

Date:

Assigned Topic:

Statement of Exam Topic to Student (1 paragraph)

Five Relevant References

Supervisory Committee Signatures

_____ (chair)

Candidacy Exam Announcement

Candidate:

Date, Time, and Place:

I, the Department Advisor, verify that the candidate has met all prerequisites (*completion of all required courses with a 3.0 minimum GPA, Qualification, Program of Study on file, and completion of written report*) for proceeding with the oral-presentation component of the candidacy exam

(signature)

Suggested Criteria and Score Sheet for Judging Exam

| Criteria | Scoring | | | | |
|---|----------------|-------|---------|----------|-------------------|
| | strongly agree | agree | neutral | disagree | strongly disagree |
| Both the report and talk had a proper balance of introductory and in-depth material. | | | | | |
| The level of the material presented in both the report and talk was appropriate for all faculty present. | | | | | |
| The candidate demonstrated mastery of the material presented, especially an understanding of the physics germane to the topic. | | | | | |
| The report and talk contained assessment, discussion, conclusions, and summaries that represent the candidates own interpretation of the subject. | | | | | |

Notes: