

**Graduate Handbook
for the
Department of
Watershed Sciences**

Spring 2007

GRADUATE HANDBOOK

FOR THE DEPARTMENT OF WATERSHED SCIENCES

Requirements, policies, and friendly advice to aid in your graduate career

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INTRODUCTION

This handbook describes the basic requirements for obtaining a graduate degree in the Department of Watershed Sciences. The handbook also provides some suggestions for making your graduate program less difficult and more fulfilling. Many of these points already will be familiar to students with graduate school experience; however, they are intended to help those with less experience and to ensure a common, but minimal, understanding for everyone.

What Are Graduate Studies?

Graduate studies, unlike more general undergraduate programs, focus upon a chosen area of specialization in a profession. You have expressed the desire to participate in a specialization, and you should be excited about this opportunity.

- C Graduate studies are much more than striving for good grades in coursework. As a beginning professional, you are expected to demonstrate initiative, ambition, excitement, and creativity.
- C Coursework is only a part of your studies. Reading and discussing additional ideas with your peers are critical components of graduate study. The library should be a second home, as you independently delve into additional past and current literature. You will not fully attain expertise in the profession by coursework alone; independent discovery and discussion are critical elements.
- C Professors should be viewed as colleagues who expect you to perform as a fellow member of the profession. Your fellow students should be viewed as peers who help you formulate ideas and develop your skills through constructive criticism.
- C Learning to ask the “important” questions and seeking answers is an aspect of professional development. You should strive to develop the ability to ask probing questions and to seek answers. Graduate studies help you to learn how to address problems, not how to recite dogma. Hopefully, you will have the opportunity to answer some of the pressing questions in the profession.
- C A chosen profession should be exciting and rewarding and if you are not enjoying your education, re-evaluate your goals. Even though you should be having fun, you should be continually evaluating your performance. Are you pleased with your progress? How does your progress compare with that of other graduate students, faculty and others in the profession? Are you progressing toward a leadership role in the profession? Are you attaining a competitive position, given the current job-market and the qualifications of others in the profession?

You were admitted into a graduate program because of your exceptional abilities and your expressed desire to become a leader in the profession. The faculty want you to succeed and will work with you to attain this goal, given your continued exhibition of this desire to achieve success in the profession.

What You Must Complete For Your Graduate Degree

It is the responsibility of both you and your advisor to track the completion of your degree requirements (grades and checklist of actions). Record keeping will be facilitated by using the ***Graduate Student Annual Progress Report Form*** (Appendix I) that is filed by you and your major advisor each spring. It is the responsibility of every graduate student to complete this progress report yearly “upon pain of death.” This form includes the date that each official step of your program of study was completed as well as other information. Information pertaining to publications, grant proposals, and teaching experiences should be included each year to both facilitate the departmental database as well as to quantify your progress. These annual forms will be used for scholarship and teaching assignments as well as to create an official record of your achievements, should questions or discrepancies arise. If departmental records indicate that you have not completed a requirement by the recommended date, your major professor/supervisory committee will be informed to determine whether the records are correct. If the records are correct, your major professor/supervisory committee will contact you on the matter. Failure to remedy the deficiencies may make you ineligible for Department, College, and University financial assistance, and if not remedied can lead to termination of your graduate program.

The following checklist is the recommended sequence of actions to be taken by graduate students for successfully completing their graduate program; nonetheless, there exists considerable flexibility in designing one's graduate program. Although the following sequence of events is only recommended, it should be taken seriously.

CHECKLIST FOR COMPLETING A MASTERS DEGREE

(Semesters refer to academic year, not including summers. Underlined terms are defined in the following section, and italicized terms represent forms that you need to have signed.)

Enter the completion date of each checklist item where indicated.

_____ **By the End of 1st Semester**

Supervisory Committee

You entered the graduate program with a major professor. Choose at least 2 additional faculty members, to serve on your Supervisory Committee. Faculty should be asked if they are willing to serve, and if they agree, list them on the *Supervisory Committee Form*. (<http://www.usu.edu/gradsch/forms/Sup%20Ctee%20Form.pdf>).

All forms can now be found online at the School of Graduate Studies website. (<http://www.usu.edu/gradsch/forms/>)

The committee's composition must be approved by the Department Head. Members of the committee should be individuals who can provide constructive input to your research and program of study. One individual must come from outside the Department. Discuss your career plans and Program of Study (<http://www.usu.edu/gradsch/forms/MS%20POS.pdf>) with your major professor and construct a tentative Program of Study by the end of this semester. Before the end of the semester, you should have a committee meeting in which your career plans, Program of Study, and potential research projects are reviewed.

- _____ a) Committee members review your Program of Study (*Program of Study Form*) (<http://www.usu.edu/gradsch/forms/MS%20POS.pdf>).
- _____ b) You review your research plans with the committee and get their feedback, an early outline of your Research Proposal will facilitate constructive discussion.

_____ By the End of 2nd Semester

Research Proposal, Pre-Project Seminar, and Program of Study

- _____ a) Prepare your research proposal by working in collaboration with your major professor and committee members.
- _____ b) **(Pre-Project Symposium replaces the following step. Details are still being finalized, contact the department office for updated information.)** Arrange a time with your committee for you to make an informal presentation of your research proposal to your committee and other interested members of the department. This can be done after all committee members indicate that your research proposal ideas are in sufficient shape for you to make an oral presentation. After this presentation, the committee will provide you with comments so you can finalize your research proposal. You have until the end of the 2nd semester to make this informal presentation. Research and teaching assistantship support will be suspended after your 2nd semester until you make your presentation.
- _____ c) After reading your Research Proposal, your Supervisory Committee must indicate the acceptability of your work by signing on the title page of your Research Proposal. Please have their names typed below their signatures.
- _____ d) You should obtain the signature of your major professor and Supervisory Committee members and the Department Head on the *Program of Study Form*. This form will be submitted along with a copy of your Research Proposal, *Plans for Publication Form* (Graduate School sends to you), *Rights to Thesis/Dissertation Data Form* (Graduate School sends to you), and completed *IACUC forms* (http://www.usu.edu/research/iacuc/IACUC_applicationWORD.doc) to the School of Graduate Studies.

_____ By the end of 4th or 5th Semester -

Thesis Defense and Post-Project Seminar

The M.S. Thesis (Plan A)/Paper (Plan B) should be defended and you should graduate. (Plan A) The Thesis Defense will entail a Post-Project Seminar that is open to all faculty and graduate students in which your research and conclusions are presented, with an opportunity for questions from the audience. The Supervisory Committee holds a Defense Meeting within 48 hours of the seminar. (Plan B) After reading the paper, the Supervisory Committee members either accept or reject the paper.

- _____ a) It is your responsibility to turn in an *Appointment for Examination Form* (<http://www.usu.edu/gradsch/forms/examthesisdiss.cfm>) to the Graduate School at least **10 working days** before your scheduled defense. A *Post-Project Seminar Presentation Form* (http://www.cnr.usu.edu/departments/wats/grad-program/post_project.doc) should also be turned into the Department Office **10 working days** before your defense. Both forms should be filled out at the same time.
- _____ b) It is your responsibility to ensure that **all** Supervisory Committee members can be present at the times and dates of the seminar and meeting, and the seminar time and date are publicly advertised **at least 10 working days prior to its presentation.**
- _____ c) It is your responsibility to meet Graduate School guidelines for binding and for the deposition of your thesis after it is accepted by your Supervisory Committee, the Department Head, and the Graduate School.
- _____ d) It is your responsibility that all Graduate School format guidelines are met (see "Graduate School Handbook for Thesis/Dissertation Writing").
- _____ e) Once the defense is complete, it is your responsibility that your committee signs the *Record of Exam Completion Form* (found in defense packet), **1 copy is made for the Department Head**, and the original is sent back to the Graduate School.

CHECKLIST FOR COMPLETING A DOCTORAL DEGREE

(Semesters refer to academic year, not including summers. Underlined terms are defined in the following section, and italicized terms represent forms that you need to have signed.)

Enter the completion date of each checklist item where indicated.

_____ **By the End of 2nd Semester -**

Supervisory Committee, Research Proposal, and Pre-Project Seminar

Choose at least 4 additional faculty members, to serve on your Supervisory Committee. Faculty should be asked if they are willing to serve and if they agree, list them on the Supervisory Committee Form (<http://www.usu.edu/gradsch/forms/Sup%20Ctee%20Form.pdf>). The committee's composition must be approved by the Department Head. Members of the committee should be individuals who can provide constructive input to your research and program of study. Three individuals must be from the Department (this can include your major professor) One individual must come from outside the Department. Before the end of the semester, you should have a committee meeting in which your career plans and Program of Study (list of courses - <http://www.usu.edu/gradsch/forms/PHD%20POS.pdf>) are reviewed, along with your thoughts on possible research projects.

- _____ a) Committee members review your Program of Study (*Program of Study Form*) (<http://www.usu.edu/gradsch/forms/PHD%20POS.pdf>).
- _____ b) You review your research plans with the committee and get their feedback, an outline or draft of your Research Proposal would facilitate constructive discussion.
- _____ c) Prepare your research proposal by working in collaboration with your major professor and committee members.
- _____ d) **(Pre-Project Symposium replaces the following step. Details are still being finalized, contact the department office for updated information.)** Present a Pre-Project Seminar. At least 10 working days before presenting your Seminar, you should provide your committee with a nearly final draft of your Research Proposal and get feedback from them.

_____ **By the End of the 3rd Semester**

Signed Research Proposal and Program of Study

- _____ a) After reading your Research Proposal and participating in the Pre-Project Symposium, your Supervisory Committee must indicate the acceptability of your work by signing on the title page of your Research Proposal. Please have their names typed below their signatures. You have until the end of the 3rd semester to address any deficiencies identified by your Supervisory Committee in your proposal or seminar.
- _____ b). You should obtain the signature of your major professor and Supervisory Committee members and the Department Head on the *Program of Study Form* (<http://www.usu.edu/gradsch/forms/PHD%20POS.pdf>). This form will be submitted along with a copy of your Research Proposal, *Plans for Publication Form* (Graduate School sends to you), *Rights to Thesis/Dissertation Data Form* (Graduate School sends to you), and completed *IACUC forms* (Institutional Animal Care Use Committee - http://www.usu.edu/research/iacuc/IACUC_applicationWORD.doc) to the School of Graduate Studies.

_____ **By the End of 4th Semester**

Comprehensive Examination

- _____ a) The Comprehensive Examination should be completed. To take the exam, you must arrange a **date** for the written portion and **time and date** for the oral portion when **all** of your Supervisory Committee can be present.

_____ **By the end of the 10th Semester**

Dissertation Defense and Post-Project Seminar

The Ph.D. Dissertation should be defended and you should graduate. The Dissertation

Defense will entail a Post-Project Seminar that is open to all faculty and graduate students in which your research and conclusions are presented, and defended in an ensuing period for questions. **Within 48 hours** of the seminar, the Supervisory Committee will conduct a Defense Meeting in which the student's research performance will be evaluated.

- _____ a) It is your responsibility to turn in an *Appointment for Examination Form* (<http://www.usu.edu/gradsch/forms/examthesisdiss.cfm>) to the Graduate School at least **10 working days** before your scheduled defense. A *Post-Project Seminar Presentation Form* (http://www.cnr.usu.edu/departments/wats/grad-program/post_project.doc) should also be turned into the Department Office **10 working days** before your defense. Both forms should be filled out at the same time.
- _____ b) It is your responsibility to ensure that **all** Supervisory Committee members can be present at the times and dates of the seminar and meeting, and the seminar time and date are publicly advertised **at least 10 working days prior to its presentation**.
- _____ c) It is your responsibility to meet Graduate School guidelines for binding and for the deposition of your dissertation after it is accepted by your Supervisory Committee, the Department Head, and the Graduate School (see "Graduate School Handbook").
- _____ d) It is your responsibility to see that all Graduate School format guidelines are met (see "Graduate School Handbook for Thesis/Dissertation Writing").
- _____ e) Once the defense is complete, it is your responsibility that your committee signs the *Record of Exam Completion Form* (found in defense packet), **1 copy is made for the Department Head**, and the original is sent back to the Graduate School.

GRADUATE STUDENT RESPONSIBILITIES

- C YOU ARE RESPONSIBLE FOR KEEPING TRACK OF ALL FORMS SENT TO YOU BY THE GRADUATE SCHOOL AND ENSURING THEY ARE TURNED IN ON TIME. ALL FORMS MUST BE TURNED IN AND APPROVED BY THE GRADUATE SCHOOL AT THE APPROPRIATE TIME BEFORE A DEFENSE IS SCHEDULED OR PERMISSION TO DEFEND WILL LIKELY NOT BE GRANTED.
- C IF YOU DO NOT MEET THE ABOVE HIGHLY RECOMMENDED DEADLINES, THE GRADUATE SCHOOL HAS A STATUTE OF LIMITATIONS FOR COMPLETING AN M.S. OR PH.D. DEGREE THAT IS 8 YEARS. IF YOUR COURSEWORK EXCEEDS THE 8 YEAR LIMIT, IT MUST BE REVALIDATED OR RETAKEN WITH WRITTEN APPROVAL OF YOUR MAJOR PROFESSOR/SUPERVISORY COMMITTEE, DEPARTMENT HEAD AND DEAN OF GRADUATE STUDIES.
- C YOU ARE RESPONSIBLE FOR MEETING ALL ADDITIONAL GRADUATE SCHOOL REQUIREMENTS AND DEADLINES, ESPECIALLY THOSE FOR PARTICULAR COMMENCEMENT DATES (see "Graduate School Handbook").
- C YOU ARE RESPONSIBLE FOR ENSURING THAT YOUR THESIS/DISSERTATION REFLECTS YOUR ORIGINAL WORK (see USU GUIDELINES FOR PLAGIARISM in the "Graduate School Handbook").

THE DESCRIPTION OF TERMS IN THE CHECKLIST

Major Professor

Your major professor should be your principle mentor for guiding you through graduate studies. Major professors differ considerably in the ways that they deal with their graduate students and have considerable flexibility in designing your graduate training. An atmosphere of mutual respect should be maintained, since you are colleagues working together as professionals. Remember, as you selected your major professor on the basis of his/her expertise and reputation, your major professor also has a stake in your progress and wants to see you succeed, since your future professional performance will reflect on his/her professional reputation. Your professional development is *the principal* role of faculty in the Graduate School.

You should feel comfortable coming to your major professor with professional concerns and should seek his or her advice regarding your professional progress. You should discuss advances in your profession with your major professor, the same as any professional does with colleagues. Your major professor is hopefully a friend, who will do all within his or her power to help you during your graduate studies. However, your major professor has an obligation as a faculty member in the Graduate School to evaluate your progress and enforce your timely progression through the graduate program.

Maintain open and frequent communication with your major professor. Most conflicts between graduate students and their major professor arise when lines of communication are not maintained and used on a frequent basis. Conflicts do arise. Try to resolve them through frank and open discussion, since you are colleagues. If this is no longer possible, remember that 1) your Graduate Student Representatives, 2) the Department Head, and 3) the Graduate Academic Review Committee can aid by arbitrating differences.

Two particular points that you should resolve early with your major professor are authorship and patent arrangements (also see “USU Patent Policy”) arising from research projects that you conduct together. Faculty attitudes differ on these points, and you need to be aware of your major professor’s expectations and make your expectations known to your major professor.

Program of Study

With the aid of your major professor, you should construct a tentative list of courses and a schedule of when they will be taken. These courses and their scheduling should “best” serve to meet your professional goals and prepare you for your immediate research needs. The course list should be formalized with and agreed to by your Supervisory Committee (*Program of Study Form – Masters or PhD*) when Candidacy is requested. Once the Program of Study has been formally approved, it can only be

changed with the approval of your Supervisory Committee, the Department Head, and the Dean of the Graduate School. *It is recommended that coursework that is particularly applicable to your research be completed as early as possible and before any extended leave from campus for research.*

The only course *required* by the department is participation in and registration for Departmental Seminar (WATS 6800/7800, 1 credit) it is combined with the other departments of the College of Natural Resources. In the spring, the seminar is combined with the Watershed Initiative as a joint water sciences seminar. **You must register for Department Seminar one semester per year** (Fall or Spring) during the semesters you are on campus taking coursework. You are required to attend as many of these weekly seminars as possible. If you choose to affiliate with other programs, such as the Ecology Center, there may be other required courses that you must complete (see literature on these programs).

The Program of Study for the graduate degree (not additional courses to satisfy deficiencies) must meet certain requirements:

1) Types of courses

- a) Courses listed 2XXX or below *cannot* count towards graduate credit.
- b) Courses listed as 3000-4999 can only count for graduate credit (maximum of 3 hours) if they are recommended by the supervisory committee for inclusion in a Program of Study. For approval by the graduate dean, such courses must be **outside** the student's graduate-degree specialization and/or emphasis. Courses required or recommended by the department for a related undergraduate degree are not acceptable for a graduate degree in that department.
- c) No more than 3 credit hours in 3XXX - 4XXX courses can count for graduate credit.
- d) Courses not approved as part of the Program of Study or its revision, as accepted by the entire Supervisory Committee, *cannot* count towards graduate credit.

2) Grades

- a) Courses listed in the Program of Study must be passed with a B (3.0) or better grade, unless it is a course that is only offered as Pass/Fail, or a seminar, special problems, readings, research, or thesis/dissertation credit in which case a PASS (P) is sufficient. If a course that is listed on the Program of Study is taken, but not passed, it cannot be removed from the Program of Study until passed. A course can be retaken only once. Under special circumstances, a grade lower than a B, but no lower than

C (2.0) can be petitioned (letter stating cause and signed by the entire Supervisory Committee) as being adequate for approval by the Department Head.

- b) A grade point average of B (3.0) or better must be maintained.
 - c) Incomplete grades (I) must be completed within 12 months (or deadline set by instructor), except for research and thesis/dissertation credits. Once thesis/dissertation credits are completed any (I) grade will change to a PASS (P). If Incomplete grades (I) are not removed in time, the course must be retaken if it is listed on the Program of Study. Courses cannot be changed from the Program of Study until all incomplete grades are taken care of.
 - d) Failure to meet the above requirements *will* lead to your being rejected for candidacy, or if you already have candidacy, you will be refused the opportunity to defend your thesis or dissertation by the Department Head.
- 3) Degree program
- a) **(M.S. students)** The Program of Study *must* include a minimum of 30 semester hours. If you are planning to do a research project and thesis (Plan A), 24 credit hours must be in formal coursework, that is non-research/thesis credits. If you are planning to write a paper (Plan B), 27 credit hours must be in formal coursework and 2-3 must be in thesis research to meet the requirements of the Graduate School. At least 24 credit hours must be taken at USU, including seminars, research paper/thesis credits, and you must be in residence for at least 1 semester (at least 6 credits per semester).
 - i) If your undergraduate preparation at the time of admission to the graduate program at USU was found to be deficient, additional courses that do not count towards your M.S. course requirements may need to be included in your Program of Study.
 - ii) Graduate credits attained elsewhere can be petitioned for transfer to your Program of Study (letter stating cause with your major professor's signature) through the Department Head, with final approval from the Dean of the Graduate School. No more than 6 transfer credits can count towards the minimum 30 credit hours required, because 24 credit hours must be taken at USU. Transfer credit will only be considered for courses that 1) are pertinent to your graduate program, 2) were not used for a degree, 3) received a B (3.0) or better grade, and 4) were taken within the past 6 years.
 - b) **(Ph.D. students)** The Program of Study *must* include a minimum of 90 credit hours beyond the B.S. degree, or 60 credit hours, if you already have an M.S. degree. At least 33 credits must be taken at USU and you

must be registered full-time for a minimum of 3 semesters of coursework. None of the semesters must be consecutive. No more than 36 credit hours can be for conducting research and writing the dissertation.

- i) If your undergraduate or M.S. preparation at the time of admission to the graduate program at USU was found to be deficient, additional courses that do not count towards your Ph.D. course requirements may need to be included in your Program of Study.
- ii) If you already have an M.S. degree and took more than 30 credit hours of coursework in getting it, excess credits can be petitioned for transfer to your Program of Study. No more than 27 transfer credits can count towards the minimum 60 credit hours, because 33 credit hours must be taken at USU.
- iii) If you have taken graduate courses elsewhere, without receiving an M.S. degree, you can petition to have credits transferred. Up to 57 credits can count towards the 90 minimum credit hours, because 33 credits must be taken at USU.
- iv) To petition to transfer credits a letter must be sent to the Department Head that states cause and is signed by your major professor. Final approval rests with the Dean of the Graduate School. Transfer credit will only be considered for courses that 1) are pertinent to your graduate program, 2) were not used for a degree, 3) received a B (3.0) or better grade, and 4) were taken within the past 8 years.

4) Number of credits/semester

- a) If you are being paid as either a Research or Teaching Assistant (R.A. or T.A.) any semester, including summer, you must be a full time-student and therefore be enrolled for a minimum of 6 credits until all coursework on your program of study form has been submitted to the graduate school. PhD students must register for a minimum of 6 credits to qualify for a tuition remission.
- b) After all of your coursework has been completed and your *Program of Study Form* (Appendix IV or V) has been submitted to the Graduate School, you may register for 3 credits/semester. This option is open to you only after your advisor submits a letter to the Graduate Dean signifying that you have fulfilled your course requirements and you have only thesis/dissertation research remaining in order to complete your degree.
- c) Students who are not on campus and do not use Utah State University facilities or USU faculty can pay a Continuous Registration Fee

(\$15/semester). This option requires a petition from your advisor or the Department Head stating that you will not be using university facilities and faculty time. For each semester that you are allowed Continuous Registration, you must pay \$15 and the semester counts against the 8 year **Statute of Limitation** for degree completion.

- d) If you cannot register for credits for health reasons or family emergencies, etc., you may petition for a **Leave of Absence** (which is often not obtainable-see section below).
- e) **You must enroll for 3 credits the semester you defend.** If you are unable to submit your final thesis/dissertation to the graduate school during the same semester as your defense, you must enroll for an additional credit hour (WATS 6990, the out-of-state tuition fee will be waived in this situation), or until your thesis/dissertation is finalized through the Graduate School Office.

Supervisory Committee

Your Supervisory Committee (*at least 2* faculty in addition to your major professor for M.S. and *at least 4* faculty in addition to your major professor for Ph.D.) oversees your progress and provides detailed, constructive criticism. For M.S. committees, 2 members must be from the Watershed Sciences Department and one member must be from another department. For Ph.D. candidate committees, at least 3 members must be from Watershed Sciences and at least one member must be from another department.

Because these individuals will be required to review your Program of Study, Research Proposal, and critique your research accomplishments, it is helpful to ask faculty to serve who are familiar with your area of specialization. If there are flaws in your work, it is better to have them found by friendly faculty advisors (your Supervisory Committee) who desire to see you succeed, than by others who may not care about your progress. Take advantage of the faculty expertise that the department and USU provide.

Once you have established your committee (they are requested to serve and are listed on the *Supervisory Committee Form*), meet with them frequently as a group or individually to discuss your progress and problems. They are there for you to use as a “sounding board” so that your research progresses smoothly. They will be of little use to you if you only talk to them when the necessary formal meetings take place.

Your supervisory committee must be officially designated (supervisory committee form signed by the Graduate Dean) **prior to any official activities such as the signing of your proposal, your pre-project presentation, etc.**

Research Proposal

This is a scholarly work and may be your first attempt at such an endeavor. A well-designed Research Proposal seldom works out the way that it is conceived on paper, but it can do a lot to ensure your success. A poorly-designed proposal often leads to disaster. A proposal is no more than a thorough statement of the research that you are planning to do. Obviously, it comes before the research, so you are not expected to have results. Nonetheless, some students may have preliminary results from pilot studies, and most will have indications of potential results from studies that have been conducted by others that were found in the literature. Failure to identify these results and discuss them is poor scholarship. If you do not have preliminary results it is often useful to analyze hypothetical results graphically and/or statistically. This will help you and your committee members conceptualize what the results may look like. Writing the proposal forces you and others to evaluate your ideas, and to see whether or not they withstand critical scrutiny. It is better to identify weaknesses in research plans before the work is started than during the project (or even worse, after the work is completed).

This may be your first attempt at technical writing, something that will become a common professional endeavor. The ability to communicate effectively is critical. Talk to your major professor and committee members about technical writing and look at style manuals for assistance. Give early drafts to your graduate student peers for criticism, and more polished drafts to your major professor for critical review. Numerous revisions and major rewrites (usually entailing more than checking spelling and grammar) may be necessary. You should note that most of the faculty use the proposal as the document which illustrates your writing competency, a requirement to become a "candidate."

To help you in writing a proposal, ask yourself the following questions about what you have written. Should the answer be yes to all these, be honest. Positive answers to all of the questions may indicate that you have done a good job and have progressed along the road to solving problems analytically and identifying important questions. Both Ph.D. and M.S. students may be having problems if any negative answers appear in the first 6 questions, because this indicates problems with the technical aspects of the research project. If you have negative answers or are uncertain about the last 4 questions, you may be having problems if you are a Ph.D. student, because this indicates problems with the novelty of the intellectual content of the research project. :

- 1) Would an individual who is an informed reader, but not an expert in the field, be able to understand what I am writing, the logical development of my ideas, and fathom my conclusions?
- 2) Do I clearly state the question (hypothesis) that my research will address?
- 3) Do I state why this question is important, especially given the knowledge provided by those who have preceded me in the field?
- 4) Do I carefully develop and explain the methods that will be used to collect data?

- 5) Do I describe how these data will be analyzed?
- 6) Will the data acquired address the question in a clear-cut and meaningful fashion?
- 7) Have I addressed alternative explanations for my anticipated results?
- 8) Does my approach to the question differ from the approaches taken by those who have preceded me in the field?
- 9) Will my study really add to the field's knowledge?
- 10) Is this study going to make a difference in the field and, if so, will the research design accomplish this goal?

There is no length requirement for the proposal, but it should be long enough to address the above questions, provide the necessary literature citations to support claims, and include pilot data, if any are available. Figures and tables can also be used. A profitable way of thinking about the proposal is that it should be easily adapted to become your introduction and method sections in your thesis/dissertation. Your Supervisory Committee members must sign the *Pre-Project Approval Form*, which contains an abstract of your proposal and return it to the Departmental office prior to Pre-Project Symposium. Completing this form indicates that you have a good draft proposal and have received feedback from the Supervisory Committee.

The proposal for either the M.S. or Ph.D. degree must be signed by your advisor, supervisory committee, and the Department Head to signify its acceptability. For MS students this must also be completed before the Pre-project Symposium. PhD students will submit a draft. An original, signed copy will be kept in the department files for future reference.

Pre-Project Seminar – presented at the Pre-Project Symposium (apx 20 minutes duration)

This is sometimes the most worrisome prospect for graduate students. However, it is a very straightforward prospect, because you are simply giving an oral presentation of your Research Proposal, which you *have* already written. Getting up in front of a group is disconcerting to many people. Just as writing is an important form of communication in the profession, so is oral presentation. This will be a function that you will have to perform frequently in the future. Different speakers have different styles that make them feel more comfortable. Draw upon the courses, lectures, and seminars you have attended. Which styles of presentation make you feel more comfortable? What types of presentations have you found to best convey the type of information that you will need to communicate? Not all styles are equally suitable for certain types of information. Do you want questions during or only after your presentation? Discuss your presentation plans with graduate student peers and your major professor. Give a practice presentation to a few individuals. **The symposium is scheduled during the Spring Semester, check**

with the Department office for the current schedule.

You will be evaluated on your ability to convey information and respond to questions. Remember, the principle purpose of the seminar is for you to communicate your research plans so that constructive criticism can be given which you can incorporate into the final draft of your Research Proposal. Sometimes the criticism may appear harsh and not constructive. If so, you may need to ask whether this might have arisen because you failed to address the 10 questions posed above or failed to communicate clearly with your audience. Criticism is an essential element of scientific inquiry. Try not to take criticism personally and learn how to handle difficult critics in a tactful and professional fashion. For example, do not “pass the buck” by saying someone else said this was acceptable. Take responsibility and realize that you are learning how to conduct research. Furthermore, if you are presented with a question for which you do not have an answer, admit that you do not know the answer and offer to discuss the issue with the questioner after the seminar.

Comprehensive Examination (Ph.D. only)

The Comprehensive Exam is used to assess whether a Ph.D. student is prepared to successfully conduct independent research. This assessment depends upon the student's:

- 1) knowledge in his/her area of specialization and in supporting areas,
- 2) understanding of philosophical perspectives on scholarship, and
- 3) ability to communicate this knowledge effectively.

It is recommended that the Comprehensive Exam be taken by the end of your second academic year. *The exam must be passed no later than 1 year prior to defending the dissertation, and before Candidacy will be recommended.*

The exam is composed of two parts:

- 1) a set of questions provided by *each* member of the Supervisory Committee that must be answered by essays, and
- 2) an oral exam, where questions must be addressed verbally.

A typical Comprehensive Exam consists of questions (minimum of one) from each committee member. Written questions must be completed over at least 5 working days, and no more than 10 working days. The scope of knowledge to be addressed in written and oral questions can vary considerably between committees (e.g., hydrology, all of biology, just ecology, or just your area of specialization). Individual committee members may require you to answer the written portion from memory or allow you to use reference material. Both the scope and form of the exam are the purview of the Supervisory Committee, both collectively and individually. You should discuss this with them so that

you know what to expect. A decision as to the acceptability of the essays will be determined within 2 weeks after the last exam is completed. To successfully complete this portion of the exam, two-thirds (e.g. 4 of 5) of your committee members must signify that you “passed” their portion of the exam. This could be accomplished with your original answers or through follow-up work such as a review paper, etc.

Failure to pass the written exam ends the Comprehensive Exam. However, proceeding to the oral portion does not mean that your committee found your written performance to be adequate. Rather, the committee might be uncertain about your written performance, and they may use the oral exam to address questions that they might have. Ask your major professor and supervisory committee members how they perceived your performance before the oral exam so that you are better prepared.

Some students feel uncomfortable with the oral portion of the exam and three suggestions may be useful. First, if you do not know an answer, admit it. “Bluffing” is always obvious and can generate even more critical questioning. Second, if you become flustered, ask for a moment to compose yourself. If necessary, ask to go to the washroom or get a drink of water, but do not allow your emotions to get out of control. Third, do not become antagonistic during questioning, if you perceive that you are being “badgered.” Careful choice of words, joking and body language can usually “desensitize” a difficult moment. Always remember that your Supervisory Committee wants to see you succeed, and they are trying to determine whether their faith in you is justified.

At the end of the oral exam, the committee will ask you to leave the room and wait outside while they discuss your performance and come to a consensus on an evaluation. The evaluation can take 3 forms, and the decision must be communicated in writing to the Department Head:

- 1) Pass - This means that 4 of 5 of your committee members have recommended that you become a Ph.D. Candidate.
- 2) Conditional pass - This means that the committee has found deficiencies in your performance, but they believe that you have demonstrated sufficient ability to recommend Candidacy after certain weaknesses are addressed by you. The deficiencies might require you to retake either the written or the oral portion of the exam, take a specific course or courses, complete a set of readings, and/or write an essay or essays on specific topics. The actions are at the discretion of the committee; however, extensive requirements might indicate to the Graduate Academic Review Committee and the Department Head that a Fail, rather than Conditional Pass, is more appropriate. These requirements *must be fulfilled* within the following semester of the academic year.
- 3) Failure - The committee can indicate a failing performance with two possible recommendations.
 - l) You must retake the written, oral, or written and oral portions of the comprehensive exam. This must be done within a year, if not sooner at

the committee's discretion.

- ii) You must terminate your graduate program. If you believe this decision was unjustified, you can appeal in writing to the Department Head to be allowed to retake the Comprehensive Exam within a year. However, reasonable cause must be given to override the Supervisory Committee's decision.

The Comprehensive Exam may only be retaken once. Remember, it must be passed at least 1 year before your dissertation can be defended.

Candidacy

Candidacy is an indication that your progress to date warrants consideration for a graduate degree. Candidacy is granted after your Supervisory Committee has formally approved:

- 1) your Program of Study completion (*Program of Study Form* Appendix IV or V),
- 2) your performance in the Pre-Project Seminar,
- 3) your Research Proposal,
- 4) (Ph.D. only) your performance on the Comprehensive Exam, and
- 5) (Ph.D. only) your request for candidacy ([Application for Candidacy Form](http://www.usu.edu/gradsch/forms/AppforCandidacy.pdf) - <http://www.usu.edu/gradsch/forms/AppforCandidacy.pdf>).

Your Program of Study and Research Proposal must be forwarded to the Department Head and the Dean of the Graduate School, and they must approve them and sign the *Application for Candidacy Form*. In addition, all necessary forms (IACUC, Plan for Publication, etc.) must be completed.

Thesis (Plan A) or Paper (Plan B) and Defense (M.S. only)

Your thesis (Plan A) or paper (Plan B) represent the culmination of your program, and should reflect a degree of professionalism and scholarship indicating that you are ready to seek employment or continue for a Ph.D. in your chosen field of specialization. The thesis or paper must satisfy any format requirements established by the Graduate School (see "Graduate School Handbook for Thesis/Dissertation Writing") and any additional requirements made by your Supervisory Committee. It is your responsibility to identify these requirements and follow them. As in writing your Research Proposal, it is important that your thesis/paper be well written. Writing a thesis is a time consuming and difficult task, and may require numerous revisions. Have your graduate student peers comment on early drafts, and have your major professor comment on more polished drafts before giving a draft to other committee members. Everyone finds that they have to rewrite their thesis/paper several times, but the process is easier if you can positively answer the first 6 questions listed under Research Proposal before giving it to

your major professor and other committee members.

It is often advantageous to write one or more chapters of your thesis in the journal format(s) where you intend to publish the results. This will teach you how to write for publication, and will facilitate the timely publication of your results. Because the formats of journals and that of the Graduate School are not identical, you will want to work with your advisor to “creatively” package your thesis. Students have been successful with including an updated introduction from their original proposal before the actual manuscript, and including ANOVA tables, etc., in appendices. This approach will both satisfy the graduate school requirements and facilitate publication.

Defenses cannot be scheduled until the thesis or dissertation is in “acceptable” format to the graduate school. That is, title pages, introduction and summary sections, as well as the basic manuscript(s) must be provided to the supervisory committee following the approval by the departmental thesis coordinator. Given that theses are now available on microfilm, the graduate school has become particular about the inclusion of a complete introduction and all statistical tables.

A public presentation of your project design and findings is required of a plan B program. The paper (Plan B) only needs to be accepted by your Supervisory Committee after they have had the opportunity to read it.

The thesis (Plan A) is a presentation and discussion of your research results. The thesis needs to be defended in a formal defense with your Supervisory Committee. Do not schedule your Thesis Defense before you have indications from your committee that they approve of your product. You must provide your Supervisory Committee with the thesis a minimum of 2 weeks before you notify the graduate school of your defense. Because the School of Graduate Studies requires a minimum 10-working day notice of your defense, this effectively means the earliest you can defend your thesis is 3 weeks after giving it to your committee members, assuming there are no major problems. In some cases, individual committee members may require substantial changes to the thesis before they will sign on the thesis as ready to be formally defended.

At least **10 working days** before your defense an *Appointment for Examination Form* should be filled out, signed by your Supervisory Committee, and turned into the Graduate School. At the same time, you should fill out a *Post-Project Seminar Presentation Form* to turn into the Department Office **10 working days** before your defense; thus saving time because both forms require signatures from your supervisory committee.

The actual defense includes:

- C **Post-Project Seminar** - You must give a public seminar that must be advertised at least **10 working days** prior to its presentation. More than one seminar can be given, but the public seminar constitutes the formal seminar for your defense. Plan on a maximum of 45 minutes, so there is adequate time for questions. *The seminar cannot take place sooner than 1 Semester after you have given your Pre-Project Seminar* (except by approval of a written petition stating cause and signed by your major professor to the Department

Head). The seminar is a formal presentation (slides/overheads) that should be well prepared and should include:

- 1) a statement of the question that your research addressed,
- 2) why this question is important, given earlier work by others in the field,
- 3) how you addressed the question and analyzed the data,
- 4) what weaknesses are in your data and how you might have done the research differently given the experience that you gained, and
- 5) what conclusions can be reached with your data and how they compare with findings by others.

C **Defense Meeting** - You *must* meet with your Supervisory Committee within *48 hours* after the Post-Project Seminar to answer questions dealing with your research and/or general knowledge in the field. At this meeting, the Supervisory Committee comes to a consensus on your performance on the thesis, its defense and whether you have fulfilled the requirements of your Program of Study. Three decisions are possible:

- 1) Acceptable - This means that your committee will sign the *Record of Exam Completion Form* (found in defense packet), recommending your being granted an advanced degree. This typically entails minor revision of the thesis and/or passing of courses that you are currently taking.
- 2) Conditional acceptance - This means that your committee will sign the *Record of Exam Completion Form* (found in defense packet) in the future after you satisfy one or more of the following:
 - a) major revision of the thesis,
 - b) satisfaction of certain actions (e.g., correction in statistics in the thesis, additional readings, etc.) required by the committee, given a deficiency indicated in the defense, or
 - c) satisfaction of a deficiency in your Program of Study (failing grade, incomplete, or course not yet taken).
- 3) Failure - This means that you will leave the graduate program without receiving a degree. This is an unlikely event, since your major professor and Supervisory Committee should have indicated the likelihood of this occurring much earlier, and can only be justified by exceptional circumstances (e.g., your having twice failed a course listed on your Program of Study, plagiarism, research fraud, etc.). Without exception, this decision will be reviewed by the Graduate Academic Review Committee and the Department Head.

After your committee signs the *Record of Exam Completion Form* (found in defense

packet) and makes **1 copy for the Department Head**, this form along with your thesis and completed *Program of Study Form* are forwarded to the Department Head and Dean of the Graduate School for final approval at which time you are eligible to graduate.

Dissertation and Defense - (Ph.D. only)

Your dissertation represents the culmination of your graduate program, and your passport to future research opportunities; therefore, it must exhibit a degree of scholarship that would permit it to be accepted in the peer-reviewed publications of your field. The dissertation must satisfy any format requirements established by the Graduate School (see “Graduate School Handbook for Thesis/Dissertation Writing”) and any additional requirements made by your Supervisory Committee. It is your responsibility to identify these requirements and follow them; however, since this work must be publishable, you might select options that will minimize your need to rewrite material before submission to a journal, monograph series, etc.

As in writing your Research Proposal, it is important that your dissertation be well written. Have your graduate student peers comment on early drafts, and have your major professor comment on more polished drafts before giving a draft to other committee members. Everyone finds that they have to rewrite their dissertation several times, but the process is easier if you can positively answer the first 6 questions listed under Research Proposal, before giving it to your major professor and other committee members. For a Ph.D., however, a well-conducted research project and well-written dissertation are not sufficient; particular attention must be paid to the last 4 questions listed under Research Proposal.

It is advantageous to write chapters of your dissertation in the journal format(s) where you intend to publish the results. This will teach you how to write for publication, and will facilitate the timely publication of your results. Because the formats of journals and that of the Graduate Schools are not identical, you will want to work with your advisor to “creatively” package your dissertation. Students have been successful with including an updated introduction section from their original proposal before the actual manuscript, and including ANOVA tables, etc. in the appendices. This approach will both satisfy the graduate school requirements and facilitate publication.

Defenses cannot be scheduled until the thesis or dissertation is in “acceptable” format to the graduate school. That is, title pages, introduction and summary sections, as well as the basic manuscript(s) must be provided to the supervisory committee following approval by the departmental thesis coordinator. Given that theses are now available on microfilm, the graduate school has become particular about the inclusion of a complete introduction and all statistical tables. To facilitate publishing your scholarly work in a timely manner, you may want to work with your advisor to “creatively” package your thesis. Students have been successful with including an updated introduction section from their original proposal before the actual manuscript, and including ANOVA tables, etc. in appendices. This approach will both satisfy the graduate school requirements and facilitate publication.

Following the committee’s favorable review of your penultimate thesis/dissertation, a post project seminar and defense can be scheduled. At least **10 working days** before

your defense an *Appointment for Examination Form* should be filled out, signed by your committee, and turned into the Graduate School. At the same time, you should fill out a *Post-Project Seminar Presentation Form* to turn into the Department Office **10 working days** before your defense; thus saving time because both forms require signatures from your Supervisory Committee.

- C **Post Project Seminar** - The actual defense must include a public seminar that is advertised at least **10 working days** prior to its presentation. Plan on a maximum of 45 minutes, so there is adequate time for questions. *The seminar cannot take place sooner than 1 year after you have given your Pre-Project Seminar and passed your Comprehensive Exam* (except by approval of a written petition stating cause and signed by your major professor to the Department Head). The seminar is a formal presentation (slides/overheads) that should be well prepared and should include:

- 1) a statement of the question that your research addressed,
- 2) why this question is important, given earlier work by others in the field,
- 3) how you addressed the question and analyzed the data,
- 4) what conclusions can be reached with your data and how they compare with findings by others, and
- 5) how your work advances the field, especially in terms of providing generalizations.

This seminar is likely to be used by you as your job seminar when you interview for your first professional position.

- C **Defense Meeting** - Your Supervisory Committee will conduct a formal defense within *48 hours* after your Post-Project Seminar in which you answer questions dealing with your research and/or general knowledge in the field. At this meeting, the Supervisory Committee comes to a consensus on the quality of your dissertation, your performance during the defense, and whether you have fulfilled the requirements of your Program of Study. Three decisions are possible:

- 1) Acceptable - This means that your committee will sign the *Record of Exam Completion Form* (found in defense packet) , recommending that you be granted a Ph.D. This typically entails minor revision of the dissertation.
- 2) Conditional acceptance - This means that your committee will sign the *Record of Exam Completion Form* in the future after revision of the dissertation and/or criticisms have been dealt with to their satisfaction.

- a) major revision of the dissertation,
 - b) satisfaction of certain actions (e.g., correction in statistics in the dissertation, additional readings, etc.) required by the committee, given a deficiency indicated in the defense, or
 - c) satisfaction of a deficiency in your Program of Study (failing grade, incomplete, or course not yet taken).
- 3) Failure - This means that you should leave the graduate program without receiving a degree. This is an unlikely event, since your major professor and Supervisory Committee should have indicated the likelihood of this occurring much earlier, and this can only be justified by exceptional circumstances (e.g., your having twice failed a course listed on your Program of Study, plagiarism, research fraud, etc.). Without exception, this decision will be reviewed by the Department Head.

After your committee signs the *Record of Exam Completion Form* (found in defense packet), and makes **1 copy for the Department Head**, this form along with your dissertation and completed *Program of Study Form*, are forwarded to the Department Head and Dean of the Graduate School for final approval, at which time you are eligible to graduate.

Leave of Absence and Off-Campus Research

The Department Head and the Graduate School can be petitioned for a leave of absence. A leave can be granted for:

- 1) illness, military service, or other extenuating personal circumstances, or
- 2) participation in a planned and department approved extension program, when the courses that are part of the program are not being offered.

Because you are expected to be enrolled while conducting research (even off-campus research), a leave of absence may not be granted for extended off-campus research. Furthermore, deadlines and the 8 year limit for degree completion are still operating even though you may be off-campus conducting research.

TRANSFERRING PROGRAM

Departmental policy allows students to switch their current program in the following ways:

- 1) Student finishes M.S. and continues, entering the Ph.D. program within

Watershed Sciences

- 2) Student wishes to transfer from an M.S. candidate to a Ph.D. candidate.
- 3) Student wishes to switch advisors, but pursue same degree.

For the first two cases, the following steps are required:

- 1) Student writes a letter to Department Head and Dean of Graduate Studies indicating a desire to enter doctoral program. In the first scenario, these letters must be submitted prior to completion of M.S. degree.
- 2) Student's M.S. advisor and advisory committee make written recommendations to the Graduate Admissions Committee.
- 3) If the proposed Ph.D. advisor is different from the M.S. advisor, that potential supervisor makes written recommendation to the Graduate Admissions Committee regarding acceptance.
- 4) Student's application materials are reviewed by Graduate Admissions Committee with a written recommendation on admission to the Department Head.
- 5) Department Head makes recommendation on admission to the Dean of Graduate Studies.
- 6) Final decision will be made by the Dean of Graduate Studies.

For the third scenario (a student wishes to switch advisors but complete the same degree), the following steps must be followed:

- 1) Student writes a letter to the Graduate Academic Review Committee indicating a desire to transfer to a different advisor to complete the current degree program. The student should include any explanations for the desired change they feel are relevant.
- 2) The student's original advisor (and supervisory committee, if requested) make written recommendations to the Graduate Academic Review Committee regarding the transfer.
- 3) The proposed new advisor makes a written recommendation to the Graduate Academic Review Committee regarding acceptance.
- 4) The student's, advisor's and committee's letters are reviewed by the Graduate Academic Review Committee with a written recommendation on a transfer to the Department Head.

- 5) The final decision will be made by the Head of the Department.

RESEARCH FRAUD AND PLAGIARISM

Research fraud is a very serious allegation and entails the claim that your research was not conducted by you and/or the results were fabricated. This is unprofessional behavior that ends one's professional aspirations, and damages others in the profession who are misled by unidentified fraudulent research.

Plagiarism occurs when an individual knowingly portrays the ideas or results of others as their own (see "USU Plagiarism Policy" in the "USU Graduate School Handbook"). Therefore, proper citation of the work conducted by others is critical. Sometimes we independently arrive at ideas that others have already published. This is *not* plagiarism, but can reflect poor scholarship by you and may raise concerns by your Supervisory Committee about your grasp of the pertinent literature in the profession.

ROLE OF THE GRADUATE ACADEMIC REVIEW COMMITTEE

The role of this Committee is advisory to the Department Head. This Committee can also bring suggested changes in the graduate program to the Department faculty for discussion. In its advisory role, the Committee can:

- 1) recommend changes in the graduate curriculum based upon the suitability of current courses and the perceived need for new courses,
- 2) recommend changes in the procedures for graduate education, including requirements and deadlines,
- 3) be requested by the Department Head to review perceived deficiencies in a graduate student's progress that have been identified using the *Graduate Student Annual Review Form*,
- 4) be requested by the Department Head to review and comment upon petitions from students, major professors, or Supervisory Committees,
- 5) be requested by the Department Head to serve as a fact-finding board in disputes between graduate students and their major professors or Supervisory Committees, and
- 6) oversee, evaluate, and provide recommendations to the Department Head for students wishing to transfer programs._