

DEPARTMENT OF PLANT AND SOIL SCIENCE

GRADUATE STUDENT HANDBOOK

2024-2025



TEXAS TECH UNIVERSITY™

**Davis College of Agricultural
Sciences and Natural
Resources**

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INTRODUCTION

This handbook outlines the graduate program policies and procedures for the Department of Plant and Soil Science. The purpose of this document is to help graduate students successfully complete the degree program. It is the student's responsibility to learn and follow the policies and requirements established by the State of Texas, Texas Tech University, the Graduate School, and the Department of Plant and Soil Science. This document is a supplement to the Graduate Catalog and does not supersede the policies of the Graduate School.

GRADUATE PROGRAMS

Admission Standards

The Department of Plant and Soil Science follows the admission/denial criteria as outlined in Texas HB 1641. Those criteria reflect a “holistic” approach with respect to admissions. This means we evaluate the whole student application package (letter of application, GPA, GRE scores and letters of recommendation) before an admission decision is made. This does not apply to a standardized test used to measure the English language proficiency of a student who is a graduate of a foreign institution of higher education (<http://www.depts.ttu.edu/gradschool/admissions/InternationalProspectiveStudents.php>) A score of at least 550 (paper exam), 213 (computer exam) or 79 (internet-based exam) on the Test of English as a Foreign Language (TOEFL) is required. Alternatively, a score of at least 6.5 on the International English Language Testing System (IELTS) is required.

Purpose

The main purpose of a graduate program is to provide the opportunity for students to gain knowledge and skills beyond those possible from baccalaureate studies. The principal difference between a B.S. and an advanced degree program is the student's participation and involvement in decision-making processes, generally through research. The major task of a graduate student is to learn how to design, conduct, interpret, and report the results of a research project.

Many students enrolled in an M.S. or Ph.D. program have a research or teaching assistantship and project funding. Assistantships are considered half-time employment. Therefore, the student is expected to work a minimum of 20 hours per week for the major professor while the remaining time should be devoted to class work and thesis/dissertation research. Often, graduate projects are structured in a manner that allows the student to work on his/her thesis/dissertation research to fulfill this requirement. In reality, most successful graduate students spend far more than 40 hours per week in research, coursework, and other graduate school activities.

Master of Science Program

The Department of Plant and Soil Science offers M.S. degrees in Horticulture Science and Plant and Soil Science. Students in the M.S. in Plant and Soil Science can choose to pursue a **concentration** in either *Crop Protection*, *Crop Science*, *Fibers and Biopolymers* or *Soil Science*. In addition, students have the option to pursue their M.S. degrees in Plant and Soil Science or Horticulture Science either with thesis (*thesis*) or without thesis (*non-thesis*). The ‘*non-thesis*’ option is for those who need advanced skills in interpretation of data and synthesizing concepts from disparate sources of information, but do not intend to conduct research *per se*. This option caters to students who wish to pursue their degree programs *at a distance* or *on-line*,

although it is also an option for students who wish to be on campus full-time. The ‘*thesis*’ option is for those who wish to develop research capabilities. Students must declare whether they are intending to pursue the ‘*thesis*’ or ‘*non-thesis*’ option in the letter of purpose that they submit with their application for admission to the Graduate School. The ‘*thesis*’ and ‘*non-thesis*’ options have different requirements in terms of minimum number of course credits and are formally declared in the program of study that is approved by the student’s Advisory Committee and endorsed by the Graduate Programs Coordinator to the Graduate School.

Non-thesis Option. The ‘*non-thesis*’ option for the M.S. degree program is an advanced education experience beyond baccalaureate studies. The student’s Graduate Advisory Committee shall be comprised of at least two (2) graduate faculty members from the Department of Plant and Soil Science, one of which is the major professor/advisor, and one (1) external member, for a total of three committee members. The external member is either an adjunct graduate faculty of the Department of Plant and Soil Science or a non-adjunct but appointed with the approval of Graduate School to serve as an *ad hoc* member. The ‘*non-thesis*’ option requires a minimum of 36 credit hours of graduate level courses plus any additional leveling (undergraduate) courses determined to be necessary by the student’s Advisory Committee. A minimum of 12 credit hours must be formal Plant and Soil Science (PSS) courses. No more than six credit hours may be non-formal courses that may include special problems or special topics. While enrolling in graduate seminar (PSS 5100) is encouraged, students attending the Plant and Soil Science graduate *programs at a distance or on-line* are not required to enroll in this class. During the semester of anticipated graduation, the student must pass an oral comprehensive examination administered by the Advisory Committee. A formal notification that the student passed the oral comprehensive examination must be submitted by the major professor to the Graduate Programs Coordinator before the degree completion is formalized at the departmental level, and submitted to the Graduate School. The non-thesis M.S. is normally considered a terminal degree, thus it is not recommended for students interested in pursuing a Ph.D.

Thesis Option. The ‘*thesis*’ option for the M.S. degree program serves as the first research-intensive educational experience for students intending to pursue careers in research, academia or industry. At the early stages in the program, students are provided considerable intellectual and technical guidance primarily by the major professor with additional support from the Advisory Committee. Since many of the students under this option are provided some form of graduate assistantship usually from externally funded projects, they are often assigned to work on specific research questions or problems that are already established and directly linked to the overarching goals of the research grant.

Students are closely mentored by the major professor to develop some degree of independent thinking, with the expectation that they will make efforts to expand upon the original ideas already developed as part of the externally funded research. While this M.S. program option allows sufficient latitude for the student to incorporate their original contribution to the project, their responsibilities are primarily the execution of experiments, collecting the data, analyzing the data using various approaches including statistics, interpreting the data, and writing the outcome of the research in the form of a thesis following the standards set by their scientific discipline and format required by the Graduate School. Research is learned through personal involvement in a structured process. The primary expectation from students under this the M.S. ‘*thesis*’ option is that they will be able to understand the scientific process, and they will develop some degree of competence in using, interpreting, and integrating scientific literature that are related to their fields of study. The major professor and graduate advisory committee ensure that the written thesis meets the standard in the discipline by providing their critical assessment of the quality of science as well as their editorial inputs. The degree of

originality and creativity shown by the student during the M.S. program provides an indication of probable aptitude for continuing towards Ph.D.

In the M.S. ‘thesis’ option, students are guided by a Graduate Advisory Committee comprised of at least two (2) graduate faculty members from the Department of Plant and Soil Science, one of which is the major professor/advisor, and one (1) external member, for a total of three committee members. The external member is either an adjunct graduate faculty of the Department of Plant and Soil Science or a non-adjunct but appointed with the approval of Graduate School to serve as an *ad hoc* member. A minimum of thirty (30) graduate credits is required to earn a M.S. degree with thesis, comprised of eighteen (18) credits of formal graduate courses, 6 credits of PSS7000 (Research), and 6 credits of PSS6000 (Master’s Thesis). Only courses at the 5000-level and above are accepted for graduate credits. Titled Special Topics (PSS6001) are considered formal courses and count toward the 18 credits of coursework. Degree completion requires the submission of a thesis that adheres to the standards in the discipline, as well as successful oral defense of the thesis judged by the members of the advisory committee who also provide the final approval of the thesis.

Doctor of Philosophy Program

The Department of Plant and Soil Science offers the Doctor of Philosophy (Ph.D.) in Plant and Soil Science. Students under this program can choose to pursue a track in either *Crop Protection*, *Crop Science (which includes Plant Breeding and Genetics)*, *Horticulture*, *Fibers and Biopolymers*, or *Soil Science*. Students admitted in this program often have the intellectual maturity as well as foundational training in the scientific process based on previous M.S. degree and/or relevant work or professional experience if they are entering without an M.S. degree. The student’s Advisory Committee shall be comprised of the major professor and three (3) members, one (1) of which must be external to the Department of Plant and Soil Science, for a total of four committee members. External members are either adjunct graduate faculty of the department or non-adjunct but appointed with the approval of Graduate School to serve as an *ad hoc* member.

Since many of the Ph.D. students in Plant and Soil Science are provided with some form of graduate assistantships that are often part of externally funded projects, they are commonly assigned to work on specific research questions or problems that are already established by their major professor. These projects are directly linked to the larger umbrella and overarching goals of the research grant. However, students are expected to provide their intellectual and technical inputs to the project that reflect their capacity for innovation and creativity. The major professor and Graduate Advisory committee do not normally resolve the research details for the student, but they serve as mentors and critics to ensure that the student is able to meet the prevailing standards in the discipline.

During their training, candidates for Ph.D. are fully immersed in the entire scientific discovery process, which involves the conceptualization of original ideas, questions, problems or hypotheses, and experimentally testing those ideas using innovative tools, approaches and strategies that meet accepted standards in the discipline. An individual person in training for Ph.D. must show considerable command of the scientific literature, creativity at hypothesis-driven investigation, skills at research design, problem solving ability, and competence in different aspects of data analysis and interpretation. Completion of a Ph.D. brings the expectation that the individual has acquired competence in articulating ideas and results of the scientific process to different types of audiences in the form of refereed scientific publications, technical or industry reports, and research proposals. The individual is also expected to learn how to articulate their ideas orally and in writing for the purpose of both technical and non-technical audiences such as scientific conferences,

industry/stake-holders meetings, classroom teaching, or during research funding negotiations. It is generally accepted that upon earning a Ph.D., an individual must have acquired the intellectual and technical experiences that make him/her qualified to work in the academia as professors or as research scientists in either government or private sector.

To earn a Ph.D., candidates must pass the written and oral comprehensive examinations and a final oral examination where they defend the outcome of their dissertation research to a panel of critics and experts comprised of the Advisory Committee, who makes the final decision. The purpose of the examinations is to assess the student's ability to integrate the cumulative body of knowledge that he/she acquired during the course his/her intellectual training, as well as to test the ability to use and apply the acquired knowledge in the scientific discovery process. *Ph.D. candidates are also required to have at least one manuscript from their dissertation research either already published or at least submitted for review in a refereed journal relevant to the field of study.* A minimum of 60 graduate credits is required in the Ph.D. program, not including Doctoral Dissertation (PSS8000) credits. Only courses at the 5000-level and above are accepted for graduate credits.

Formal courses earned from the M.S. degree up to a maximum of 30 credits can be counted towards the 60 credits required in the Ph.D. program. The 60 credits must include a minimum of 36 formal credits, 18 of which must be earned from Texas Tech University, and which may include Titled Special Topics (PSS6001) and Problems in Plant and Soil Science (PSS 5001) upon approval by the student's graduate committee. It is strongly recommended that the coursework include a graduate statistics course, and individual graduate committees may set additional course requirements, depending on the graduate student's background and research interests.

Graduate Certificate Programs

The Department of Plant and Soil Science offers graduate certificate programs in Crop Protection, Fibers and Textiles, Horticultural Landscape Management, and Soil Management. These certificates are intended to meet the supplemental post-baccalaureate educational needs of certain groups of students. These certificates provide in-depth knowledge of a subject matter and require twelve (12) hours of specific courses offered in the Department of Plant and Soil science (PSS courses).

GRADUATE ADVISORY COMMITTEE

A student's graduate program is under the direction of a PSS major professor and a Graduate Advisory Committee. The major professor, who must be an employee of Texas Tech University, chairs the committee. The major professor and student work closely together on all aspects of the student's graduate degree program.

Adjunct faculty serve a major role in our graduate program. Nevertheless, an adjunct faculty cannot serve as the major professor. One member of the M.S. and the Ph.D. committee must be external (and approved by Graduate School) or come from departments other than PSS (they may be PSS adjunct faculty).

Committee members are selected after joint consultation between the student and the major professor. Committee members should be selected based upon their ability to contribute expertise to the student's graduate program. Serving on a Graduate Advisory Committee is a significant time commitment for faculty, therefore the members should be selected carefully. Potential committee members should be contacted to gain

their oral consent to be on the committee before the committee is finalized. The committee selection is subject to the approval of the Department Chair and the Dean of the Graduate School. The composition of the committee may be revised at any time by mutual consent of the faculty involved and the approval of the major professor, the Department Chair and the Dean of the Graduate School.

A Graduate Advisory Committee is appointed during the first semester the student is in residence. Even if there is some uncertainty about the student's specific area of study and career objective, the initial committee meeting will preferably be held no later than the end of the first semester of residence to assist in the selection of coursework. It is not reasonable to expect advisory committees to review and approve accomplished coursework programs, research plans, or results presented without an opportunity for input. Work done prior to the initial committee meeting **may not be acceptable** to the committee as a whole. Neither the Graduate School nor the graduate advisory committee are obligated to accept courses completed prior to acceptance into a graduate program or formation of a Graduate Advisory Committee. The Graduate Advisory Committee will recommend a program of courses, administer a comprehensive examination, assist in developing a research plan, critique reports and other evidence of progress on the research, read the final draft of the thesis/dissertation, attend seminars presented by the candidate, and attend the final examination.

The student is encouraged to maintain close contact with the major professor and other members of the graduate advisory committee during research and writing phases of the thesis/dissertation. This contact allows the student to benefit from the expertise of individual effort; furthermore, it informs the graduate committee members of research progress. The student is urged to confer with members of the graduate advisory committee whenever needed during the research program.

ADMISSION TO CANDIDACY

Admission to candidacy in advanced degree programs in which a thesis or a dissertation is required, the student must: (1) write a detailed research proposal; (2) successfully defend the written proposal in a "candidacy" meeting with the graduate advisory committee; (3) obtain the committee's approval of a curriculum of coursework; and (4) submit a degree plan the Graduate School. There are different forms for the M.S. and Ph.D. degrees. The degree plan and admission to candidacy form for the M.S. is entitled "Program for the Master's Degree and Admission to Candidacy" and can be obtained at the following URL: http://www.depts.ttu.edu/gradschool/academic/docs/Masters_Degree_Plan.pdf. This form must be completed and approved by the student's committee. After the Graduate Programs Coordinator has signed the degree plan, it should be submitted to the Graduate School. The "Program for the Doctoral Degree" form is available at http://www.depts.ttu.edu/gradschool/academic/docs/DoctoralDegreePlanForm_Updated.pdf. This form must be completed and approved by the student's Advisory Committee. After the Graduate Programs Coordinator has signed the degree plan, it should be submitted to the Graduate School. The requirements for admission to Ph.D. candidacy are described in greater detail below.

For the M.S. non-thesis option, only the approval of a curriculum of coursework and submission of the "Program for the Master's Degree and Admission to Candidacy" form to the Graduate School are required. This form must be completed and approved by the student's committee. After the departmental graduate advisor has signed the degree plan, it should be submitted to the Graduate School. Approved forms are submitted by the Graduate Advisory Committee chair to Lead Academic Advisor for Plant and Soil Science Diann Merriman for final submission to the Graduate School.

The student is expected to fulfill the requirements for admission to candidacy as soon as possible after the graduate committee has been formed. If the student is unable to define a specific research problem during the first two semesters of the program, the student should hold a preliminary meeting with the graduate advisory committee to decide on coursework. Any changes in course works or major alterations in research direction requires written approval of the major professor and committee before submitting change of degree plan forms to the Graduate School.

Research Proposal

Under supervision of the major professor, the student should define an original research problem and write a detailed proposal. The proposal should consist of a title, a statement of the problem and rationale for gathering original research data, a statement of objectives including hypotheses to be tested, a review of the literature, and a detailed description of the design, data analysis and procedures of the study. The student should be aware that the proposal will be judged largely on the basis of whether or not the study design and procedures are likely to permit fulfillment of the stated objectives.

After the major professor has approved the proposal, the student should distribute copies to members of the graduate advisory committee. The committee should be allowed **at least two weeks** to read and evaluate the proposal prior to the committee meeting.

Committee Meeting

During the committee meeting, the student will be questioned by the graduate committee on the research proposal. The student should be prepared to summarize orally the content of the proposal; to defend the rationale, objectives and hypotheses; to cite and comment on relevant sources in the literature; and to defend the proposed study designs and procedures. When members of the Graduate Advisory Committee have finished questioning the student, they will arrive at a consensus as to whether or not, and under what conditions, the proposal should be accepted. The student's list of required coursework is also scrutinized in relation to previous coursework, current research, and career objectives. The student must comply with any suggested changes and stipulations before admission to candidacy.

Coursework and Registration Requirements

A student pursuing an M.S. degree with a ***thesis option*** must take at least 30 credit hours of graduate coursework. Only classes numbered 5000 or above are acceptable for graduate credit. These 30 hours are generally comprised of 18 hours of formal coursework plus six hours of research (PSS 7000) and six hours of Master's thesis (PSS 6000). In addition, no more than six credit hours of titled* individual study courses will be permitted (generic individual study courses do not count). Additional hours of research or thesis may be taken without a grade.

**To request a title for an independent study course, the faculty member should contact the Registrar in writing, the first week of class indicating the title to be assigned to the class. Copies of this request should additionally be sent to the PSS department chair and the CASNR Associate Dean for Academic Programs.*

A student pursuing an M.S. degree with a ***non-thesis option*** must take a minimum of 36 credit hours of graduate coursework. Attendance at seminars is **strongly encouraged** for all resident graduate students, but is not required for distance education students.

A minimum of three years of graduate study beyond the bachelor's degree is required for the doctorate. A Ph.D. student is required to complete at least 60 semester hours of graduate coursework, exclusive of dissertation. Of these 60 semester hours, 36 must be formal coursework, and 18 credits of formal coursework must be from Texas Tech University coursework. For example, one could count 18 hours of formal coursework from the Master program, 24 hours of research from the Ph.D. program, and 18 hours of formal coursework from the Ph.D. program. If a minor is taken, it must include at least 15 graduate credit hours in a program outside the student's major. Only classes numbered 5000 or above are acceptable for graduate credit. The residency requirement is that 18 graduate coursework hours must be taken on campus. Distance hours do not count toward this requirement.

The student is urged to meet with the major professor shortly after arriving on campus to decide upon a tentative program of coursework. After the student and the major professor agree on the proposed coursework list, the student should distribute copies to members of the graduate committee prior to the meeting at which coursework is to be discussed. In this meeting, the committee reviews or revises the proposed list of courses prior to approval.

A formal degree plan must be submitted by the student to the Graduate Programs Coordinator using the Plant and Soil Science Graduate Plan of Study approval forms signed by all members of the Graduate Advisory committee along with the Graduate School Plan of Study approval form. Degree plan lists the courses the student will be required to take to satisfy the coursework requirements for their MSc or PhD degree. Students lacking adequate undergraduate preparation in supporting areas may be required to take additional coursework and levelling courses without graduate credit. Any such required undergraduate courses must also be listed on the degree plan.

Decisions concerning specific courses to be taken are the responsibility of the graduate committee. However, the degree plan must be approved by the Graduate Programs Coordinator and the Dean of the Graduate School. The degree plan should be submitted to the Graduate Program Coordinator no later than the second semester the student is enrolled in their graduate program. A graduate committee coursework approval form, signed by each committee member, must be submitted along with the degree plan.

It may be necessary to make changes to the degree plan during the student's program. Any changes to an approved degree plan must have the approval of each member of the Graduate Advisory Committee, the Graduate Program Coordinator, and the Dean of the Graduate School.

GRADE MAINTENANCE REQUIREMENTS

Graduate School policy requires all graduate students to maintain an average of "B" or better. If a student's GPA for a particular semester drops below 3.0 he/she will be placed on academic probation. If the overall GPA is not above 3.0 within two semesters after being put on probation, the student will be suspended from the graduate degree program and any financial assistance will be terminated.

REGISTRATION REQUIREMENTS

All graduate students receiving assistantships, regardless of the funding source for the assistantship, must register for at least 9 credit hours each long (spring and fall) semester and for 3 credit hours during each summer. A student who is not in residence and/or is without financial support may sometimes be granted exemption from these rules by the Department Chair. These rules apply to every semester up to and including the semester of the thesis/dissertation defense. If degree program completion occurs during a semester other than the semester of defense, the student must register for at least one credit hour. Forms are available in the department main office to defer selected fees for the student who has a TA or RA appointment.

The maximum credit load for a student on a research assistantship is 12 credit hours per semester. Graduate assistantships include a waiver of nonresident tuition and a partial waiver of in-state tuition and fees. A current tuition and fee schedule can be found at www.depts.ttu.edu/studentbusinessservices.

SEMINAR ENROLLMENT

Each M.S. and Ph.D. student is required to enroll in seminar (PSS5100) once per degree and present one seminar (oral and poster).

RESIDENCY AND REGISTRATION

The student who has begun thesis/dissertation research must register for PSS 6000 or PSS 8000 in each regular semester and each summer session until the degree requirements have been completed, unless granted an official leave of absence from the program for exceptional reasons. Approval of a leave of absence will not automatically extend time for completion of the degree.

Residence for a Ph.D. at Texas Tech University is normally accomplished by completion of a full schedule (at least 9 credit hours) of graduate work in each of two consecutive semesters. The residency requirement may be fulfilled by 18 graduate coursework hours taken on campus, but spread over multiple semesters. Distance hours do not count toward this requirement.

TIME LIMITS ON COURSEWORK

Coursework for a graduate degree must be completed within six years for an M.S. program. All work for the Ph.D. program must be completed within four years after the applicant has been admitted to candidacy.

PROFICIENCY IN ENGLISH

Since all coursework at Texas Tech University and written products of graduate research are in English, the student must develop a command of English regardless of national origin. Students for whom English is not the native language must pass the Test of English as a Foreign Language (TOEFL) exam. A score of at least 550 (paper exam), 213 (computer exam) or 79 (internet-based exam) is required. Alternatively, a score of at least 6.5 on the International English Language Testing System (IELTS) is required.

The student may also be given further diagnostic tests by the Intensive English Language Institute upon arrival at Texas Tech University. Further English studies may be indicated or placement in introductory (undergraduate) level courses may be advised at the outset of the student's program.

The major professor and committee may verify writing competency at the first committee meeting, and additional coursework or writing experience may be required. The minimum level of English proficiency required will be determined by the major professor and committee.

Ph.D. PRELIMINARY EXAM

Prior to the Ph.D. preliminary examination, the student should obtain and draft a "Program for the Doctoral Degree" plan. This form is available at <http://www.depts.ttu.edu/gradschool/forms/DoctoralDegreePlanForm.pdf>. The student should bring the draft version of this form with background information, proposed coursework, and transfer credits (if any) to the preliminary exam.

The student should undergo a preliminary examination meeting as early in the Ph.D. program as possible. Generally, this is an oral examination that covers previous course work and the dissertation proposal. This examination will serve as the basis for further counseling of the student and development of the program of study. It should also evaluate the course work to date. At the preliminary examination meeting, the student should make any necessary changes to the draft doctoral degree plan. Results will be reported to the Graduate School on the form entitled "Program for the Doctoral Degree." Any change in coursework taken or major alterations in research direction requires written approval of the committee. Memoranda to formalize such changes will be initiated by the major professor.

Ph.D. QUALIFYING EXAMINATIONS

A Ph.D. candidate in the Department of Plant and Soil Science is required to take comprehensive written and oral qualifying examinations prepared and conducted by the Graduate Advisory Committee. The purpose of these qualifying examinations is to determine whether a candidate possesses a depth of knowledge in their area of specialization, a breadth of knowledge in supporting areas, an understanding of the scientific method, and the ability to communicate knowledge in an organized and scholarly manner.

The student should make arrangements with the major professor to take the qualifying examinations upon finishing the coursework. A student should complete all portions of the examination, preferably at the end of the second year of study, but no later than four months before the planned graduation date.

The written examinations may be open or closed book and length at the discretion of each committee member. Normally, several months of preparation by the student will be needed for the qualifying exams. Following successful completion of all written exams, an oral qualifying exam should be scheduled.

ADMISSION TO Ph.D. CANDIDACY

After successful completion of the oral qualifying examination, the student's major professor should send a memo requesting the student be admitted to candidacy to the Ph.D. program. This memo should be sent to the Graduate School.

PREPARATION OF THESIS/DISSERTATION DATA

In preparing initial drafts of the thesis or dissertation, the student should conform to the manuscript style currently accepted by the Graduate School. The Texas Tech University [Publication Guide for Graduate Students](#) and the CBE [Scientific Writing for Graduate Students](#) are helpful. Departmental office staff will not provide typing or duplicating any draft of the research proposal, thesis, or dissertation. Computers are available in the departmental graduate computer lab (PS 209) and at the ATLC in the basement of the library.

An alternative to the traditional style of writing the thesis/dissertation is the submission of a paper or collection of papers in a format acceptable for submission to an appropriate professional journal. Typically, this is a general introductory chapter followed by one or more stand-alone manuscript styled chapters followed by an overall summary chapter. Consultation with the major professor and committee to select which style will be used is recommended.

FINAL EXAMINATION

An M.S. or Ph.D. candidate who has fulfilled all coursework requirements, passed qualifying examinations (Ph.D. only), and gained the major professor's approval of a draft of the thesis/dissertation (not required for M.S. non-thesis option) must pass a final examination to complete the degree program. The final examination includes an oral presentation (defense seminar) open to the public followed by an exam conducted by the Graduate Advisory Committee in which the student is expected to defend his/her work. The Graduate School office provides specific deadlines and procedures to be followed in this process.

Thesis/Dissertation

Each committee member has the option of using **two weeks** to examine the draft of the thesis/dissertation approved by the major professor, to determine if it is acceptable to be formally defended. The committee members will suggest either a willingness to attend the final examination or inform the student what remains to be done before a final examination is held.

Final Oral Presentation

The final oral presentation is presented at a publicly announced seminar. This presentation is based upon the thesis/dissertation and is expected to be of a quality suitable for delivery at a scientific meeting. Included in the presentation should be: (1) a clear rationale for the research; (2) a concise statement of objectives; (3) a brief review of procedures; (4) a summary of results; and (5) a discussion of the broad significance of the study. Presentation lengths vary, but are typically 30-45 minutes.

Defense of Thesis/Dissertation

The purpose of the final examination is to allow members of the Graduate Advisory Committee the opportunity to evaluate the student's total academic performance and to arrive at a consensus as to whether or not an advanced degree should be granted. During the final meeting, the committee will review the student's

records to make certain all prior requirements have been completed satisfactorily and will examine the student verbally on the thesis/dissertation subject matter. The student should be prepared to summarize briefly the objectives and results of his/her research, to justify the importance of its contribution and to answer questions pertaining to the form and content of the report, thesis, or dissertation draft.

After the Graduate Advisory Committee has reviewed the student's records and conducted the oral defense, a determination will be made whether or not to recommend conferral of an advanced degree. The student will be advised immediately of the committee's decision. The committee has the option of indicating conditional approval, in which case the student must meet the specified conditions. Members of the Graduate Advisory Committee indicate ultimate approval by signing the final version of the thesis/dissertation. All committee members must sign for a degree to be conferred. Departmental policy requires a majority vote to pass.

After the student has satisfactorily defended their thesis/dissertation, the advisor is to submit the appropriate thesis/dissertation approval form to the graduate school. For an MS degree the form can be obtained from the following URL: <http://www.depts.ttu.edu/gradschool/academic/FormsResources.php> . For the PhD degree, the form can be obtained from the following URL: <http://www.depts.ttu.edu/gradschool/academic/FormsResources.php> .

FINAL REQUIREMENTS FOR GRADUATION

The student must file the "Statement of Intention to Graduate" form online to graduate.

<https://apps.texastech.edu/graduationApplication>

One form must be filed for each intended semester of graduation.

The student who is within four months of completing a graduate degree program is advised to consult the Graduate Catalog and personnel in the Graduate School for information on fees, disposition of the departmentally-approved thesis/dissertation and graduation deadlines. Students are encouraged to participate in commencement exercises and need to contact the Graduate School for annually updated information on graduation deadlines. The student is responsible for meeting all deadlines required for graduation.

OTHER PROFESSIONAL OBLIGATIONS

Integrity

Advancement of knowledge depends on the generation of original truthful information. Stealing someone else's ideas, data, or producing fictitious information drastically impedes the progress of science. Scientists must be scrupulously honest with themselves and with those who will be using the results of their research. Consequently, even a hint of plagiarism or fictitious data will cause a cloud of suspicion to form over relationships with professors and other colleagues. Proof of such activity will be grounds for immediate dismissal from the Department of Plant and Soil Science graduate program.

Fraud

The University expects a graduate student to maintain the highest standards of research honestly. Research fraud is an act of deception; it is different from error. The term fraud is used here to include a broad range of deceptive practices including:

1. Falsification of data—the intentional and unauthorized altering or inventing of any information or citation, including the purposeful omission of conflicting data with the intent to falsify.
2. Plagiarism—knowingly representing the words or ideas of another as one's own.
3. Misappropriation of other's ideas—the unauthorized use of privileged information (such as violation of confidentiality in peer review, however obtained).

Research fraud may be reported either during or after a graduate student's program has been completed. If found guilty of research fraud, the student will be given a penalty which may include: (1) reprimand; (2) warning or other probation; (3) suspension; (4) expulsion; (5) request to rewrite thesis/dissertation, correct and reanalyze data and/or resubmit and re-defend thesis/dissertation; (6) loss of financial assistance; or (7) revocation of degree.

Professional Societies

Graduate students are encouraged to join and participate in the activities of pertinent professional societies. Since the student is embarking on a professional career, it is in the student's best interest to become actively involved in a professional society. Most societies have reduced student dues in recognition of student budgetary constraints. In addition to reading journals and newsletters, the student should attend professional meetings whenever possible. Departmental transportation will sometimes be available to the off-campus events of these societies. The student who serves on a committee or delivers a paper at a scientific or society meeting will usually be able to obtain at least partial travel expenses from the project or department.

Informal Social and Other Learning Opportunities

The alert graduate student will find that there are many opportunities to learn from fellow students as well as from classes or conferences with professors. The student will gain most from graduate years by taking every opportunity to talk with other students and share experiences from other parts of the United States and the world. The student can learn a great deal by sharing work efforts and traveling to different study areas with other students with other students or professors. The Department will try to facilitate these opportunities for interaction. These interchanges will not be forced. A student, however, who quietly works on only individual research, will gain only a fraction of the experience that a sociable, widely-inquiring student will be able to obtain. Lifelong professional ties can be built among fellow students which will enhance your long-term chances for success.

Publication of Research

A thesis or dissertation is not considered a publication. These documents are not readily accessible to the scientific community. The student who accepts public money to conduct research has an obligation to make the results available to the public. Consequently, every student is expected to publish at least the main elements of the research in a widely-available journal. The stature of the Department of Plant and Soil Science and its ability to attract research funds depends on this process. Maintenance of the departmental stature is of overall value to past and potential recipients of graduate degrees. Present graduate students draw on the past reputation of our department as they vie for positions in the current job market.

The student is encouraged to write the research in a form acceptable for publication within one year after completion of degree requirements. This task becomes more difficult the longer it is delayed. Accordingly, if the student fails to meet this obligation within one year after leaving, the responsibility for getting the research into publishable form will fall on the major professor. This, in turn, may influence the professor's opinion

when answering requests for job references and awards. Lack of effort can also be grounds for relinquishing senior authorship on a publication.

All data and intellectual properties generated during graduate and project research are the property of Texas Tech University. Departmental, College, and University guidelines must be followed in publishing research or protecting intellectual properties. Failure to follow proper procedures or to leave Texas Tech University without full disclosure of data or intellectual properties could result in civil or criminal prosecution.

All data collected, research materials accumulated, slides and publication rights of any research conducted during graduate work are the property of Texas Tech University and the State of Texas. Such materials should be left in the safekeeping of the major professor at the end of the degree program.

CARE AND USE OF UNIVERSITY FACILITIES

Funds

Nearly all Departmental activities entail use of facilities, equipment, and operational budgets provided through state and federal funds. When private money is accepted, its use becomes public. The use of these funds for conducting teaching and research entail accountability to those who provide this support. This means that use of facilities, equipment, and budgets may be audited by appropriate authorities at any time. A student who uses University property for reasons other than that for which it was intended is liable for legal prosecution and/or dismissal. Avoid the temptation to use telephones, copy machines, mail, vehicles, and other resources for private use.

Insurance

The University carries third-party injury and property damage liability insurance for a graduate student who is on contract. This insurance, however, does not cover costs for repairs from collisions of Departmental vehicles nor is it valid when accidents occur in connection with unauthorized use of equipment. It also is not valid if the user is breaking the law (example: drinking alcoholic beverages in a state vehicle) at the time of the accident. The law breaker is also personally responsible for all fines (example: traffic tickets).

The student must maintain personal automobile liability insurance. A current driver's license in good standing and approval by the University are required of all drivers who operate departmental vehicles. University employees are covered by Workman's Compensation in case of injury on the job. Any accidents should be reported to the major professor as soon as possible. A student with a TA or RA appointment is eligible for coverage by Texas Tech University's health insurance. A student should be sure the appropriate forms are completed for individual coverage as soon as possible after the initial appointment is made.

Vehicles

The Department has many vehicles that are necessary to fulfill teaching and research missions. Each driver must have a valid driver's license, liability insurance and be listed on the Departmental insurance sheet for each vehicle operated.

The most common taxpayer complaints regarding vehicle usage are about state vehicles being seen at unauthorized places (parked at private residences and restaurants) and speeding. Failure to follow the above policies could jeopardize the privilege of having project or departmental vehicles.

Departmental Labs

The Department has laboratories available to use by graduate students. These labs are under direction of the individual project leaders who will coordinate laboratory use.

Computers

The Department has a dedicated graduate computer lab, BPS209 equipped with computers, scanner, and printer. This equipment is available to graduate students on a first come, first serve basis. Secretaries' computers may never be used by graduate students.

Office space

Graduate student office space is typically available in or proximal to the major professor's laboratory. If this option is unavailable, the graduate student is to visit with a departmental secretary for assignment of office space. The department has graduate student office space available in several of its buildings.

Copying and Office Supplies

The department makes every effort to support graduate research to the fullest extent possible. There are, however, some stipulations we place on the use of office supplies and equipment provided by the State of Texas. General office supplies and equipment (paper, pens, etc.) are available to faculty and staff. Supplies are available to a graduate student only by special request from a graduate advisor.

Departmental copy machines are available for graduate student use as well as faculty and staff. The copy machines are intended to support research and teaching activities, not for copying coursework material or books (commercial copy centers are located both on campus and throughout the city for copying personal material).

MISCELLANEOUS POLICIES

Travel

Official travel out of town overnight in project or private vehicles requires completion of a "Travel Authorization Form." These forms must be completed and approved prior to the planned trip. The student should ask the major professor or departmental administrative assistant for details.

Alcohol

Texas law prohibits consumption of alcoholic beverages in state vehicles and on all state property. Drinking of alcoholic beverages in public, however, is legal and any person in charge of a field trip or property is responsible for such conduct. A student's refusal to comply with these laws could leave the person in charge no option but to request the assistance of law enforcement officials.

Smoking

Texas Tech University prohibits smoking tobacco in all structures on campus.

Drugs

To continue to receive federal money for teaching and research, Texas Tech University has agreed to maintain a drug-free workplace. Accordingly, discovery of and use of illegal (non-prescription) drugs while on University property or while conducting University business elsewhere will require the notification of appropriate authorities. Conviction will be followed by dismissal.

Vacations

Part-time appointments do not carry provisions for vacation or sick leave. Arrangements for absences from campus for field sites should be worked out between the student and the major professor. The student should indicate when he/she expects to be absent. Student holidays are provided for undergraduate students and do not necessarily apply to graduate students on paid appointments. All leave time must be approved by the student's major professor.

Mail

Mail boxes are established for each graduate student. Please see a PSS Administrative Assistant to establish a box or leave a forwarding address when your program is completed.

Keys

Appropriate keys are requested by a PSS Administrative Assistant from the key shop on campus. . The student will be required to sign for keys at the key shop. It is illegal to duplicate University keys or have unauthorized keys in one's possession. After the completion of a program, keys must be returned to the department.

Safety Regulations

Safety standards for Texas Tech University are regulated by the Attorney General's Office and enforced by the Texas Department of Health. These standards are at least as stringent as O.S.H.A. (Occupational Safety and Health Administration) requirements. Stiff fines and penalties exist for noncompliance.

Before starting any analytical procedure, a student must be trained in the safe use and handling of chemicals involved. A form must be signed attesting to this training. Material Safety Data Sheets (MSDS) for all chemicals are located at the Quaker Avenue Farm and Department greenhouses. Laboratory supervisors should also provide access to MSDS sheets. Please read and refer to the MSDS sheets for chemicals you will be handling. These safety sheets contain all the necessary information regarding chemicals.

All containers within the labs must be appropriately labeled. An inventory must be maintained and an MSDS must be available for each and every chemical in the Department. Please inform the lab supervisor of any chemical brought into the Department. This is the only way accurate records can be maintained.

Inventory lists and signs are posted in each lab. Please do not remove or relocate any lists or signs. Food and drinks are prohibited in labs by University regulations.

RESPONSIBILITIES OF THE MAJOR PROFESSOR

1. Advise the student of opportunities and appropriateness of intended coursework and research necessary to meet personal career objectives.
2. Advise the new student how to obtain keys, a desk, and a mailbox.
3. Advise the student on selection of graduate committee, coursework, and research plan.
4. Organize and attend all graduate committee meetings, including seminars.
5. Advise the student as needed during progress of research.
6. Organize qualifying exams (Ph.D. only).
7. Read and critique drafts of thesis/dissertation in a timely and constructive manner.
8. Attend seminars and help the student prepare presentations.

9. Organize final defense.
10. Read and sign final version of thesis/dissertation.
11. Answer requests for recommendation concerning the student's employment or further study.
12. Work with the student to write and submit funded research results for publication in scientific literature.

RESPONSIBILITIES OF THE GRADUATE STUDENT

1. Give thoughtful consideration to your personal, educational, and career goals.
2. Acquire a basic familiarity with your own academic program, including all applicable Departmental, College, and University requirements and policies.
3. Give thoughtful consideration and preparation to the planning of your courses, research, and thesis/dissertation.
4. Ask questions about all policies and procedures that you do not fully understand.
5. Keep your major professor, Departmental office, and Registrar's Office apprised of your current local and permanent addresses and telephone numbers, so that you can be contacted if necessary.
6. Take responsibility for being aware of all important calendar deadlines, such as the last day to drop a course and defend your thesis/dissertation.
7. Accept responsibility for your choices and decisions.
8. Participate in departmental activities.

**Graduate Faculty (not including adjunct faculty)
Department of Plant & Soil Science**

An updated list of faculty members in the Department of Plant & Soil Science is found at <https://www.depts.ttu.edu/pss/people/faculty/>.