GUIDELINES FOR GRADUATE STUDENTS
IN THE DIVISION OF SOIL & LAND RESOURCES

Foreword
Master of Science (M.S.), thesis or non-thesis, and Doctor of Philosophy (Ph.D.) programs are offered in Soil & Land Resources with opportunity for specialization in areas such as: environmental quality, soil and water quality, soil fertility, soil morphology and genesis, soil chemistry, soil biochemistry, soil microbiology, microbial ecology, and soil and environmental physics.

General requirements of the College of Graduate Studies for M.S. and Ph.D. degrees appear in the *Graduate Bulletin*. All requirements, including procedures and time elements involved, are found in the introductory section of the Bulletin and should be carefully followed.

Many of the operational details of graduate programs have been delegated to the individual administrative units such as the Division of Soil & Land Resources of the Department of Plant, Soil, and Entomological Sciences. It is the purpose of the Division of Soil & Land Resources guidelines to provide students and faculty with information concerning the graduate policies and procedures for Soil Science majors. **It is the responsibility of the major professor and graduate student to follow these guidelines.**

Admission Requirements
Application for admission to the graduate program is made through the Admissions Office. Additionally, three letters of reference should be sent directly to the Division of Soil & Land Resources.

(1) A bachelor's degree from an accredited college or university is required.
(2) Grade point average must be 2.8 or higher. Progressive grade improvement in junior and senior years will be given special attention in marginal cases.
(3) A TOEFL score of 550 or higher on the Paper Based Test (PBT) or a score of at least 213 on the Computer-Based Test (CBT) is required for all students whose first language is not English. Students with exceptional academic credentials may be admitted with a TOEFL score between 500 and 550 with the stipulation that they pass English 101, ESL Grammar and Writing Lab, or score 550 or higher on the Paper-Based TOEFL exam or 213 on the Computer-Based TOEFL Test within the first year of their graduate program.
(4) GRE scores are required. GRE test results will be used in combination with other application materials to evaluate the applicant's potential for success in a graduate program.
(5) Individual professors may impose further requirements on their own prospective students.

Appointment of a Major Professor and Graduate Committee - M.S. and Ph.D.
The major professor and graduate committee should be nominated as early as possible during the student's first semester in residence. The Soil and Land Resource Division Chair and Graduate Dean approve the major professor and

committee's nomination after consideration of the student's interests and the availability of Soil & Land Resources faculty with the necessary graduate faculty standing.

The committee for an M.S. degree will consist of a minimum of three members of the graduate faculty, including: (1) the major professor as chair, (2) a second member from the Soil & Land Resources graduate faculty, and (3) a member representing a supporting field outside of Soil & Land Resources. The committee for the Ph.D. degree will consist of a minimum of four members of the graduate faculty, including: (1) the major professor as chair, (2) a second member from the Soil & Land Resources graduate faculty, (3) a member from a minor or supporting area, and (4) a member from outside the major and supporting fields. The committee assumes the responsibility for advising the student and approval of the student's program.

Development of a Study Plan - M.S. and Ph.D.
The student and graduate committee should meet as soon as possible after appointment of the graduate committee to hold a background interview and develop a study plan. Prior to the meeting, the student, in consultation with the major professor, should prepare a tentative schedule of courses and a research plan for the proposed thesis topic (thesis degree). The background interview is to review the professional goals of the student and to determine the type of graduate program best suited to achieve those goals. All M.S. programs must include a minimum of 2 cr. of seminar and all Ph.D. programs must include a minimum of 3 cr. of seminar. This seminar requirement is in addition to the required exit seminars. An undergraduate understanding of soil physics, soil chemistry, soil biology, soil fertility, and soil genesis and morphology is required of all students who complete a graduate degree in Soil Science. This requirement may be waived in those instances where the student has had a closely related course. The suggestions and recommendations of the graduate committee are used to develop a final study plan for the degree. After approval of the study plan by all members of the graduate committee, it is submitted to the Soil & Land Resources Division Chair and Graduate Dean for approval.

Students working on a thesis degree at the M.S. or Ph.D. level will need to work closely with their major professor and other members of their graduate committee to develop a sound research outline early in the program. This outline should (1) make a thorough review of literature pertaining to the study, (2) list the objectives and rationale of the study, and (3) describe the procedures for attaining the objectives.

Length of Research Assistantship Support
M.S. - Departmental research assistantships from appropriated funds are normally limited to two years. Support for students on programs taking longer than two years will depend on additional funding obtained by the student or major professor.

Ph.D. - Departmental research assistantships from appropriated funds are normally limited to three years. Support for students on programs taking longer than three years will depend on additional funding obtained by the student or major professor.

**Please note: Graduate students on full-time assistantship are required to be registered for 12 credits per semester. This applies to both M.S. and Ph.D. students. Students who wish to register for fewer credits each semester should consult with their major professor.

Evaluation of a Graduate Student's Progress
The Soil & Land Resources graduate faculty will meet at least once each year, at the call of the Division Chair, to review the progress of all currently enrolled Soil & Land Resources graduate students. If the review reveals problems or unsatisfactory progress, a set of recommendations and suggestions for the student will be prepared and forwarded to the student via the major professor. The recommendations should be specific and include timelines for accomplishments and review of progress. Continued failure to make satisfactory progress as determined by the graduate faculty in concert with the student's committee can result in termination of the degree program. Termination of a degree program requires a majority vote of the student's committee and the Soil & Land Resources graduate faculty.

Teaching Requirement
All Ph.D. students are expected to obtain teaching experience or training. This requirement can be satisfied by taking responsibility for a section of the Soil 206, General Soils Lab, by taking responsibility for some portion of an upper division soils course, and/or taking appropriate University courses.

M.S. REQUIREMENTS AND PROCEDURES - THESIS OPTION

Thesis
Preliminary Draft - The first draft of a thesis is prepared by the student in close consultation with the major professor. The initial draft is rewritten until it is in acceptable condition for review by the graduate committee. The thesis may be prepared in standard thesis format or as a compilation of journal manuscripts, as determined by the student and major professor in cooperation with the graduate committee.

Reviewed Draft - This draft is prepared by the student, incorporating ideas and suggestions made by the major professor. The student prepares a copy for each committee member. The student must allow at least two weeks for review of the draft by the committee members. If major alterations are recommended by the committee members, this procedure may need to be repeated.

Final Draft - After the reviewed draft meets the general approval of the graduate committee, the final draft is prepared by the student in consultation with the major professor, incorporating suggestions made by the graduate committee. The original and first copy (or two reproduced copies) plus an abstract of the thesis are taken by the student to members of the graduate committee, the Division Chair, and the Dean of the College of Agricultural and Life Sciences for signatures and then submitted to the College of Graduate Studies. A minimum of 2 days each is required for the Division and College administrators' signatures. A copy of the final thesis is given to the Department for its archives.

Final Exam

Scheduling - The final exam may be taken after the student has completed the "Application for Final Defense" form, submitted it to the College of Graduate Studies and received the "Final Defense Report" form. The major professor, in consultation with the student and the graduate committee, selects a time and place for the exam. The major professor then informs the graduate committee, the Soil & Land Resources graduate faculty, and the Division Chair of the time and location.

Examination Procedure - The oral examination is attended by the student and all graduate committee members. Interested members of the Soil & Land Resources graduate faculty are invited to attend.

The major professor will act as moderator and will guide the direction of the questions. At the beginning of the exam, the student will present an exit seminar on his/her research. During the remainder of the exam the student will be expected to defend his/her thesis and demonstrate a solid grasp of academic knowledge related to soil science.

Evaluation - The decision as to whether the student passes or fails the exam rests with the committee and members of the Soil & Land Resources graduate faculty in attendance at the exam. An advisory vote of the Soil & Land Resources graduate faculty in attendance will be taken and considered by the student's committee. A favorable majority vote by the committee is required to pass the student.

If the student does not pass the exam, the committee will recommend whether or not the student should be permitted to retake the exam. The exam may be repeated once within a period of not less than three months and not more than one year after the first attempt.

M.S. REQUIREMENTS AND PROCEDURES - NON-THESIS OPTION

In some cases, with approval of the Soil & Land Resources graduate faculty, a student may be permitted to enter into an M.S. non-thesis program in which he/she is expected to pass a comprehensive exam and write a final report on an appropriate technical subject.

Technical Report

The nature of the technical report should be agreed on by the student and graduate committee no later than the end of the first semester. Copies of the completed report must be given to the major professor and committee at least one week before the comprehensive exam. The essential difference between this report and a regular thesis is that the former is not based on original research performed by the candidate.

Comprehensive Exam

This written and/or oral examination is taken after the completion of most of the degree requirements, including the course work stipulated in the study plan. The decision as to whether the exam will include a written portion, in addition to an oral, rests with the major professor and graduate committee. The major

professor will inform the graduate committee, the Soil & Land Resources graduate faculty, and the Division Chair of the time and place of the oral exam. A majority favorable vote is required of the graduate committee to pass the student. An advisory vote of the Soil & Land Resources graduate faculty in attendance will be considered in arriving at a decision. The exam, if failed, may be repeated once. The interval before the second attempt may not be less than three months or longer than one year.

PH.D. REQUIREMENTS AND PROCEDURES

Preliminary Examination
The student will take a preliminary exam after completing the majority of the required course work. The exam will consist of both written and oral parts.

Written Examination - Questions for the written exam will be solicited by the major professor from selected Soil & Land Resources graduate faculty and members of the graduate committee. The student is expected to take a written exam in four of the five subject matter specialties of (1) soil fertility, (2) soil physics, (3) soil microbiology and biochemistry, (4) soil chemistry, and (5) soil morphology, genesis, and classification. The time span for taking the written preliminary exams will be decided by the student's major professor.

Oral Examination - The time and place of the oral examination will be set by the major professor in consultation with the graduate committee. All graduate committee members must be present and all members of the Soil & Land Resources graduate faculty will be invited. Questions are to be encouraged from all Soil & Land Resources graduate faculty in attendance as well as from graduate committee members.

Evaluation - The decision as to whether the student passes or fails the exam rests with the committee and the members of the Soil & Land Resources graduate faculty in attendance at the exam. An advisory vote of the Soil & Land Resources graduate faculty in attendance will be taken and considered by the student's committee. A favorable majority vote by the committee is required to pass the student.

If a student fails the preliminary exam, he/she may be able to repeat it within a period of not less than three months or more than a year following the first attempt.

Dissertation Procedure
Preliminary Draft - The first draft is prepared by the student in close consultation with the major professor who will review the draft and assure that the dissertation is in satisfactory condition before authorizing the student to prepare a review draft. The dissertation may be in standard thesis format or a compilation of journal manuscripts, as determined by the student and major professor in cooperation with the graduate committee.

Reviewed Draft - The student will prepare multiple copies of the reviewed draft incorporating ideas and suggestions of the major professor and submit one copy

to each graduate committee member. The student should allow at least 2 weeks for review by the graduate committee.

Final Draft - Once the review draft meets with the approval of the graduate committee, the student prepares the final draft in consultation with the major professor, incorporating suggestions made by the graduate committee.

Disposition of Dissertation - The original and first copy (or two reproduced copies) plus an abstract of the dissertation are taken by the student to members of the graduate committee, the Soil & Land Resources Division Chair, and the Dean of the College of Agriculture and Life Sciences for signatures and then submitted to the College of Graduate Studies. A minimum of 2 days each is required to obtain Department and College administrators' signatures. A copy of the final dissertation is given to the Department for archiving.

Final Oral Exam

Scheduling - This examination is scheduled not less than 10 working days after the "Request to Proceed with Final Defense" form has been submitted to the College of Graduate Studies. The major professor, in consultation with the student and the graduate committee, selects a satisfactory time and place for the exam. The major professor informs the committee members, the Soil & Land Resources graduate faculty, and the Division Chair of the exam time and location.

Examination Procedure - The final exam will be attended by the student, the graduate committee, and other interested faculty. The examination will be preceded by an exit seminar on the dissertation research. Committee members will have priority in the questioning; other faculty members may participate at the discretion of the major professor, who will act as moderator and will guide the direction of questioning. The exam will consist primarily of a defense of the dissertation but may include questions of a more general nature.

Evaluation - The decision as to whether the student passes or fails the exam rests with the committee and the members of the Soil & Land Resources graduate faculty in attendance at the exam. An advisory vote of the Soil & Land Resources graduate faculty in attendance will be taken and considered by the student's committee. A favorable majority vote by the committee is required to pass the student.

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