

## **Requirements for the Degree of MASTER OF SCIENCE Major in Soil Science**

The Master of Science degree is offered to provide training and skills beyond that ordinarily offered by the B.S. degree but without the intensive training in research and creative scholarship required for the Ph.D. degree. The Master of Science degree is granted upon successful completion of a prescribed program of study that involves advanced courses and experience in research.

**Joint Masters Degree:** Unless specified otherwise, candidates for a joint master's degree must fulfill all of the requirements for a Master of Science Degree in Soil Science plus those of the cooperating department.

### **ADMISSION**

Admission represents a judgment as to the probability of a student's success in graduate work. This judgment is based on the student's undergraduate and postgraduate transcripts, letters of reference, results from the Graduate Record Exam (GRE), and where appropriate, results from the Test of English as a Foreign Language (TOEFL).

Each student's application is reviewed by the Department of Soil Science as well as by Graduate School admission's examiners. Admission is ultimately determined by the Graduate School; however, no student is admitted in the absence of a favorable recommendation by the Department of Soil Science.

**Admission with Full Standing:** Graduate School requirements are: 1) a Bachelor's degree from an approved institution, 2) an undergraduate grade-point average of at least 3.0 (4.0 basis), and (3) an undergraduate major or equivalent evidence of suitable background for entering graduate studies in Soil Science.

**Admission with Deficiencies:** Applicants with insufficient credits in the basic sciences may be admitted for graduate study in Soil Science at the discretion of their advisor, but a plan for making up such deficiencies (generally within the first year) must be in place by the end of the first full semester of enrollment. A student admitted with deficiencies may need to spend more time than the minimum to complete their degree requirements.

**Admission on Probation:** Graduate School policy is that a student whose undergraduate grade point average is below 3.0 may be recommended by a department for admission on probation, provided other substantial evidence of capacity to do satisfactory graduate work is presented. In recommending admission on probation, the department must present a specific plan of probation and inform the applicant of it.

**Admission of International Students:** See Graduate School Bulletin.

### **COURSE WORK AND PROGRAM**

The normal program is 9 to 12 credits for a semester and 5 or 6 credits for the eight-week summer session. Students may not register for more than 12 credits in the semester or 8 credits in the eight-week summer session. Courses carrying graduate credit are those numbered in the 300-999 group.

Because every student who uses University facilities must be registered, provision has been made for registration on a per-credit basis. Minimum registration is 2 credits in either the semester or summer session.

Holders of Research Assistantships, Fellowships, and Scholarships are required to carry a full program of graduate studies during their appointments.

**Minimum Graduate Level Credits:** Candidates for the M.S. must earn a minimum of 16 credits at UW-Madison in graduate level courses, with an average grade of B or better in non-research courses.

**Courses in Basic Sciences:** Candidates for the M.S. in Soil Science are required to have completed the basic science courses shown in Table 1 prior to their final examination.

The list of required courses in the basic sciences reflects the Department's consensus of the minimum academic background in science needed to pursue graduate studies in Soil Science. These courses should be completed as part of the undergraduate curriculum in preparation for graduate studies, and most are prerequisites for graduate level courses in Soil Science. Prospective students are encouraged to complete these courses during their undergraduate studies. During their first semester of enrollment, new graduate students must submit evidence (normally copies of their academic transcripts) to the Certification Committee that the courses in the basic sciences have been completed, or submit a plan of course work to meet the requirements.

Courses other than those listed in the basic science requirements can be substituted if approved by the Certification Committee. When considering alternate courses, students must show evidence of having sufficient academic background to successfully complete the graduate courses in their planned graduate program. Courses in Soil Science will not be considered as suitable substitutes.

**Courses in Soil Science:** M.S. candidates must meet the minimum departmental course requirements for soils graduate degrees shown in Table 1. A minimum of 7 credits in non-research, soils and/or non-soils,  $\geq 500$ -level courses, including 1 credit of soils graduate seminar, must be taken at UW-Madison as a graduate student.

**Seminars:** All M.S. candidates must present at least one Soil Science graduate seminar (Soil Sci 728) for letter grade ( $\geq B$ ) during their M.S. program. Each candidate must enroll in a Soil Science seminar every fall and spring semester; exceptions require the approval of the Department Chair. Students should take the seminar on a Satisfactory/Unsatisfactory (S/U) basis when enrolling without a formal presentation. An S grade requires 80% attendance, and is a passing grade (B) from a Graduate School standpoint.

**Certification of Minimum Course Requirements:** A proposed program for a M.S. candidate satisfying the minimum course requirements must be approved by the Certification Committee by the end of the first semester of M.S. graduate work. It is the responsibility of the student and the Major Professor to complete the departmental M.S. Certification forms, arrange to be certified by the Certification Committee, and arrange for approval of revisions in the initial program if this becomes necessary.

**Grades:** Required courses in soil science must be completed with a grade of B or better (BC and C may not be offset by AB and A). For other courses, the Department of Soil Science follows the grade requirement of the Graduate School, which is an average record of B or better in all work taken as a graduate student. Courses with a grade of C or BC may be counted toward course requirements, providing they are offset by an equivalent number of credits of A or AB work in regular courses or seminars. A grade of P is usually given for satisfactory progress in research (Soil Sci. 990); when the M.S. research is completed a final, retroactive grade is given by the Major Professor. Grades of Incomplete are considered to be unsatisfactory if they are not removed the following semester.

**Written Research Plan:** Students are expected to present a written research plan to their committee no later than the end of the third semester of M.S. graduate work. The Written Research Plan normally includes the following: Title Page, Table of Contents, Introduction, Objectives, Review of Literature, Plan of Proposed Research (early research data showing the feasibility of the proposal is optional) and References. The maximum length of the Written Research Plan is suggested to be 10 pages, double spaced. The bibliography is not counted as part of the 30 pages.

**M.S. Thesis:** A candidate for the Master's degree is required to prepare a thesis on original research. Original research includes comprehensive and original interpretations of the literature. It must be approved by the Major Professor under whose guidance it has been produced and by the Examination Committee.

## **M.S. EXAMINATION**

**M.S. Examination Warrant:** The candidate may not take the final examination until all course requirements for the degree have been satisfied. The student must contact the Student Services Coordinator at least three weeks prior to the exam so the required documentation can be prepared in conjunction with the Graduate School. Information needed by the Student Services Coordinator includes the date of defense, the title of the thesis, and whether or not the student intends to continue in the Department for the Ph.D. degree.

**M.S. Examination Scope:** Candidates must present an open seminar on their M.S. thesis research, and pass a comprehensive examination (either oral, or an oral-written combination if requested by the candidate) on the graduate work offered in support of their candidacy.

**Composition of M.S. Examination Committee:** The Master's examination committee consists of at least three faculty members of defensible breadth, a minimum of two drawn from the Soil Science faculty. Defensible breadth shall be subject to Certification Committee approval. The third member of the committee must have a degree equivalent to that pursued by the student and be approved by the Certification Committee.

**Documents:** The Major Professor should obtain the following materials from the Student Services Coordinator on the day of the exam: the M.S. Warrant, the Soil Science Graduate Program Examination Evaluation forms, copies of the M.S. certification form, and copies of the current transcript for each Committee member. All materials are to be returned to the Student Services Coordinator after the exam.

**M.S. Examination Results:** In addition to recording the results of the M.S. examination on the Graduate School Warrant, each member of the M.S. Examination Committee must also complete the departmental Soil Science Graduate Program Examination Evaluation form.

**Policy on Permission to Retake the M.S. Examination:** The decision as to whether or not a student may retake the examination is made by the M.S. Examination Committee. A student may, if denied the right to retake an M.S. examination, appeal to the Department Chair who then may appoint a special committee to study the case and make recommendations as to further action. Whenever possible, the M.S. Examination Committee for an examination retake should be the same as the M.S. Examination Committee that gave the student a failing grade on the first examination.

**Time Requirements for M.S. Degree Completion:** There are no deadlines for completing the M.S. degree. However, students enrolled full time are expected to complete their degree requirements within 2-3 years.

## **EXAMINATION MATERIALS CHECKLIST**

**You must contact the Student Services Coordinator at least three weeks prior to the Examination.** It is the responsibility of the Major Professor to ensure that the items listed below are brought to the M.S. Examination.

- ☐ Certification form (1 copy for each Committee member)
- ☐ Transcript (1 copy for each Committee member)
- ☐ Soil Science Graduate Program Examination Evaluation form (1 copy for each committee member)
- ☐ M.S. Warrant

<b>TABLE 1. MINIMUM DEPARTMENTAL COURSE REQUIREMENTS FOR THE SOIL SCIENCE MASTER'S DEGREE</b>		
<b>Courses<sup>a</sup></b>		<b>Minimum Credits</b>
<b>BASIC SCIENCES</b>		
<b>Math</b>	Calculus (Math 221, 5 cr; Math 222, 5 cr)	5
<b>Statistics</b>	Introductory (3 cr)	
<b>Chemistry</b>	<i>Any combination of 9 credits, such as:</i> Chem 109 (5 cr); and Chem 327 (4 cr); or Chem 103-104 (9 cr)	9
<b>Physics</b>	General Physics (Phys 103, 4 cr)	4
<b>Biology</b>	<i>Any 3 credits from:</i> Bot/Zool 151 (5 cr); Bot/Zool 152 (5 cr); Biocore 301 (3-4 cr); Biocore 303 (3 cr); Bot 350 (3 cr); Bot 500 (3-4 cr); Bot/Forest/Zool 460 (4 cr); Biochem 501 (3 cr); Biochem 507 (3-4 cr)	3
<b>SOIL SCIENCES (Total Soil Science Area Requirement is 18 credits)</b>		
<b>General Soil Sci</b>	Soil Sci 301 (4 cr)	4
<b>Graduate Seminar</b>	Soil Sci 728 (1 cr) (must enroll every semester)	1
<b>Field-based Soil Sci</b>	<i>Any credits from:</i> Soil Sci 305 (1 cr); Soil Sci 325* (3 cr); Soil Sci 601 (3 cr)	1-3
<b>At least one course in 4 of the following 6 subject areas</b>		10-13
	Pedology – Soil Sci 325* (3 cr)	
	Soil Physics - Soil Sci 322 (3 cr); Soil Sci 532 (3 cr); Soil Sci 622 (3 cr)	
	Soil Chemistry – Soil Sci 321 (3 cr); Soil Sci 621 (3 cr); Soil Sci 626 (3 cr)	
	Soil Biology – Soil Sci 323 (3 cr); Soil Sci 523 (3 cr); Soil Sci 623 (3 cr)	
	Soil Fertility – Soil Sci 326 (3 cr)	
	Spatial Analysis – Geo 377 (4 cr); Soil Sci/LandArch 695 (3 cr); F&W Ecol/Civ Engr/IES 301 (1 cr)	
Total Soil Science Area Requirement		18
Total Credits That Must Be Taken in the Department		7 <sup>b</sup>

\*325 may be counted for both a Field-based course and as one of the Subject area courses.

<sup>a</sup> All of these courses include an “or equivalent” qualifier. Prerequisites for any of the courses listed above must be satisfied by the student in accordance with the course description. Individual programs may have specific requirements regarding chemistry, physics, or biology, contingent on a student’s certification plan.

<sup>b</sup> 500 or higher-level non-research soils and/or non-soils courses taken at UW-Madison as a graduate student, including 1 credit of Soil Sci 728 (Graduate Seminar). Soils courses must be completed with a grade of  $\geq$ B.