

Plant and Soil Sciences

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Graduate study offered in the Department of Plant and Soil Sciences leads to the Master of Science degree in Plant and Soil Sciences with a concentration in Agronomy, Horticulture, or Weed Science and also to the Doctor of Philosophy degree in Plant and Soil Sciences with a concentration in Agronomy, Horticulture, or Weed Science. The department has an extensive research program which provides a diversity of problems for thesis and dissertation research under the supervision of experienced and highly trained scientists. The Department of Plant and Soil Science offers fundamental and applied graduate research in agronomy, horticulture, weed science, plant breeding and genetics, molecular biology, crop modeling, soil science, crop physiology, turfgrass science, and remote sensing.

Graduate programs are designed to develop skills in research techniques in reference to the individual needs of each student. This program is developed and administered by a departmental committee within the student's area of specialization and may include courses in mathematics and statistics, biology, chemistry, biochemistry, remote sensing, etc., as well as agronomic, horticultural, and weed science courses. Graduate assistantships are provided, subject to availability of funds. An undergraduate grade average of B or better is required to be eligible for an assistantship. Requests for additional information should be addressed to:

Department Head

Plant and Soil Sciences

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Highly qualified undergraduates at Mississippi State University are encouraged to consider applying to the Accelerated Program (Combined B.S./M.S.). This program permits concurrent enrollment in the Agronomy or Horticulture B.S. and the Agronomy, Horticulture, or Weed Science M.S. degree programs during the student's final year of undergraduate studies with enrollment in up to nine hours of graduate courses for which undergraduate credit is also awarded. Students need to consult with a potential graduate advisor to ensure graduate credit could be applied to a program of study for the M.S. degree. Application to this program may be made as early as the end of the junior year (i.e., after completion of 90 or more hours of graded undergraduate courses). This option is only available for students pursuing a thesis-based Master of Science degree in Agriculture with a concentration in Agronomy, Horticulture, or Weed Science.

Departmental Admission Criteria

M.S. in Plant and Soil Sciences and **Ph.D.** in Plant and Soil Sciences with concentrations in Agronomy, Horticulture, or Weed Science:

- GPA—
For Master of Science: 2.75
For Doctor of Philosophy: 3.00 on graduate work
- TOEFL (Test of English as a Foreign Language) or IELTS (International English Language Testing Systems) score—
TOEFL score of 500 PBT or 61 iBT or IELTS score of 5.5
- GRE—All graduate programs require submission of GRE scores.
- Non-thesis M.S.-- A non-thesis M.S. does not qualify toward admission to a Ph.D. program in the Department of Plant and Soil Sciences at Mississippi State University.

Accelerated **B.S./M.S.** program in Agronomy, Horticulture, or Weed Science for undergraduates:

1. a GPA of 3.50 or higher for all undergraduate work;
2. submission of a standard application for graduate studies in the Department of Plant and Soil Sciences;
3. three letters of recommendation from individuals familiar with the applicant's academic performance;
4. submission of scores from the Graduate Record Examination (GRE) General Test prior to enrolling in graduate courses, and
5. a statement of professional interests and goals from the applicant, including specification of one or more potential major professors.

For students enrolled in a combined B.S./M.S. program, the MSU Graduate Council has established these guidelines in cooperation with the Registrar's Office:

Once the student is accepted into the combined program, the student and the advisor may select up to 9 hours that will satisfy both undergraduate and graduate requirements. These courses may be split-level (i.e., 4000-6000 level) or 8000 level classes, and the student should take the courses

for graduate credit (i.e., 6000-level or higher). To do so, he/she must submit a completed form to the Office of the Graduate School requesting such permission: <http://www.grad.msstate.edu/forms/pdf/accel.pdf>. The OGS will notify the student by MSU email when the request is approved. The combination of undergraduate and graduate credit hours may not exceed 16 hours within a semester. After successfully completing the graduate-level classes, the student and undergraduate advisor will submit a request to the Registrar's Office to grant credit for the course also at the undergraduate level with the same grade awarded as received for the graduate course. In the case of a split-level class, the transcript will show credit for both the 4000- and 6000-level on the transcript. In the case of an 8000-level class, a special topics undergraduate course of the same title will be entered on the transcript to allow dual credit.

Students are permitted to opt out of the combined program at any time, at which point they could complete only the undergraduate portion of the program. No additional dual counting of courses would occur after the student leaves the combined program.

Students will receive the bachelor's degree once the requirements for that degree are met. Students will be required to complete all of the requirements for both the bachelor's and master's degrees in order to receive both degrees, and those requirements will be identical to the requirements for students enrolled in the traditional B.S. and M.S. programs. Students will be classified as undergraduates until they fulfill at the requirements for the undergraduate degree. At that time they will be classified as graduate students and will be subject to the guidelines pertaining to the M.S. degree. Students admitted to this program should read and understand the guidelines in the Department of Plant and Soil Sciences Graduate Student Handbook before registering for any courses for graduate credit.

Provisional Admission

A student who has not fully met the GPA or other requirements stipulated by the University may be admitted on a provisional basis. The provisionally-admitted student is eligible for a change to regular status after receiving a 3.00 GPA on the first 9 hours of graduate courses at Mississippi State University (with no grade lower than a C). The first 9 hours of graduate courses must be within the student's program of study. Courses with an S grade, transfer credits, or credits earned while in Unclassified status cannot be used to satisfy this requirement. If a 3.00 is not attained, the provisional student shall be dismissed from the graduate program.

Leveling Courses

The Department of Plant and Soil Sciences recognizes that many students who hold bachelor degrees from other educational areas may wish to study towards an advanced degree within the department. These students may come from areas with different requirements than those normally associated with Agronomy, Horticulture, or Weed Science. To increase the possibility of success in attaining the advanced degree, the department requires all graduate students to have a fundamental understanding of soil and plant science. To this end, all graduate students must have had at least one course in soil science equivalent to Soils (PSS 3303), a plant science course covering basic plant physiology, college mathematics, college chemistry, and college-level biology. Graduate students who do not possess these courses upon acceptance will be required to complete these courses during the first or second semester of their attendance at Mississippi State University.

General Department Completion Requirements

M.S. -- A thesis and an oral thesis defense are required. The graduate committee must approve the thesis topic, research proposal, program of study, and final thesis.

M.S. Non-Thesis -- A research paper approved by the student's graduate committee and an oral comprehensive exam are required.

Ph.D. -- The dissertation is required of all candidates for the doctorate degree. Original research, a written examination, an oral preliminary examination, and an oral dissertation defense and examination are required. At least one semester of teaching experience is strongly encouraged. The graduate committee must approve the dissertation topic, research proposal, program of study, and final dissertation.

Academic Performance

Students in the M.S. and Ph.D. degree programs must maintain a 3.00 GPA after admission to the program. No grade below C will be accepted for graduate credit. More than two grades (8 total hours) of C or below constitute grounds for dismissal. Note: C grades for a course that is retaken and in which the student earns a grade of B or higher will not be included in the 8 total hours. However, the original grade is included as part of the calculation of the GPA. At any time, the student will lose any departmental assistantship should his/her cumulative GPA drop below a 3.00. Students with alternative sources of funding (scholarships, fellowships, etc.) must follow the rules and regulations of the funding source.

Master of Science in Plant and Soil Sciences with Agronomy Concentration - Thesis

Prerequisites - As stipulated by the major professor, the departmental graduate coordinator, and the dean.

Graduate-level coursework		12
PSS 8811	Seminar ¹	1
ST 8114	Statistical Methods (or other graduate-level statistics course) ²	4
Additional 8000-level coursework		7

Research/thesis ³	6
Total Hours	30

A thesis defense is required.

- 1 An exit seminar describing the thesis research is required as part of the credit hours.
- 2 A graduate-level statistics course is required as part of the credit hours.
- 3 The total 8000-level coursework must equal a minimum of 12 hours.

Master of Science in Plant and Soil Sciences with Agronomy Concentration - Non-Thesis

Prerequisites - As stipulated by the major professor, the departmental graduate coordinator, and the dean.

Graduate-level coursework	12
PSS 7000 Directed Individual Study in Plant and Soil Sciences ¹	3
PSS 8811 Seminar ²	1
ST 8114 Statistical Methods (or other graduate-level statistics course) ³	4
Additional 8000-level coursework ⁴	10
Total Hours	30

An oral comprehensive exam is required.

- 1 The student must develop a research paper approved by the student's graduate committee.
- 2 An exit seminar describing the research is required as part of the credit hours.
- 3 A graduate-level statistics course is required as part of the credit hours.
- 4 The total 8000-level coursework must equal a minimum of 15 hours.

Doctor of Philosophy in Plant and Soil Sciences with Agronomy Concentration

Prerequisites - As stipulated by the major professor, the departmental graduate coordinator, and the dean.

PSS 8821 Seminar ¹	1
PSS 8831 Seminar ²	1
PSS 9000 Dissertation Research /Dissertation in Plant and Soil Sciences (minimum) ⁴	20
Total Hours	22

- 1 The first seminar should be done within the first year of the student's program and should present the research proposal and include a review of relevant literature.
- 2 An exit seminar will describe the results of the student's dissertation research.

Master of Science in Plant and Soil Sciences with Horticulture Concentration - Thesis

Prerequisites - As stipulated by the major professor, the departmental graduate coordinator, and the dean. In addition, graduate students accepted into the Horticulture concentration are expected to have completed a course in General Plant Physiology or will be required to include this course on their graduate program of study.

Graduate-level coursework	12
PSS 8811 Seminar ¹	1
ST 8114 Statistical Methods (or other graduate-level statistics course) ²	4
Additional 8000-level coursework ³	12
Research/thesis ⁴	6
Total Hours	35

- 1 An exit seminar describing the thesis research is required as part of the credit hours.
- 2 A graduate-level statistics course is required as part of the credit hours.

³ The total 8000-level coursework must equal a minimum of 12 hours.

⁴ A thesis defense is required.

Master of Science in Plant and Soil Sciences with Horticulture Concentration - Non-Thesis

Prerequisites - As stipulated by the major professor, the departmental graduate coordinator, and the dean. In addition, graduate students accepted into the Horticulture concentration are expected to have completed a course in General Plant Physiology or will be required to include this course on their graduate program of study.

Graduate-level coursework		12
PSS 7000	Directed Individual Study in Plant and Soil Sciences ¹	3
PSS 8811	Seminar ²	1
ST 8114	Statistical Methods (or other graduate-level statistics course) ³	4
Additional 8000-level coursework		10
Total Hours		30

An oral comprehensive exam is required.

¹ The student must develop a research paper approved by the student's graduate committee.

² An exit seminar describing the research is required as part of the credit hours.

³ A graduate-level statistics course is required as part of the credit hours.

⁴ The total 8000-level coursework must equal a minimum of 15 hours.

Doctor of Philosophy in Plant and Soil Sciences with Horticulture Concentration

Prerequisites - As stipulated by the major professor, the departmental graduate coordinator, and the dean. In addition, graduate students accepted into the Horticulture concentration are expected to have completed a course in General Plant Physiology or will be required to include this course on their graduate program of study.

PSS 8811	Seminar	1
PSS 8831	Seminar (Graduate-level PSS coursework approved by advisor) ²	1
BCH 6603	General Biochemistry	3
ST 8214	Design and Analysis of Experiments (or other graduate-level statistics course)	4
Additional graduate-level coursework		21
PSS 9000	Dissertation Research /Dissertation in Plant and Soil Sciences	20
Total Hours		50

¹ To be done in the early stages to present the research proposal and include a review of relevant literature.

² Exit seminar will describe the dissertation research.

A qualifying examination may be administered at the beginning of the student's program. The student must successfully complete a program of study as approved by the major advisor and graduate committee. The student must pass a preliminary examination. A written and oral preliminary examination will be administered by the graduate committee after completion or within 6 hours of completing coursework. Original research and a dissertation are required of all candidates for the doctorate degree.

Horticulture (Floral Management) Minor

PSS 6013	Principles of Floral Design	3
PSS 6023	Floral Management	3
PSS 6033	Case Studies in Floral Management	3
PSS 6043	International Horticulture	3
Total Hours		12

The graduate minor is available for graduate students seeking training in this field to complement their graduate degree. Students seeking the minor are required to complete the 12-hour program. The student's graduate committee must include a minor committee member from the Department of Plant and Soil Sciences.

Master of Science in Plant and Soil Sciences with Weed Science Concentration - Thesis

Prerequisites - As stipulated by the major professor, the departmental graduate coordinator, and the dean.

Graduate-level coursework		12
PSS 8811	Seminar ¹	1
ST 8114	Statistical Methods (or other graduate-level statistics course) ²	4
Additional 8000-level coursework ³		7
PSS 8000	Thesis Research/ Thesis in Plant and Soil Sciences	6
Total Hours		30

A thesis defense is required.

- 1 An exit seminar describing the thesis research is required as part of the credit hours.
- 2 A graduate-level statistics course s required as part of the credit hours.
- 3 The total 8000-level coursework must equal a minimum of 12 hours. Up to 9 hours of PSS 8701-8771 Current Topics in Weed Science may be included to meet these requirements.

Master of Science in Plant and Soil Sciences with Weed Science Concentration - Non-Thesis

Prerequisites - As stipulated by the major professor, the departmental graduate coordinator, and the dean.

Graduate-level coursework		12
PSS 7000	Directed Individual Study in Plant and Soil Sciences ¹	3
PSS 8811	Seminar ²	1
ST 8114	Statistical Methods (or other graduate-level statistics course) ³	4
Additional 8000-level coursework ⁴		10
Total Hours		30

An oral comprehensive examination is required.

Doctor of Philosophy in Plant and Soil Sciences with Weed Science Concentration

Prerequisites - As stipulated by the major professor, the departmental graduate coordinator, and the dean.

PSS 8811	Seminar ¹	1
PSS 8831	Seminar ²	1
ST 8114	Statistical Methods (or other graduate-level statistics course)	4
Additional graduate-level coursework		14
PSS 9000	Dissertation Research /Dissertation in Plant and Soil Sciences ⁴	20
Total Hours		22

- 1 To be done in the early stages to present the research proposal and include a review of relevant literature.
- 2 Exit seminar will describe the dissertation research.

A qualifying examination may be administered at the beginning of the student's program. The student must successfully complete a program of study as approved by the major advisor and graduate committee. The student must pass a preliminary examination. A written and oral preliminary examination will be administered by the graduate committee after completion or within 6 hours of completing coursework. Original research and a dissertation are required of all candidates fafter completion of two semesters, a preliminary exam after completion or within 6 hours of completing coursework, and an oral exam are required. Original research, a dissertation, a preliminary exam and an oral defense are required.