

## UNIT REPORT

## Soil and Water Science (MS) - 01.Reviewer's Report - Academic Data

Generated: 11/9/23, 9:46 AM

# Soil and Water Science (MS)

## MS in Soil and Water Science Mission

### Mission:

The mission of the Soil and Water Science Department (SWSD) is to provide scientific leadership of the highest level in research, teaching, and extension for soil, water, and environmental sciences. By discovering new scientific knowledge and imparting that knowledge to fellow scientists, students, and citizens, the Department intends to assist in the resolution of soil and water issues related to agriculture and natural resources in Florida, the nation, and the world. The graduate program in Soil and Water Science supports the missions of the college and university to serve the nation's and state's critical needs by contributing to a well-qualified and broadly diverse citizenry, leadership and workforce through graduate education and to expand our understanding of the natural world, the intellect and the senses through graduate student research.

**Program Type and Level:** Masters (includes all masters level degrees)

**Start:** 07/01/2022

**End:** 06/30/2023

**Program:** Soil and Water Science (MS)

**Program CIP:** 01.1201

**Site Information:** Online & Residential

**If Other Site:** :

**Responsible Roles:** R Turner (returner@ufl.edu)

## PG 1 Quality Graduate Level Courses

**Goal:** Provide quality graduate level courses in Soil and Water Science for majors and as service courses for other disciplines.

**Program:** Soil and Water Science (MS)

### Evaluation Method:

- Number of SWS and non-SWS students enrolled in SWS graduate-level courses
- Student evaluations of instructors and courses on end-of-course evaluation forms
- New courses developed in response to programmatic needs.

### Results:

- Student enrollment in SWS graduate level courses was robust, with 811 graduate students enrolled across 52 total courses offered. These included 320 DE students and 491 on-campus students from within the department, as well as students outside the department.
- Overall evaluation of graduate courses (AGG 5607, AGG 6503, ALS 5155, and SWS5xxx and above) offered by instructors with teaching appointments in the Soil and Water Sciences department compare favorably with the University-wide metrics.
- During the 2022 – 2023 reporting period, we created a new SWES course (SWS 6117 – Fertilizer Technology and Use) and updated a SWES course by changing its' title, overall course description, catalog course description, and prerequisites (SWS 6136 – Nutrients in Ag Production). In addition, we created a new SWES graduate certificate program in Fertilizer Science and Technology. We are currently modifying SWS 6722 – Soil Landscape Modeling, and working on getting two (2) new SWES courses approved, one in Soil Health and Data and one in Modeling Soil Processes. We anticipate these all being approved for the next reporting period.

**Summary:** There was robust demand for courses taught within the program and course evaluations have been favorable, indicating that the course content and delivery is appreciated by the students. As quality measures have become more standardized. For future reporting we would like to start tracking the number of existing courses that have been peer-reviewed and new/existing courses that are/were developed with input from UF-CITT and UF Quality Matters.

## PG 2 Increasing Enrollment

**Goal:** Develop the graduate student program by increasing enrollment and per faculty graduate student numbers.

**Program:** Soil and Water Science (MS)

### Evaluation Method:

- Assessment of the number of M.S. Students in the program overall, and the number of M.S. students per graduate faculty member.
  - Target: increase enrollment and advisorship relative to previous year.

**Results:**

- 102 M.S. students (16 on-campus, 7 at Research and Education Centers, and 79 distance education) were in the graduate program overall in 2022-2023. This was an overall increase from 93 M.S. students during the previous reporting period. This represents no change in the on-campus MS students, a slight decrease for REC MS Students (from 10 to 7), and an increase for distance education students (from 67 to 79).

**How many faculty have MS students (on-campus, REC, and DE (nonthesis)?**

- 12 SWS faculty members advised the 16 on-campus SWS graduate students during this reporting period. This is an increase from last year where 16 students were advised/co-advised by 9 faculty.
- 6 SWS faculty members at RECs advised/co-advised 7 REC-based SWS graduate students during this reporting period. These results indicate a decrease from last year when 10 faculty advised/co-advised 13 students.
- 14 SWS REC-based faculty members advised 49 non-REC-based DE SWS graduate students during this reporting period. This is an increase from last year when 10 REC faculty advised 33 non-REC-based DE SWS graduate students.
- 16 SWS on-campus faculty advised 30 non-REC-based DE students. This is a slight decrease from last year when 15 on-campus faculty advised 36 non-REC-based DE students.

**Summary:** The MS student population increased significantly over the reporting period, primarily driven by increased enrollment in the MS-non-thesis option. Student advisorship decreased from 28 to 25 unique faculty advisors.

**PG 3 Enhance Graduate Program**

**Goal:** Enhance the graduate program by attracting the highest caliber graduate students..

**Program:** Soil and Water Science (MS)

**Evaluation Method:**

- Overall number of students who apply and matriculate
  - Target: non-decreasing number of matriculates

**Results:**

- 78 students applied to our M.S. program (a slight increase from 77 during the previous reporting period). Of the 78 applicants, 33 applied to the DE program, a decrease from 43 during the previous reporting period.

**Summary:** Applications to the program were stable relative to the last reporting period and indicate significant continued interest in this graduate program.

**PG4 Enhance Distance Education MS program****Goal:**

Develop and enhance a distance education M.S. program in Soil and Water Sciences with a track in Environmental Science with the objective of enhancing graduate programs for center faculty.

**Program:** Soil and Water Science (MS)

**Evaluation Method:**

- Number of students enrolled in the DE program
- Number of advisers of DE M.S. students

**Results:**

- 79 M.S. students were enrolled in the DE program (compared to 45 during the previous reporting period).
- In 2022 – 2023, there were 33 M.S. applicants to the DE program. Of the applicants, 33 were admitted and matriculated. This is a decrease from the previous reporting period where we had 43 applicants and 40 admissions into the DE program.
- Except for this reporting cycle, overall applications into the department's DE program have sharply increased since the Fall 2020 semester, possibly due to Covid-19 and/or no longer requiring the GRE exam for applicants, as well as recruitment efforts. Looking into the future, we envision continued increases in DE applications and enrollment into our program.
- During the 2022 – 2023 reporting period, 30 SWES faculty members served as adviser/co-advisor for 86 non-REC-based DE M.S. students and REC-based DE students.
- 14 SWS REC-based faculty members advised 49 non-REC-based DE SWS graduate students during this reporting period. This is an increase from last year when 10 REC faculty advised 33 non-REC-based DE SWS graduate students.

**Summary:** Results indicate that the non-thesis Environmental Sciences track has expanded participation of REC faculty in the graduate program by providing access to students through DE.

**SLO 1 Theories and Concepts in Soil and Water Sciences**

**Outcome:** Describe and explain theories and concepts in soil and water sciences.

**SLO Area (select one):** Knowledge (Grad)

**Assessment Methods Checklist:** Faculty developed examination(s)/test(s)

Paper(s) - includes reports, plans, other documents

Thesis

**Assessment Method Narrative:**

**SLO Not Assessed This Year:****Threshold of Acceptability:** 75**How many students did you assess for this outcome?:** 58**How many students met the outcome?:** 58**What percentage of students met the outcome?:** 100**Does this meet your threshold of acceptability?:** Yes**Results:**

- 10 MS-thesis students successfully defended their theses and graduated
- 24 MS-non-thesis students successfully completed their final exams administered by their committees and graduated
- 13 MS-non-thesis students received credit for major papers written and submitted to SWES Admin Office.
- 11 MS non-thesis students successfully completed the graduate-level writing-course option
- This report was shared with the faculty at a meeting.

**Summary:** During the 2022-2023 Academic Year, 34 total M.S. students (11 on-campus/research and education center and 23 distance education) passed the final exam and earned M.S. degrees in Soil and Water Sciences, which was an increase from a total of 19 (8 on-campus/research and education center and 11 distance education) in the previous reporting period. Passing final exams and graduation are good SLO indicators because they integrate the graduate student's learning experiences from multiple courses, projects, and applications.

**SLO 2 Skills****Outcome:** Apply, analyze, and synthesize content knowledge by identifying component parts, relationships and ideas.**SLO Area (select one):** Skills (Grad)**Assessment Methods Checklist:** Faculty developed examination(s)/test(s)

Paper(s) - includes reports, plans, other documents

Thesis

**Assessment Method Narrative:****SLO Not Assessed This Year:****Threshold of Acceptability:** 75**How many students did you assess for this outcome?:** 58**How many students met the outcome?:** 58**What percentage of students met the outcome?:** 100**Does this meet your threshold of acceptability?:** Yes**Results:**

- 10 MS-thesis students (of 10 attempting) successfully defended their theses and graduated
- 24 MS-non-thesis students (of 24 attempting) successfully completed their final comprehensive exams administered by their committees and graduated
- 13 MS-non-thesis students received credit for major papers written and submitted to SWES Admin Office
- 11 MS-non-thesis students successfully completed the graduate-level writing course option
- This report was shared with the faculty.

**Summary:** 100% of our thesis and non-thesis M.S. students passed their final assessments or thesis defenses, which is similar to the 2022 – 2023 reporting period. These successes are good indicators of the student's ability to apply, analyze, and synthesize content knowledge by identifying component parts, relationships, and ideas related to their research and major papers

**SLO 3 Professional Behavior****Outcome:** Display ethical behaviors, cultural sensitivity, professional conduct and effective communication.**SLO Area (select one):** Professional Behavior (Grad)**Assessment Methods Checklist:** Faculty Evaluation/Review**Assessment Method Narrative:****SLO Not Assessed This Year:****Threshold of Acceptability:** 100**How many students did you assess for this outcome?:** 102**How many students met the outcome?:** 102**What percentage of students met the outcome?:** 100**Does this meet your threshold of acceptability?:** Yes**Results:**

- No M.S. students violated the code of conduct.
- 0 SWS M.S. students were referred to the UF Honor Court
- This report was shared with the faculty.

**Summary:** No student conduct violations were reported to the graduate coordinator or chair, indicating no serious problems with students or the culture of the program. While this assessment only accounts for students who get caught, it is still the best for identifying problems related to ethical/acceptable behavior.

### MS - Soil and Water Science

**Improvement Types Checklist:** Revised one or more existing Program Goals.

**Use of Results for Improvement Narrative - Required:**

Our overall program goals have not changed. We plan to start tracking whether courses have had input from CITT and Quality Matters as a measure of course improvement/quality assurance. We are also developing holistic screening guidance to ensure we recruit the highest caliber students who are primed to be successful. This review confirmed that our program enrollment and quality factors are similar to previous years.

**Summary SLO 1:**

During the 2022-2023 Academic Year, 34 total M.S. students (11 on-campus/research and education center and 23 distance education) passed the final exam and earned M.S. degrees in Soil and Water Sciences, which was an increase from a total of 19 (8 on-campus/research and education center and 11 distance education) in the previous reporting period. Passing final exams and graduation are good SLO indicators because they integrate the graduate student’s learning experiences from multiple courses, projects, and applications.

**Summary SLO 2:** 100% of our thesis and non-thesis M.S. students passed their final assessments or thesis defenses, which is similar to the 2022 – 2023 reporting period. These successes are good indicators of the student’s ability to apply, analyze, and synthesize content knowledge by identifying component parts, relationships, and ideas related to their research and major papers.

**Summary SLO 3:**No student conduct violations were reported to the graduate coordinator or chair, indicating no serious problems with students or the culture of the program. While this assessment only accounts for students who get caught, it is still the best for identifying problems related to ethical/acceptable behavior.

Results were reviewed by the Graduate Coordinator. They will be shared with the Academic Programs Shared Governance Committee and faculty.

Results were reviewed by the Graduate Coordinator. They have been shared with the Academic Programs Shared Governance Committee and faculty.

**Program Results Not Reported This Year:**

**Program Results Reporting Complete:** true

### MS in Soil and Water Science AAP Detail

**Providing Department:** Soil and Water Science (MS)

**Assessment Cycle:**

Assessment Cycle for:

M.S. in Soil and Water Science

College of Agricultural and Life Sciences

Analysis and Interpretation:

May 1 of each year

Program Modifications:

Completed by July 1 of each year

Dissemination:

Completed by August 1 of each year

Year	21-22	22-23	23-24	24-25
<b>SLOs</b>				
<b>Content Knowledge</b>				
#1	X	X	X	X
<b>Skills</b>				
#2	X	X	X	X
<b>Professional Behavior</b>				
#3	X	X	X	X

**SLO Assessment Rubric:**

Sample rubric for assessment of SLO #1

MS Thesis or Paper Assessment Rubric:

Learning Outcome	Assessment		
	Exceeds Expectations	Meets Expectations	Does not meet Expectations
Describe and explain theories and concepts in soil and water sciences.			
Apply, analyze, and synthesize content knowledge by identifying component parts, relationships and ideas.			

### Assessment Oversight:

Name	Department Affiliation	Email Address	Phone Number
Patrick Wilson, Graduate Coordinator	Soil & Water Sciences	pcwilson@ufl.edu	352-294-3166
James Bonczek	Soil & Water Sciences	bonczek@ufl.edu	352-294-3112
Mark Clark	Soil & Water Sciences	clarkmw@ufl.edu	352-294-3115
Susan Curry	Soil & Water Sciences	scurry@ufl.edu	352-294-3147
Patrick Inglett	Soil & Water Sciences	pinglett@ufl.edu	352-294-3170

### Methods and Procedures - Undergraduate and All Certificate Programs:

#### Curriculum Map - Undergraduate Degree Programs:

##### Research :

Students in the Soil and Water Science M.S. program are expected to conduct a specific and focused research project under the direction of the chair of their supervisory committee and with assistance from the supervisory committee, and to produce a thesis describing the research. The research is expected to follow the scientific method and would ideally result in at least one publication in a peer-reviewed journal. The thesis will include a comprehensive literature review, and the results, data analysis, and defensible conclusions based on the data. The thesis research should provide training for the student in the methods, data analysis, and writing expected in the subdiscipline of soil and water science that the project is focused around. During the final semester of the thesis program, the student is required to defend the thesis in an oral examination before the advisory committee, and to complete a seminar course during which the student will present results of the thesis in a departmental seminar. The oral defense will ensure that the quality of the thesis meets the expectations of the department and university. The seminar course assists the student in preparation of the department seminar and provides critical feedback prior to the seminar.

Students in the Distance Education M.S. (Environmental Science Track) program are not required to conduct a laboratory or field based research project. They are required, however, to submit a Major Paper in lieu of a thesis on a focused research topic that is approved by the student's advisory committee. The Major Paper is similar to a M.S. thesis, but much smaller in scope. For the Major Paper, a student demonstrates knowledge and understanding of a selected topic in the soil, water or environmental science discipline. The student is required to pass a written comprehensive or oral exam administered by the advisory committee no more than six months before the degree is to be conferred. This exam is comprehensive covering all aspects of soil, water, and environmental sciences. Students prepare for this exam through course work (SWSD) and studying of standard textbooks (such as Brady N.C. and R.R. Weil, 2007. *The Nature and Properties of Soils*, Prentice Hall, New Jersey). In the exam the student demonstrates proficiency in the following categories: knowledge, comprehension, application, analysis, synthesis, evaluation, and creation.

**SLO Measures - Graduate and Professional Programs:**

Chairs of student’s advisory committees will provide the SWSD Student Affairs Specialist with assessment of the MS-thesis or non-thesis major paper for mastery of SLO #1. The supervisory committee chair will also report results (pass/fail) of final examinations within one week of examination, who will collate the information throughout the year. This information will be transmitted to the SWSD Teaching Committee by July 1 of each year. The chairs of advisory committees conduct annual reviews of graduate students. Results of annual evaluations are maintained by the SWSD Student Affairs Specialist, who will report the percentage of sub-satisfactory evaluations to the SWSD Teaching Committee by July 1 of each year. The annual evaluation rubric assesses the development of the student, with specific evaluations for professional integrity and ethical conduct, ability to solve problems and synthesize data, and an overall assessment of progress toward the degree.

**Assessment Timeline - Graduate and Professional Programs:**

M.S. in Soil and Water Science

College of Agricultural and Life Sciences

Assessment	Thesis or Non-Thesis Paper	Lab Activities	Comprehensive Exam	Annual Evaluations
<b>SLOs</b>				
<b>Knowledge</b>				
#1	X			
<b>Skills</b>				
#3		X	X	
<b>Professional Behavior</b>				
#5				X