

Program Assessment Report
M.S. in Crop, Soil, and Environmental Sciences
University of Arkansas
Academic Year 2021-2022

1. Department Name & Contact Information

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2. Department Mission

The mission of the Department of Crop, Soil, and Environmental Sciences is to provide superior education programs at the undergraduate and graduate levels, conduct innovative research and extension programs in the crop, soil, and environmental sciences and provide superior service for citizens of Arkansas and the nation.

3. Program Goals

1. Graduates have the discipline-specific knowledge in crop, weed, soil, water, and environmental sciences required to perform successfully in appropriate-level private, government, or academic positions.
2. Graduates are able to critically analyze, synthesize, and evaluate new information to make informed decisions.
3. Graduates have the ability to solve complex, multidisciplinary problems.
4. Graduates are able to prepare and synthesize information to effectively communicate, both orally and in writing, with technical or scientific and non-technical audiences.
5. Graduates have expertise in research and analytical skills through completion of a thesis research project.

4. Student Learning Outcome

1. Students will demonstrate the appropriate depth and breadth of discipline specific knowledge required to function as expert crop, weed, environmental, soil, or water science professionals.
2. Students will demonstrate the ability to critically evaluate situations or scenarios to arrive at well thought out and supported decisions and outcomes.
3. Students will demonstrate the ability to work through and solve complex, multidisciplinary problems.
- 4a. Students will demonstrate the skills required to effectively communicate technical/scientific information in oral platforms to general and professional audiences.
- 4b. Students will demonstrate the ability to integrate, organize, and effectively present written reports of technical/scientific information to general and professional audiences.
5. Students will contribute to the advancement of science by acquiring skills (e.g. conceptual, statistics, laboratory or field skills, etc.) to fulfill project requirements to generate original and independent research data.

A. Assessment Measure for Outcomes

- Achievement will be measured at the completion of a student's program during the **thesis defense, scored using a rubric.**
- This is a **direct** measure of student learning.
- Graduate advisory / thesis examination committee is the responsible party.
- We aim to capture at least 50% of graduating students.
- Depth and breadth of discipline specific knowledge learned, and ability to think critically, logically and progressively through multiple dimensions of a complex scenario or issue to solve problems will be assessed through oral questions posed by a thesis examination committee. Effective oral communication will be evaluated during a presentation and question and answer period during the thesis defense. The thesis advisory / examination committee will evaluate the delivery of presentation, effectiveness of visual aids, and quality and organization of content. The committee will also ask questions following the presentation. The length of the question and answer period (number and type of questions posed to the student) will be subject to the committee's discretion based on the student's background and research focus, presentation provided by the student, and responses to questions. Effective written communication skills will be evaluated through the written thesis. The thesis advisory / examination committee will evaluate the quality and organization of content, quality of references, style, and adherence to convention in writing, attention to detail, and overall effectiveness and credibility in delivery. Demonstration of mastery of research and analytical skills (e.g. conceptual, statistics, laboratory or field skills, etc.) will be assessed during the thesis defense. The thesis advisory / examination committee will evaluate the independence and quality of the student's development of skills in completion of the research through oral questioning in the thesis defense and reading of the written thesis.
- The rubric used for scoring is attached to this assessment plan.

B. Acceptable and Ideal Targets (not required for indirect measures).

- Acceptable: 70% of M.S. students defending their thesis will score "proficient" or greater for student learning outcomes 1 and 4a and 5; 60% of M.S. students defending their thesis will score "proficient" or greater for student learning outcomes 2, 3, and 4b.
- Ideal: 90% of M.S. students defending their thesis will score "proficient" or greater for student learning outcomes 1 and 4a and 5; 80% of M.S. students defending their thesis will score "proficient" or greater for student learning outcomes 2, 3, and 4b.

5. Results of Analysis of Assessment of Student Learning Outcome & Summary of Findings

- Among the rubrics completed, faculty indicated master's candidates are receiving a satisfactory education and graduating with proficient level of discipline-related learning.
- For all five outcomes, learning was proficient (or mastery) for 88 to 100% of the assessments for graduating MS students.
- Rubric completion has decreased during the previous three academic years. Eight CSES Graduate Student Learning Objectives (SLO) Assessment rubrics were completed for three different CSES M.S. students during 2021-2022. In 2020-2021, 13 rubrics were completed for five M.S. graduating students, while during 2019-2020, 17 CSES to Graduate Student Learning Objectives (SLO) Assessment rubrics were completed for seven different CSES M.S. students. It is unclear at this time if fewer M.S. students are graduating compared to the previous years or if fewer rubrics are being completed per graduating student.

6. Any Changes to Degree/Certificate Planned or Made on the Basis of the Assessment and Analysis

- There are currently no changes planned for the M.S. degree; however, the CSES Department should continue to closely monitor performance in student learner outcomes. While a small set of data, assessment data from the academic year has indicated strong learning among CSES MS students. The past two years students and faculty have been dealing with COVID-19, which included remote, hybrid, and in-person course and meeting formats, delays in teaching, learning, and research, and repeated periods of isolation from colleagues.
- Knowledge, oral communication skills, and research and analytical skills have appeared to be strengths for CSES in previous years, while critical thinking and problem solving are more difficult skills for students to develop. A few notes on individual rubrics from 2019-2020 indicated that some students have learning disabilities and others have interests that do not include further graduate school; these and other factors may need to be considered in future curriculum design.

7. Any Changes to the Assessment Process Made or Planned

- The difficulties of dealing with COVID-19 may affect student learning, but may be difficult to capture with a small number of completed rubrics submitted each year. In 2021-2022, CSES constructed an electronic form for submission through Qualtrics in order to encourage completion of Graduate SLO Assessment rubrics while maintaining anonymity.
- The CSES Department will promote electronic submission of Graduate SLO Assessment for the short-term future to determine if that approach increases submission numbers.

8. Supporting Attachments

CSES Graduate SLO Assessment rubric adapted from multiple Association of American Colleges and Universities rubrics (e.g. critical thinking, problem solving, oral and written communication skills, etc.) can be found at https://uark.qualtrics.com/jfe/form/SV_7UpjzfUSRRmPyxo.