Program Assessment Report
Ph.D. in Crop, Soil, and Environmental Sciences
University of Arkansas
Academic Year 2024-2025

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 depth and breadth of 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 contribute to the advancement of science through creation of original and independent ideas and research.

4. Student Learning Outcomes

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. Students will demonstrate the ability to integrate, organize, and effectively present written reports of technical/scientific information to general and professional audiences.

4b. Students will demonstrate the skills required to effectively communicate technical/scientific information in oral platforms to general and professional audiences. 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

- Achievements are measured at the completion of a student's program during the **dissertation defense, scored using a rubric.**
- This is a ***direct*** measure of student learning.
- Graduate advisory / dissertation examination committee is the responsible party.
- We aim to capture at least 50% of graduating students.
- Depth and breadth of discipline specific knowledge learned, ability to think critically and logically, and progressively through multiple dimensions of a complex scenario or issue to solve problems, and effective oral communication is assessed through oral questions posed by a dissertation advisory/examination committee. The dissertation advisory / examination committee evaluates the delivery of presentation, effectiveness of visual aids, and quality and organization of content. The committee asks questions following the presentation. The length of the defense and number and type of questions are subject to the committee's discretion based on the student's background and research focus and responses to questions. Effective written communication skills are evaluated through the written dissertation. The dissertation advisory / examination committee evaluates 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. Contribution to the advancement of science of original and independent research and ideas are assessed during the dissertation defense. The dissertation advisory / examination committee evaluates the quality of research and contribution of the scholarship to the advancement of science and the initiative, independence and quality of the student skills development in completion of the research through oral questioning in the dissertation defense and reading of the written dissertation.
- The rubric used for scoring is attached to this assessment plan.

B. Acceptable and **Ideal Targets** (<u>not required</u> for indirect measures).

- Acceptable: 70% of Ph.D. students defending their dissertation will score "proficient" or greater.
- Ideal: 90% of Ph.D. students defending their dissertation will score "proficient" or greater.

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

- Nine Graduate SLO Assessment rubrics were completed in 2024-2025 for two different graduating PhD students. All students were proficient or mastering all student leaner outcomes in 2025. For the two PhD students receiving assessments in 2024-2025 the mean score was 3.78 which is well above proficient and many of the individual section scores were reported as "mastery" (4.0).
- There are a limited number of CSES PhD students graduating each year. Two rubrics were completed in 2020-2021, 2021-2022, 2022-2023, and eleven in 2023-2024. No rubrics were completed during 2019-2020, and 13 rubrics were completed in 2018-2019.
- The expectation is that the majority of students are receiving an excellent education and developing knowledge and skills to be proficient or demonstrate mastery as scientific professionals. Given limited data, results reported here were combined from 2022-2024. Results

for the 3-year dataset indicate that Ph.D. students are meeting acceptable goals for proficient achievement for all student learner outcomes.

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 Ph.D. degree.

7. Any Changes to the Assessment Process Made or Planned

- With a limited number of CSES Ph.D. students graduating each year, the department must be diligent in making sure that advisors and graduate students remember to have advisory committee members complete Graduate SLO Assessment rubrics at the conclusion of every defense. To institutionalize the implementation of assessment during dissertation defenses, the departmental practice had been informing new graduate students about the CSES Graduate Student Handbook, including that each CSES graduate student **must** inform the CSES Department (i.e. the CSES Department Head and CSES Office Manager) of a scheduled defense **two weeks prior** to the defense and obtain a "CSES Exit" packet. The CSES Exit packet includes a copy of the rubric to remind students and mentors to prompt committee members to complete electronic submission of the rubric. 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 sends reminders at the end of the semesters to encourage electronic submission of the Graduate SLO Assessment from committee members.

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.