Academic Assessment Report

BEST PRACTICES IN STUDENT LEARNING OUTCOMES
(M.S. / CROP, SOIL, and ENVIRONMENTAL SCIENCES)
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CSES 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.

Program Goals
(Program goals are broad general statements of what the program intends to accomplish and describes what a student will be able to do after completing the program. The program goals are linked to the mission of the university and college.)

9. 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.
10. Graduates are able to critically analyze, synthesize, and evaluate new information to make informed decisions.
11. Graduates have the ability to solve complex, multidisciplinary problems.
12. Graduates are able to prepare and synthesize information to effectively communicate, both orally and in writing, with technical or scientific and non-technical audiences.
13. Graduates have expertise in research and analytical skills through completion of a thesis research project.

Student Learning Outcomes
(Student Learning Outcomes are defined in terms of the knowledge, skills, and abilities that students will know and be able to do as a result of completing a program. These student learning outcomes are directly linked to the accomplishment of the program goals.)

5. Students will demonstrate the appropriate depth and breadth of discipline specific knowledge required to function as advanced crop, weed, environmental, soil, or water science professionals.
6. Students will demonstrate the ability to critically evaluate situations or scenarios to arrive at well thought out and supported decisions and outcomes.
7. Students will demonstrate the ability to work through and solve complex, multidisciplinary problems.
8. Communication skills
    a. Students will demonstrate the skills required to effectively communicate technical/scientific information in oral platforms to general and professional audiences.
    b. Students will demonstrate the ability to integrate, organize, and effectively present written reports of technical/scientific information to general and professional audiences.
9. Students will demonstrate mastery of research and analytical skills (e.g. conceptual, statistics, laboratory or field skills, etc.) required to function as advanced crop, weed, environmental, soil, or water science scientists.

Assessment Measure for Outcome 1

- 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.
- Depth and breadth of discipline specific knowledge learned will be assessed through oral questions posed by a thesis examination committee. The length of the defense and number and type of questions will be subject to the committee's discretion based on the student's background and research focus and responses to questions.
- The rubric used for scoring is attached to this assessment plan.

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

- Acceptable: 70% of M.S. students defending their thesis will score "proficient" or greater.
- Ideal: 90% of M.S. students defending their thesis will score "proficient" or greater.

Key Personnel (who is responsible for the assessment of this measure).

- Graduate advisory / thesis examination committee is the responsible party.
- We aim to capture at least 50% of graduating students.

Summary of Findings

- The development of the CSES Graduate Student Learning Objectives (SLO) Assessment rubric was a new initiative for the CSES Department in 2016. The rubric was adapted by combining items from several Association of American Colleges and Universities (AACU) rubrics into one rubric that encompassed the SLO for the CSES M.S. graduate program. The use of a single rubric facilitates assessment of SLO during the graduate students' defenses by each student's graduate advisory committee, i.e. the committee working most closely with each student during each person's development and education as a graduate student. However, the implementation of the use of the rubric at the conclusion of a graduate student defense has not yet become a routine practice for faculty. Therefore, we do not have data with which to assess the CSES M.S. program.

Recommendations

- The CSES faculty are adjusting to the new practice of implementing student learning outcome assessment at thesis defenses by completing the CSES Graduate SLO Assessment rubric. It continues to take time, multiple reminders, and conscientious effort to make use of the CSES Graduate SLO Assessment rubric a routine practice that is completed and turned in at the conclusion of each M.S. thesis defense.
- The use of the CSES Graduate SLO Assessment rubric at the conclusion of M.S. defenses has to be implemented such that completing the rubric is a routine practice for advisory committee members. If this does not occur during 2017-2018, the CSES Department should consider other methods to assess graduate student learning outcomes.

Assessment Measure for Outcome 2

- 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.
- Ability to think critically will be evaluated through oral questions posed by a thesis examination committee. The length of the defense and number and type of issues and scenarios posed to the student to evaluate critical thinking ability will be subject to the committee's discretion based on the student's background and research focus and responses to questions.
- The rubric used for scoring is attached to this assessment plan.

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

- Acceptable: 70% of M.S. students defending their thesis will score "proficient" or greater.
- Ideal: 90% of M.S. students defending their thesis will score "proficient" or greater.

Key Personnel (who is responsible for the assessment of this measure).

- Graduate advisory / thesis examination committee is the responsible party.
- We aim to capture at least 50% of graduating students.

Summary of Findings

- See Summary of Findings for Outcome 1.

Recommendations

- See Recommendations for Outcome 1.

Assessment Measure for Outcome 3

- 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.
- Ability to think logically and progressively through multiple dimensions of a complex scenario or issue to solve problems will be evaluated through oral questions posed by a thesis examination committee. The length of the defense and number and type of issues and scenarios posed to the student to evaluate problem solving ability will be subject to the committee's discretion based on the student's background and research focus and responses to questions.
- The rubric used for scoring is attached to this assessment plan.

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

- Acceptable: 70% of M.S. students defending their thesis will score "proficient" or greater.
- Ideal: 90% of M.S. students defending their thesis will score "proficient" or greater.

Key Personnel (who is responsible for the assessment of this measure).

- Graduate advisory / thesis examination committee is the responsible party.
- We aim to capture at least 50% of graduating students.

Summary of Findings

- See Summary of Findings for Outcome 1.

Recommendations

- See Recommendations for Outcome 1.

Assessment Measure for Outcome 4a

- 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.
- 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.
- The rubric used for scoring is attached to this assessment plan.

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

- Acceptable: 70% of M.S. students defending their thesis will score "proficient" or greater.
- Ideal: 90% of M.S. students defending their thesis will score "proficient" or greater.

Key Personnel (who is responsible for the assessment of this measure).

- Graduate advisory / thesis examination committee is the responsible party.
- We aim to capture at least 50% of graduating students.

Summary of Findings

- See Summary of Findings for Outcome 1.

Recommendations

- See Recommendations for Outcome 1.

Assessment Measure for Outcome 4b

- 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.
- 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.
- The rubric used for scoring is attached to this assessment plan.

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

- Acceptable: 70% of M.S. students defending their thesis will score "proficient" or greater.
- Ideal: 90% of M.S. students defending their thesis will score "proficient" or greater.

Key Personnel (who is responsible for the assessment of this measure).

- Graduate advisory / thesis examination committee is the responsible party.
- We aim to capture at least 50% of graduating students.

Summary of Findings

- See Summary of Findings for Outcome 1.

Recommendations

- See Recommendations for Outcome 1.

Assessment Measure for Outcome 5

- 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.
- 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 length of the defense and number and type of questions will be subject to the committee's discretion based on the student's background and research focus and responses to questions.
- The rubric used for scoring is attached to this assessment plan.

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

- Acceptable: 70% of M.S. students defending their thesis will score "proficient" or greater.
- Ideal: 90% of M.S. students defending their thesis will score "proficient" or greater.

Key Personnel (who is responsible for the assessment of this measure).

- Graduate advisory / thesis examination committee is the responsible party.
- We aim to capture at least 50% of graduating students.

Summary of Findings

- See Summary of Findings for Outcome 1.

Recommendations

- See Recommendations for Outcome 1.

Overall Recommendations

- At this time, there are no new data to form program recommendations. 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. However, without the empirical data, it is difficult to determine if sufficient percentage of the student body is doing so in all stated learning outcomes.
- The CSES Department needs to renew its efforts to make the collection of assessment data during graduate student defenses a routine part of the process of completing a graduate degree. Personnel change in the CSES departmental office manager position and faculty efforts to follow through with getting a copy of the assessment rubric to advisory committee members during a graduate student defense should help facilitate that renewed commitment.

Action Plan

- Inclusion of the CSES Graduate SLO Assessment rubric in the CSES Graduate Student Handbook needs to occur so that all incoming students are fully aware of student learning outcomes for the M.S. program.
- To institutionalize the implementation of assessment during defenses, a department policy should be developed where each CSES graduate student **must** inform the CSES Dept (i.e. the CSES Dept Head and CSES Office Manager) of a scheduled defense **two weeks prior** to the defense and obtain a "CSES Exit" packet. Among other items, the CSES Exit packet has the CSES Graduate SLO Assessment rubric for each Advisory Committee member to complete and return to Daniela Kidd in 115 PTSC.
- The CSES Dept needs to collect data from CSES Graduate SLO Assessment rubrics during 2017-2018 in order to compile baseline data of competency levels among graduate students.

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.)