I. **Program Mission, Goals, and Context**

Students completing this program will be prepared to pursue careers in agronomy or continue their education through advanced study. The Soil and Crop Science program supports the collective missions of the University of Wisconsin System, University of Wisconsin-Platteville, College of Business, Industry, Life Science and Agriculture and School of Agriculture of providing baccalaureate degree programs that meet primarily regional needs. We strive to prepared students for careers as resourceful, ethically responsible, and competent agronomists and soil scientist by combining liberal arts education with professional coursework and practical experience.

a. **Program Objectives and Student Learning Outcomes**

The soil and crop science program at the University of Wisconsin-Platteville strives to provide curricula and educational opportunities that enable graduates to:

1. Conceptualize, understand, and apply chemical, physical, biological, and agronomic sciences to address practical agronomic problems.
   a. Students will conceptualize the various factors influencing crop production including climate, tillage, seeding, soil fertility, plant nutrition, harvesting methods, and water availability.
   b. Students will identify common crops and weeds, and be able to diagnose crop diseases, pests, and nutrient deficiencies encountered in crop production.
   c. Students will apply the principles of nutrient and pest management in simulated and real-world scenarios to address the issue of excessive nutrient and pesticide usage.

2. Apply scientific principles to gather, analyze, and interpret agronomic data
   a. Students will conduct laboratory analyses to accurately determine physical, chemical, and biological properties of soils.
   b. Students will interpret soil test information and make management decisions based on state recommendations.
   c. Students will conduct analyses to determine grain and forage quality and rank the quality using industry-accepted systems.
   d. Students will evaluate crop performance in field trial data using basic knowledge of statistics.

3. Effectively and accurately communicate agronomic information in written and oral forms.
a. Students will write reports based on agronomic research data to be read by wide audience.
b. Students will present the results of research and class projects in seminar format.

4. Develop team work skills
   a. Students will demonstrate the ability to work in teams on class projects.
   b. Students will be encouraged to participate in the Collegiate Crops Judging and Soils Judging teams.
   c. The ability of students to work in teams will be evaluated by internship employers and by student interns through self-evaluation surveys.

5. Use and become familiar with new technologies in agronomy and related sciences.
   a. Students will contrast crop improvement methods that use traditional breeding techniques with those using biotechnology.
   b. Students will use or identify tools used in precision agriculture, including global positioning systems, satellite imagery, yield monitors, and various environmental monitoring devices. The practical application of precision agriculture tools and techniques will be evaluated.

6. Understand the professional, legal, and ethical responsibilities associated with professional careers in agronomy.
   a. Students will have an appreciation of the social and ethical responsibilities that go along with agronomic decision-making through exposure to a wide range of social and environmental issues related to agriculture.
   b. Students will debate controversial issues in agronomic sciences, including the use of genetically improved crops, water quality regulations affecting the use of fertilizers and pesticides, and the loss of cropland through urbanization.
   c. Students will understand sustainable crop production by describing the principles of nutrient and pest management, and soil and water conservation.

II. **Assessment of Educational Goals and Objectives**
Several evaluators are used to assess the soil and crop science program as seen in the program assessment matrix (Table 1). Annual reviews are based on input received from employers (internship supervisors), comments gathered from student assessment surveys (e.g., student interns and senior exit surveys) and through in-class evaluations by instructors and student peers. Data from these assessments are reviewed by the ornamental horticulture and soil and crop science program chair. Results of these assessments are reported to the soils, crops and ornamental horticulture committee, and the Director of
the School of Agriculture. These groups review assessment results and suggest proper actions to the program chair, faculty and instructors.

Table 1. Matrix of assessment evaluator used to assess the effectiveness of achieving the soil and crop science program objectives and student learning outcomes.

<table>
<thead>
<tr>
<th>Program Objective</th>
<th>Survey of Intern Employers</th>
<th>Self-evaluation survey of student interns</th>
<th>Senior exit surveys</th>
<th>Placement data</th>
<th>Independent study evaluation</th>
<th>Class learning evaluations</th>
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a. Evidence and Results from Assessment Activities

- **Internship Evaluations**
  All students in the soil and crop science program are required to complete at least one, 3-credit internship before graduation. Most students complete their first internship after their sophomore year in the program. Student participation in the internship program provides an excellent opportunity to gain feedback from industry professionals and student interns.

  **Results from employers of student interns**
  As part of our program assessment we ask industry professionals to assess our program effectiveness by evaluating the performance of the student interns they supervise. Toward the end of a student’s internship experience the intern’s supervisor is mailed a survey designed to elicit their opinions as to the competence of each intern in student learning outcome areas.

  Based on the results of completed surveys, the soil and crop science program is effectively achieving the outlined program objectives, goals and student learning outcomes. Most (66-88%) employers rate our students as above average or excellent in all student learning outcome areas examined (Figure 1a). However, most employers suggested improvements were needed in students’ written communication skills, their ability to diagnose pest and disease problems and their leadership skills. Most (71-94%) supervisors commented that students improved in these areas during their
internship experience (Figure 1b). This suggests that more practical experience is required in these areas early in their academic career (i.e., before they take an internship).

Results from self-assessments by student interns
Based on the results of surveys completed at the end of the internship experience, most students believed that their skills in the student learning outcome areas examined were average to above average (Figure 2a). Some (< 20%) students rated their communication, critical thinking and diagnostic, and managerial skills as excellent, whereas only 10% rated their knowledge of agronomic science as excellent. This was in sharp contrast to the results of the employer evaluation surveys, 30% of whom rated our intern’s agronomic knowledge as excellent. These data suggest that our students are humble regarding their knowledge base and they realize that they still have more to learn about the soil and crop science discipline. However, this may also suggest that the expectations that our students have for themselves may not be realistic.

Internship Evaluations

Internship Supervisor Evaluations

- Senior Exit Surveys
  Senior exit surveys were first distributed in May 2007. However, only one student returned a completed survey. As a result we have not analyzed these data at this time.
- **Placement Data**
  Placement of graduating seniors has been excellent with over 90% since the inception of the soil and crop science program over forty years ago. Due to limit staffing, we have not been able to update our records since spring 2005.

- **Employer Survey of Recent Graduates**
  To date we have not surveyed alumna that have graduated recently due to program director time constraints.

- **Independent Study Evaluations**
  To date we have not surveyed alumna students participating in independent study projects due to program director time constraints. It is possible that this assessment evaluator will not be developed.

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**Internship Evaluations**

**Student Intern Self-Assessment**

![Figure 2a. Percentage of students rating themselves as excellent, above average, average, below average or poor in achieving specific student learning outcomes.](image)

![Figure 2b. Opinions of student interns regarding the effectiveness of their internship in improving their ability to achieve specific student learning outcomes.](image)

- **Class Learning Evaluations**
  There are several courses in the soil and crop science program in which specific student learning outcomes are addressed and assessed by instructors. While evaluation of student performance on quizzes and examinations are considered, these courses employ a specific project or series of projects to primarily assess student learning outcomes. We have
not been able to examine these assessments due to instructor and program
director time constraints.

III. What have you learned from the results obtained from assessment
tools?
Overall, results from the assessment evaluators used to date have suggested that
we are achieving the student learning objectives and outcomes developed for the
soil and crop science program. However, data collection from program
assessment evaluators has been limited since the initial development of program
learning objectives and student learning outcomes due to staffing and leadership
changes, and time constraints.

a. Internship Evaluations
Surveys conducted with employers of student interns have effectively
identified program strengths and weaknesses. Self assessments completed by
student interns have proved similarly effective; however, our sample size has
been very small (only five respondents). Distribution of the surveys to
employers and students could be improved. Currently printed copies of
surveys are mailed to the supervisors. We would like to covert these surveys to
an electronic format that could be emailed to the supervisor. Most supervisors
have commented that they would prefer this method of contact.

b. Senior Exit Surveys
The use of senior exit surveys has not been an effective evaluator due to poor
student response rates and difficulties associated with delivering surveys to
students. Distribution of exit surveys to graduating seniors could be improved
by better coordination between the program director, program assistant and
School of Agriculture Director, and by converting the process to an electronic
format.

c. Placement Data
The use of placement data was used as a program assessment evaluator prior
to 2005. Again, during the transition to new leadership in the soil and crop
science program has left gaps in assessment coverage. We are currently in the
process of identifying and filling communication gaps.

d. Employer Survey of Recent Graduates and Independent Study
   Evaluations
We have not been able to devote time into developing assessment tools for
these evaluators at this time. It appears that surveying employers of student
interns is a good substitute for surveying employers of recent graduates, and
only the former may be used in the future. Independent study evaluations also
appear to be limited in the amount and quality of information gained.
Assessment tools for the later will likely not be developed and the listing of
the evaluator eliminated.

e. Limitations in Conducting Program Assessment
The development and implementation of program assessment evaluators and tools is time consuming and cumbersome, requiring adequate staffing at all levels. The responsibility of developing and implementing assessment tools for academic programs cannot be placed solely on faculty but requires coordination among academic staff, program assistants, administrative leaders as well as faculty. For small programs, such as soil and crop science and ornamental horticulture which have only one or two faculty members, the burden of program assessment is time consuming and frankly not a top priority. A cut in administrative assistants has affected our ability to conduct program assessment in effective and timely manner. Because of these events I believe that it is essential that we reexamine our student learning objectives and outcomes as well as discern which assessment evaluators and tools will be most effective. Hopefully less will be more!

IV. Document specific changes that have resulted from your assessment efforts.

Over 30 actions have been taken with regards to changes in curriculum in the soil and crop science program at the University Undergraduate Curriculum Commission within the past three years. Unfortunately, none of the actions approved and implemented resulted from our assessment efforts. All actions were in response to administrative changes in staffing, retirements, changes in leadership and position descriptions, and cuts in positions.

Stability in the soil and crop science program is required before accurate assessment is possible. We hope that needed stability should occur within three to five years after arrival of the new crop science position. Thankfully, we were granted a new crop science instructor position during the 2007-2008 academic year and a new person will arrive in August 2008. The addition of this position will help to distribute workload and improve our ability to develop and implement the outlined assessment tools. Arrival of the crop scientist is likely result in an infusion of new courses and revision of the soil and crop science curriculum. Most of these changes will be based on feedback from the agronomic industry and responses on student assessment surveys, and will lead to the development of a stronger soil and crop science curriculum.