Unit Plan for Assessing and Improving Student Learning in Degree Programs

Unit: Department of Crop Sciences
Unit Head approval: Robert G. Hoeft **Date: 5/9/08**

SECTION 1: PAST ASSESSMENT RESULTS

In response to feedback from graduating seniors, CPSC 498, Undergraduate Crop Sciences Seminar, was completely redesigned. The class was moved from second semester senior year to first semester junior year. The newly designed class includes topics on professional development such as writing resumes and cover letters, interviewing and job search skills, business etiquette, and ethics.

To better prepare Crop Sciences undergraduate and graduate students in problem solving, critical thinking skills and quantitative reasoning our courses in biometry and applied statistics were revised and updated. Undergraduate requirements were changed to require CPSC 241, Introduction to Applied Statistics, for all undergraduate students in the Department of Crop Sciences. Two new graduate courses CPSC 541, Regression Analysis, and CPSC 499 (permanent number not yet assigned), Applied Multivariate Statistics, were developed to strengthen the biometry course offerings available to graduate students.

SECTION 2: REVISED ASSESSMENT PLAN

Degree Programs in Crop Sciences

- B.S. in Crop Sciences
- M.S. in Crop Sciences
- Ph. D. in Crop Sciences
- M.S. in Bioinformatics
- Off-Campus M.S. Program

(a.) PROCESS:

- The previous Outcome Assessment Plan from 1999 was reviewed.
- The Outcome Assessment Plan was discussed in the Teaching Committee and suggestions for the plan were solicited from the committee members. The Teaching Committee includes faculty members, a teaching associate, and student members.
- A revised plan was developed by the Undergraduate Teaching Coordinator and the Graduate Coordinator.

- The revised plan was reviewed by some members of the Teaching Committee and the Department Head.

(b) <u>STUDENT OUTCOMES</u>:

B.S. Program

Undergraduate programs in Crop Sciences aim to prepare students for entry-level jobs in a variety of organizations, or for continued graduate or professional education. The following areas of desired competency have been identified:

- subject matter knowledge in key areas

- information gathering, critical thinking and problem solving skills

- oral and written communication skills

- leadership and interpersonal skills

M.S. and Ph.D. Programs

Graduate programs in Crop Sciences aim to prepare students for professional careers in the areas of research, education, or policy development in academic, government, or commercial organizations. Faculty have identified the following areas of desired competency:

- subject matter knowledge in key areas

- information gathering, critical thinking and problem solving skills

- methodological expertise in the particular areas of research, teaching, and outreach appropriate for the student=s professional direction

- communication skills appropriate for the student=s professional direction

(c) <u>MEASURES AND METHODS USED TO MEASURE OUTCOMES</u>:

B.S. Program

A. Methods to accomplish desired outcomes

- *subject matter knowledge in key areas* - The primary means to accomplish this outcome will be completion of key courses in the curriculum. Key courses include those that cover subject matter in crop science (CPSC 112 and CPSC 418) and in sub-disciplines and related disciplines [e.g. CPSC 352 (genetics), NRES 201 (soils), PLPA 204 (plant pathology), CPSC 241 (applied statistics)].

- *information gathering, critical thinking and problem solving skills* - Development of students= information gathering, critical thinking and problem solving abilities will be enhanced through specific courses that require these skills (e.g. CPSC 112, CPSC 241, CPSC 352, CPSC 226, CPSC 453, CPSC 426, PLPA 204). These skills also will be developed as students prepare reports of internship and research experiences. Internship reports are required by the department; research reports are often prepared as presentations for regional or national meetings or as manuscripts for publication.

- *oral and written communication skills* - Students= skills in these areas are enhanced in our undergraduate seminar course, in which each student works as a member of a team to develop an oral presentation. Many other courses in the Crop Sciences curriculum incorporate activities that enhance oral or written communications skills or teamwork skills. For example, PLPA 200 is an Advanced Composition Course and thus includes numerous writing assignments; CPSC 116 incorporates a group project and presentation, CPSC 453 includes a written report and oral presentation resulting from a team project, and PLPA 404 includes a team oral presentation.

- *leadership and interpersonal skills* - Students= leadership and interpersonal skills are developed through their participation in student and professional organizations. Many of our undergraduate students belong to and serve as officers of our Field and Furrow Club; some students each year lead student activities at regional and/or national meetings, and some students are members of Crop Sciences Ambassadors, a group of students who help with recruiting prospective students and representation of the department. Other students enhance their leadership and interpersonal communication skills in other registered student organizations such as ACES Student Advancement Committee and ACES Student Council.

B. Measures of accomplishment of desired outcomes

The department already has available information on student performance, senior exit surveys, internship reports and internship surveys with both interns and internship supervisors, College of ACES Undergraduate Student Survey, and the Chancellor's Senior Survey. As in the past we will collect and evaluate the information from these sources and use it for program improvement. We also plan to investigate the possible use of focus groups of students with 2-3 faculty members to assess student perceptions of their accomplishment of the outcomes identified as desirable by the department. We will also plan to conduct a focus group or survey with alumni who have graduated 2 to 5 years ago to assess their perceptions of their education and the preparation it provided for their career. We also plan to survey some of the major employers of our graduates to obtain information from them about the strengths and weaknesses of graduates from our program.

M.S. and Ph.D. Programs

A. Methods to accomplish desired outcomes

- *subject matter knowledge in key areas* - Measurement of this outcome will be students= grades in key courses and advisory committee evaluations of performance in preliminary examinations for Ph.D. students, in research defense examinations for thesis option M.S. and Ph.D. students or in final project examinations for non-thesis option M.S. students. Because there is no standard set of core courses required of each graduate student, the set of courses taken by each student differs and is determined by the student=s advisory committee. Therefore, the key courses used for this evaluation will be determined by the student's committee, with some standardization when possible. We will also keep track of articles in scientific journals that are the result of M.S. and Ph.D. student research projects. This information will be used to insure that most graduate student research is of sufficient quality for publication.

- *methodological expertise in the particular areas of research, teaching, and outreach appropriate for the student=s professional direction* - A student=s methodological expertise will be evaluated primarily by that student=s research advisory committee at the time of the thesis or dissertation defense examination.

- *communication skills appropriate for the student=s professional direction* - All graduate students, with the exception of students in the Off-campus Masters Program, are required to present a final research or project seminar in one of the departmental seminar series. The student=s presentation is evaluated by the Seminar Committee or faculty member in charge of that seminar series. All graduate students involved in research are encouraged to present research proposal seminars, which are evaluated in a similar manner. Additionally, we will keep a record of abstracts presented by graduate students at scientific meetings, with the assumption that those students who regularly present papers or posters will have more opportunity to improve their professional communication skills than those students who do not.

B. Measures of accomplishment of desired outcomes

The department currently receives information on student performance in some of the areas identified through advisory committee progress reports, Ph.D. preliminary examinations, dissertation and thesis defense examinations, seminar presentations, and exit interviews. Therefore our initial focus will be to gather the information we already collect, and to use it for program improvement. Graduate students currently have an exit interview with the department head shortly before they leave the institution. A standardized set of questions for the students to answer at the time of their exit interviews will be developed. The answers to these questions and the department head=s evaluation of communications skills will be given to those involved in the graduate student outcomes assessment process.

We will also track the GRE scores and GPAs of graduate students applying for admission and those students who are admitted to the graduate programs, as well as, the percentage of

admitted graduate students who enroll at the University of Illinois. A database will be developed to track GRE scores and undergraduate GPA of applicants and incoming graduate students and placement of graduates. We intend to begin to evaluate the effectiveness of these criteria (GRE scores and undergraduate GPA) for predicting success in the graduate program and ultimately placement of graduate students and success in their careers.

SECTION 3: PLANS FOR USING RESULTS

(a) PLANS:

The outcomes assessment process in Crop Sciences will be managed by the Teaching Coordinator and the Graduate Programs Coordinator, with input from the Teaching Committee and the Graduate Policy Committee. The two coordinators will be responsible for compilation of data for their respective programs at the beginning of each academic year, and will prepare a report for the committees. The committees will review the report and make recommendations for action to the coordinators, who will initiate action for improvement. The Undergraduate Teaching Coordinator will conduct exit interviews with graduating seniors, and the Department Head will conduct exit interviews with graduate students when they complete their degree. Data on time to complete a degree, internships completed (for B.S. students), and placement of graduates will be compiled.

Reports of outcomes assessment activities will be prepared by the two coordinators and transmitted to the head, faculty, and external advisory committee. Input will be sought from each of these sources.

(b) TIMELINE FOR IMPLEMENTATION:

2008-09

- assess adequacy of exit interview processes; modify if necessary

- continue to collect data from student exit interviews and written surveys

- develop process for focus groups of undergraduate students and alumni

- consult with external advisory committee

2010-2011

- evaluate data from 2008-09 and initiate necessary changes

- initiate focus groups

- collect data as above