FEB 17 2005
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Assessment Plans for Student Learning Outcomes
Kansas State University

☐ Check the box if your program's student learning outcomes have been modified since November 2003. If so, please email the revised outcomes (apr@ksu.edu) or attach a hard copy to this document.

A. College, Department, and Date of this Submission

College: Agriculture
Department: Entomology
Date of Submission: October 28, 2004

B. Contact Person(s) for the Assessment Plans

Sonny Ramaswamy, Professor and Department Head
John Reese, Professor and Chair of Course & Curriculum Committee

C. Program – degree, minor, or certification

Ph.D. in Entomology

D. Assessment Plans for the Student Learning Outcome(s) that will be addressed in the Next Three Years

1. Student Learning Outcome(s)

Of the 12 student learning outcomes that we have developed and categorized as "required" or "highly desirable", we will focus on assessing four standards during the next three years.

Each student will be able to demonstrate:

- A knowledge of the four core areas of entomology – taxonomy, integrated pest management, physiology and ecology
- The ability to conduct original research, including the analysis and interpretation of data
- An in-depth knowledge of his/her area of specialization
- The ability to write scientifically sound research proposals and manuscripts

Special rationale for selecting these learning outcomes (optional):

They are high priority and measurable using quantitative assessments currently available.

Relationship to K-State Student Learning Outcomes:

Program SLOs	University-wide SLOs (Graduate Programs)			Program SLO is conceptually different from university SLOs
	Knowledge	Skills	Attitudes and Professional Conduct	
1. Core knowledge	X			
2. Original research		X		
3. Know specialty area	X			
4. Scientific writing	X	X		

2. How will the learning outcome(s) be assessed? Who will be assessed?

A summary of the four learning outcomes, including the curricular and extracurricular components by which students will obtain learning experiences, is shown in Table 1.

a. Knowledge of core discipline areas in entomology. Assessment of core entomological knowledge in four discipline areas – ecology, physiology, taxonomy, and integrated pest management -- will be made of all doctoral students via individualized written and oral exams that will be administered by individual faculty members (*course-embedded*) and by the Department (*co-curricular*). These assessments will be *direct* and a combination of both *quantitative and qualitative measures*. They will also include both *formative and summative* assessments. One assessment will be *value-added* (i.e., provide a 'before' and 'after' comparison). The specific assessments, including evaluative criteria and schedules, are as follows:

- A general assessment of knowledge in the four core areas will be made by giving a multi-section written test to all graduate students shortly after enrollment in our graduate program and before they begin formal coursework. This will represent the 'pre-test'. A post-test will be given near the end of graduate students' degree programs. The overall average change in numerical scores between the pre- and post-tests will serve as the primary evaluative criterion on which to assess student learning.

- Course instructors in each of the four core areas will develop and administer a written exam to assess knowledge of those graduate students who take their courses. This will be done at the beginning of the semester (pre-test). At the end of the semester, a post-test will be given. The overall average change in numerical scores between the pre- and post-tests will serve as the primary evaluative criterion on which to assess student learning.

- In addition to the written knowledge assessments, the Department Head, who serves as the Graduate Student Coordinator, will examine each doctoral student during his/her oral qualifying exam on core entomological knowledge. Responses to those questions, as well as others asked by supervisory committee members, will be recorded on an evaluation form using various evaluative criteria that are categorical (e.g., incorrect-partially correct-correct; complete-incomplete; etc.). The assessments will be categorized by core area to determine knowledge levels and changes (progress) in individual core areas.

  Records of performance will be kept on file anonymously (student name removed) and the scores compiled so that trends can be measured over time. Our prediction is that the initial three-year assessment will not reveal significant changes, but that more meaningful patterns will emerge by tracking student performance over longer periods of time.

b. Ability to conduct original research. The originality of doctoral research programs will be quantitatively assessed in three ways.

- First, we will modify the evaluation form that we already use to rate our graduate students' oral presentations (seminar) of their research proposal by adding questions that specifically address the originality of the research (concept, methods, etc.). These questions will offer categorical choices, which can then be ranked numerical by assigning a number value to each category ('best to worst').
- Second, we will evaluate the written research proposal using the same criteria as those used by scientific grant review panels. Students will be provided with the standard format before they begin developing their proposals.
- Third, we will compile statistics on papers submitted to and accepted by nationally and internationally prestigious journals (e.g., Nature, Science, PNAS, etc.) as well as top-tier journals in the specialized discipline area (e.g., ecology, physiology, etc.) of the graduate student. This assessment will need to be carefully constructed so that it reflects on originality of the research, not simply increased submission rates to more prestigious journals.

c. In depth knowledge of student specialty area(s). This knowledge will be measured by multiple criteria, including grades in specialization courses, graded research proposal seminar evaluations, preliminary exams in declared areas of specialization (major field[s]), and the final dissertation defenses. A 'pass'-'fail' categorical ranking will be employed, possibly with additional qualitative categories (e.g., 'high pass'). Categories will be numerically ranked and scores will be averaged over time to indicate trends.

d. Ability to write scientifically sound proposals and manuscripts. The assessment of scientifically sound writing of research proposals and manuscripts will be measured in two ways.

- Research proposals required of all doctoral students will be evaluated and ranked categorically by the Graduate Student Coordinator/Department Head using criteria for peer-reviewed grant proposals.
- Scientific quality of manuscripts will be evaluated by compiling general acceptance rates of submitted manuscripts. In cases where students elect to prepare and submit one or more extramural grant proposals, these will also be evaluated using the same criteria.

3. When will this outcome be assessed? When will the results of the assessment(s) be discussed?

Learning outcomes will be assessed each semester or whenever students make oral presentations and receive teaching evaluations, present their proposals, take preliminary exams, defend their dissertations, submit manuscripts and research proposals and receive notification of the outcome. Results of the assessments will be accumulated and compiled after two years and then shared with the faculty, students, and administration (e.g., College and Graduate School).

A schedule of when each student learning outcome will be assessed is shown in Table 1.

[Briefly describe the timeframe for how your unit will spread out the assessment of the learning outcomes selected for the three-year plan. For example, provide a layout of the semesters or years (e.g., year 1, year 2, and year 3), list which outcomes will be assessed, and which semester/year the results will be discussed (e.g., discussed with faculty, advisory boards, students, etc.)]

4. What is the unit's plan for improving students' learning?

Our plan for improving student learning will be four-fold. First, we will evaluate our standards of excellence relative to each student learning outcome (SLO) and assessment tool to ensure that adequate standards have been set. Second, we will do a short-term evaluation of student performance relative to these standards. Third, as data accumulate over time, we will determine which, if any, of our SLOs are declining and/or consistently not meeting our standards of excellence. Fourth, any SLO identified as needing improvement will be reevaluated to improve the method(s) by which that SLO is being achieved. We will also continue to evaluate the assessment tools we are using and make changes as needed.

TABLE 1.				Department of Entomology -- Assessment Experiences -- Ph.D. Program								
SLO	Pre- and post-tests	Qualifying exams	Insect ecology	Insect taxonomy	Insect physiol.	Integrated pest mgt	Other specialty courses	Research seminar	Research proposal	Publishing success	Reviewed manu-scripts	Dissertat. defense seminar
1. Core entomological knowledge	x	x	x	x	x	x						
2. Originality of Ph.D. research								x	x	x		
3. In-depth knowledge area of specialty		x					x		x			x
4. Assess scientifically sound writing									x	x	x	x