

**Ph.D. in Biological and Agricultural Engineering (BAE)
Assessment of Student Learning Plan
Kansas State University**

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

A. College, Department, and Date

College: Engineering
Department: Biological and Agricultural Engineering
Date: November 1, 2004

REGISTERED
APR 13 2005

BY: _____

B. Contact Person(s) for the Assessment Plans

Naiqian Zhang, Professor and Coordinator of the Graduate Programs
Ronaldo G. Maghirang, Professor and Co-chair of the Graduate Programs Assessment Committee
James Steichen, Professor and Co-chair of the Graduate Programs Assessment Committee
Donghai Wang, Assistant Professor

C. Degree Program

Ph.D. in Biological and Agricultural Engineering (BAE)

D. Assessment Plans for the Student Learning Outcome(s) that will be addressed in the Next Three Years**1. Student Learning Outcomes (SLOs)**

Of the eight student learning outcomes approved by our faculty, the BAE department will focus on the following five learning outcomes in our three-year assessment plan.

Graduates of the Ph.D. program in BAE will demonstrate the following:

- Ability to solve advanced BAE problems using math, science, computation, and analysis skills.
- Ability to critically synthesize and evaluate information.
- Expertise in the area of specialization.
- Ability to plan and conduct scholarly activities that make original contributions to the knowledge base in the field of study.
- Ability to communicate effectively both in written and oral forms.

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	
Ability to solve advanced BAE problems	X	X		
Ability to critically synthesize and evaluate information		X		
Expertise in the area of specialization	X	X		
Ability to plan and conduct scholarly activities	X	X		
Ability to communicate effectively in written and oral forms		X		

2. How will the learning outcome(s) be assessed? What groups will be included in the assessment?

Program SLOs	Measures			Who will be assessed?
	Direct	Indirect	Not Sure	
Ability to solve advanced BAE problems	Graduate courses in engineering (samples of student work) ¹			All Ph.D. students.
	Preliminary exam ³			All Ph.D. students.
	Dissertation proposal (write up, presentation) ²			Ph.D. students who have submitted and presented their dissertation proposals.
	Dissertation (write up, final exam) ²			Ph.D. students who have defended their dissertation.
		Advisor/Supervisory Committee Evaluation ³		All Ph.D. students.
Ability to critically synthesize and evaluate information	Preliminary exam ³			All Ph.D. students.
	Dissertation proposal (write up, presentation) ²			Ph.D. students who have submitted and presented their dissertation proposals.
	Dissertation (write up, final exam) ²			Ph.D. students who have defended their dissertation.
		Advisor/Supervisory Committee Evaluation ³		All Ph.D. students.
Expertise in the area of specialization	Graduate courses in engineering (samples of student work) ¹			All Ph.D. students.
	Preliminary exam ³			All Ph.D. students.
	Dissertation proposal (write up, presentation) ²			Ph.D. students who have submitted and presented their dissertation proposals.
	Dissertation (write up, final exam) ²			Ph.D. students who have defended their dissertation.
		Advisor/Supervisory Committee Evaluation ³		All Ph.D. students.
Ability to plan and conduct scholarly activities	Dissertation proposal (write up, presentation) ²			Ph.D. students who have submitted and presented their dissertation proposals.
	Dissertation (write up, final exam) ²			Ph.D. students who have defended their dissertation.
		Advisor/Supervisory Committee Evaluation ³		All Ph.D. students.
Ability to communicate effectively in written and oral forms	Preliminary exam ³			All Ph.D. students.
	Dissertation proposal (write up, presentation) ²			Ph.D. students who have submitted and presented their dissertation proposals.
	Dissertation (write up, final exam) ²			Ph.D. students who have defended their dissertation.
	BAE 815 - Graduate seminar (student's presentation and assignments) ⁴			Ph.D. students who are enrolled in BAE 815.
		Advisor/Supervisory Committee Evaluation ³		All Ph.D. students.

¹Samples of student's homework, tests, and reports in at least two graduate courses in engineering will be considered and presented as evidence. The Graduate Programs Assessment Committee will identify these courses in consultation with the BAE Graduate Faculty.

²The BAE Graduate Assessment Sub-committee will rate the student according to the following scales: (a) greatly exceeds expectation - student demonstrates mastery of the outcome that far exceeds expectations for a Ph.D. candidate in BAE; (b) exceeds expectations - student demonstrates mastery of the outcome that is more than expected of a Ph.D. candidate in BAE; (c) meets expectations - student demonstrates mastery of the outcome satisfactorily for a Ph.D. candidate in BAE; and (d) falls below expectations - student's mastery of the outcome is below what is expected of a Ph.D. candidate in BAE. In consultation with the BAE Graduate Faculty, the Committee will define the "expectations for a Ph.D. degree in BAE.

³The student's major advisor and supervisory committee will rate the student according to the scales above.

⁴The instructor in BAE 815 will assess the student's presentation and/or selected assignments in accordance with the scales above.

3. When will these outcomes be assessed? When and in what format will the results of the assessment be discussed?

The Graduate Assessment Committee, in cooperation with the major advisors, will collect annually assessment data starting in Fall 2005, and summarize and analyze the data in Fall 2007.

Program SLOs	Timetable for Assessment of Learning Outcomes			Baseline created?
	2005	2006	2007	
Ability to solve advanced BAE problems	Graduate engineering courses		→	3-yr baseline data created in Fall 2007
		Preliminary exam	→	
	Dissertation proposal (write up, presentation)		→	
		Dissertation (write up, final exam)	→	
		Advisor/supervisory committee evaluation	→	
Ability to critically synthesize and evaluate information		Preliminary exam	→	
	Dissertation proposal (write up, presentation)		→	
		Dissertation (write up, final exam)	→	
		Advisor/supervisory committee evaluation	→	
Expertise in the area of specialization	Graduate engineering courses		→	
		Preliminary exam	→	
	Dissertation proposal (write up, presentation)		→	
		Dissertation (write up, final exam)	→	
		Advisor/supervisory committee evaluation	→	
Ability to plan and conduct scholarly activities	Dissertation proposal (write up, presentation)		→	
		Dissertation (write up, final exam)	→	
		Advisor/supervisory committee evaluation	→	
Ability to communicate effectively in written and oral forms		Preliminary exam	→	
	Dissertation proposal (write up, presentation)		→	
		Dissertation (write up, final exam)	→	
		Advisor/supervisory committee evaluation	→	
	BAE 815		→	

4. What is the unit's process for using assessment results to improve student learning?

The BAE Graduate Programs Assessment Committee has been established to create and implement assessment measures for the BAE graduate programs. With limited enrollment in the Ph.D. program in BAE, the committee will compile students' performance over a 3-yr period. The committee will analyze and interpret the data, present the findings to the BAE Graduate Committee in Fall 2007, and recommend changes that may be needed if significant weaknesses are discovered. Recommendations may deal with overall program requirements, e.g., formal procedures and/or requirements for dissertation proposal, preliminary exam, final exam, core courses, among others. The Graduate Committee will review the Assessment Committee's findings and recommendations, and report with recommendations to the BAE Graduate Faculty regarding implementation of program and/or curriculum changes. The Graduate Faculty must then take action on the Graduate Committee's recommendations. The Graduate Assessment Committee will compare future assessments to the baseline data to monitor improvement and/or stability in students' performance, re-evaluate the assessment plans, and maintain feedback loops.