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APR 13 2005

**Ph.D. Chemical Engineering  
Assessment of Student Learning Plan  
Kansas State University**

BY: .....

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

**A. College, Department, and Date**

College: Engineering  
Department: Chemical Engineering  
Date: November 15, 2004

**B. Contact Person(s) for the Assessment Plans**

James H. Edgar, Professor

**C. Degree Program**

Ph.D. in Chemical Engineering

**D. Assessment of Student Learning Three-Year Plan**

**1. Student Learning Outcome(s)**

1. Solve advanced engineering problems using discipline appropriate math, science, computation, and analysis skills
2. Critically synthesize and evaluate information
3. Demonstrate advanced knowledge in the area of specialization
4. Plan and conduct scholarly activities that include original contributions to the knowledge base (PhD)
5. Communicate effectively (written and oral)

Special rationale for selecting these learning outcomes (optional):

None

*[If applicable, provide a brief rationale for the learning outcomes that were selected]*

Program SLOs	University-wide SLOs (Graduate Programs)			Program SLO is conceptually different from university SLOs
	Knowledge	Skills	Attitudes and Professional Conduct	
1.	X	X		
2.	X	X		
3.	X	X		
4.	X	X	X	
5.	X	X	X	

2. How will the learning outcomes be assessed? What groups will be included in the assessment?

1. The ability to solve advanced engineering problems using discipline appropriate math, science, computation, and analysis skills will be assessed in the required core chemical engineering courses through homework assignments and tests. Direct
2. The ability to critically synthesize and evaluate information will be assessed from the student's Ph.D. preliminary exam and dissertation. Direct
3. The demonstration of advanced knowledge in the area of specialization will be assessed by homework assignments and tests in specialty elective courses and from the student's dissertation. Direct
4. The planning and conduction of scholarly activities that include original contributions to the knowledge base will be evaluated by the student's Ph.D. preliminary exam (which includes a research proposal) and dissertation. Direct
5. The student's ability to effectively communicate will be assessed via the student's written assignments in courses, Ph.D. preliminary exam, dissertation, and defense of the dissertation. The evaluation of the Ph.D. defense by the chair of the examining committee and subsequent publications by the student will also be considered. Direct

A graduate student advisory committee composed of representatives from the current graduate students body will be formed and will meet with the department head or chair of the graduate committee on a yearly basis. Student feedback on the courses they have taken will be sought. Indirect

A faculty committee will be formed to assess all Ph.D. students over the next three years.

*[Briefly describe the assessment tools, measures, or forms of evidence that will be utilized to demonstrate students' accomplishment of the learning outcomes selected in the three-year plan. Also indicate whether each measure is direct or indirect. If you are unsure, then write "Unsure of measurement type". There is an expectation that **half of the assessment methods/measures** will be direct measures of student learning (see **Measures, Rubrics, & Tools for Assessing Student Learning Outcomes** on the APR website for examples of direct and indirect measures).]*

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

Past performance of all recent graduate students will be initially assessed in January 2005 to provide a baseline for subsequent evaluations that will occur in August 2006 and December 2007. Syllabi from core and elective chemical engineering courses, and procedures for Ph.D. preliminary exams, and guidelines for dissertations will be reviewed at these times. Additional anecdotal evidence of prior graduates' professional success will be gathered informally. The review will be performed by a committee composed of three faculty, and they will make recommendations on standards to be adopted at a meeting with the entire ChE faculty. Adoption of the recommended changes will be sought.

*[Briefly describe the timeframe over which your unit will conduct 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 and used to improve student learning (e.g., discussed with faculty, advisory boards, students, etc.)]*

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

Recommended changes to the course content and requirements for dissertations will be implemented. This may include more structured and uniform course content, a consistent format and standards for dissertations, a mandatory departmental seminar, or new requirements for the Ph.D. defense. The graduate committee will monitor the impact of changes to the program, to ensure that the changes resulted in improvements. Additional recommendations will be made and implemented as needed.

*[Briefly describe your process for using assessment data to improve student learning.]*