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**Degree Program
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: Chemical Engineering
Date: November 8, 2004

B. Contact Person(s) for the Assessment Plans

John R. Schlup

C. Degree Program

B. S. in Chemical Engineering

D. Assessment of Student Learning Three-Year Plan

1. Student Learning Outcome(s)

The primary educational objective of the chemical engineering program at Kansas State University is to prepare students for diverse professional careers in chemical engineering or for advanced professional study. In the course of this process, the learning outcomes below will be met.

1. Graduates are prepared for the diversity of career opportunities available to them through an emphasis on chemical engineering fundamentals.
2. Students will have progressed through a sequence of courses that begins with mathematics and the physical and natural sciences, progresses through the engineering sciences, and ends with engineering design coursework.
3. Students will have completed a major design experience structured to satisfy prior and current criteria of the Accreditation Board for Engineering and Technology.
4. Graduates of the program will demonstrate a working knowledge, including safety and environmental aspects, of:
 - a) material and energy balances as applied to chemical processes,
 - b) thermodynamics of physical and chemical equilibria,
 - c) heat, mass, and momentum transfer,
 - d) chemical reaction engineering,

- e) continuous and stage-wise separation operations,
 - f) process dynamics and control,
 - g) modern computing techniques, and
 - h) process design and economics.
5. Professional skills such as communication, teamwork and engineering ethics will be incorporated throughout this program of study.
 6. Students will be enabled to meet the challenges of a world characterized by rapidly increasing technical complexity.
 7. Qualified graduates of the program will compete favorably while pursuing advanced studies at other universities.

Special rationale for selecting these learning outcomes (optional):

The student learning outcomes described herein correspond to the program outcomes and objectives established for accreditation by ABET. The relationship of these outcomes and objectives to the K-State Student Learning Outcomes is given in the next section. The assessment process described herein is that identified for ABET as well. This is meant to be an on-going process, and accreditation requires that all program outcomes and objectives be assessed continuously. Therefore, all of the program outcomes and objectives are included, as this must occur as part of the ABET accreditation process.

Relationship to K-State Student Learning Outcomes (insert the program SLOs and check all that apply):

The primary educational objective of the chemical engineering program at Kansas State University is to prepare students for diverse professional careers in chemical engineering or for advanced professional study. In the course of this process, the student learning outcomes on the following page will be met. Those university-wide student learning outcomes corresponding to departmental SLO's are presented in the column to the right of the SLO's.

Program SLO's	University-wide SLO's (Undergraduate Programs)					Program SLO is conceptually different from university SLO's
	Knowledge	Critical Thinking	Communication	Diversity	Academic / Professional Integrity	
1. Emphasis on Fundamentals	XX			XX		
2. ChE Sciences	XX	XX				
3. Major Design Experience	XX	XX				
4. Working Knowledge	XX	XX				
5. Professional Skills		XX	XX	XX	XX	
6. Broader Challenges		XX		XX		
7. Preparation for Advanced Studies	XX	XX				

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

Assessment Instruments

Currently there are eight assessment instruments that provide data for the department. These tools and the frequency with which the data are acquired are itemized in the list below. In addition, the Department of Chemical Engineering is in the process of expanding its assessment instruments to include our students' acceptance into and success in graduate school and other post-baccalaureate professional programs. A matrix demonstrating the relationship between the Program Outcomes and the Assessment Instruments is given at the end of this document.

<u>Current Assessment Instrument</u>	<u>Frequency</u>	<u>Direct/Indirect</u>
1. Peer Review (ABET)	Every six (6) years	Indirect
2. Senior Exit Interviews	Each Year	Indirect
3. Alumni Surveys Graduating Seniors First-Year Alumni Four-Year Alumni	Biannually	Indirect
4. Placement Data	Annually	Indirect
5. FE Exam Results	Each semester	Direct ✓
6. Grades (particularly distribution within classes)	Each semester	Direct ✓
7. Capstone Design Course	Annually	Direct ✓
8. Achievements of Students	Annually	Indirect

Planned for Future Implementation

- | | | |
|-------------------------------------------------------------------|----------|----------|
| 9. Acceptance and Success in
Graduate and Professional Schools | Annually | Indirect |
|-------------------------------------------------------------------|----------|----------|

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

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

The assessment process currently in place addresses both of these questions. Since these issues are integrated within the process, they will not be treated separately. Accreditation by ABET requires that assessment of student learning outcomes and objectives be a continual process. Since the process is currently in place and assessment is to occur on an ongoing basis, the timeline will not vary over the three years requested as a part of this document.

Assessment Process

1. Assessment of the undergraduate program is the responsibility of the Undergraduate Program Committee for the Department of Chemical Engineering. This committee will review the assessment data collected for the academic year during the following summer and summarize it for the constituencies of the department.
2. Assessment data will be collected as it becomes available and will be filed in the department office. These data will serve as the basis for continuous improvement of the program and for reevaluating the educational objectives and outcomes of the department. The Undergraduate Program Committee described above will have ultimate responsibility for acquiring and assessing the data.
3. A summary of the data along with recommended action items will be presented to the faculty of the department, the Undergraduate Student Advisory Council, and the Chemical Engineering Advisory Board (ChEAB) during the fall semester for their consideration and input. Review of the data and recommended action items will occur during the fall semester of each academic year.
4. Once the input of the various constituencies has been obtained, the Undergraduate Program Committee will prepare recommendations for action for consideration by the department faculty during the fall semester. Implementation of program changes will be pursued during the spring semester. Those actions may include changes in the curriculum, departmental policy, student learning outcomes, and/or educational objectives.

A diagram summarizing the assessment process is provided on the following page.

Assessment Process ...
Department of Chemical Engineering



