Last revised 10/4/04

Template
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: *Graduate School*
Program: *Biochemistry*
Date: *12/15/2004*

B. Contact Person(s) for the Assessment Plans

Lawrence C. Davis
Professor and Chair

C. Degree Program

MS./Ph.D. Biochemistry

D. Assessment of Student Learning Three-Year Plan

1. **Student Learning Outcome(s)**
   *[Insert at least **2-5 learning outcomes** that will be assessed by the unit over the next three years. Each unit will select which of its learning outcomes to assess.*

   Graduates from the Biochemistry program will have demonstrated understanding of the structures and functions of biological molecules.

   2. Graduates from the Biochemistry program will have demonstrated ability to read original literature and communicate it effectively to an audience.

Special rationale for selecting these learning outcomes (optional):
[If applicable, provide a brief rationale for the learning outcomes that were selected]
These two outcomes are fundamental parts of a graduate education, whether at M.S. or Ph.D. level

Last revised 10/4/04

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

	University-wide SLOs (Undergraduate Programs)					Program SLO is conceptually different from university SLOs
Program SLOs	Knowledge	Critical Thinking	Communication	Diversity	Academic / Professional Integrity	
1. understanding of the structures and fundamentals of biological molecules.	X	X	X			
2. Ability to use computers as information and research tools	X	X				

	University-wide SLOs (Graduate Programs)			Program SLO is conceptually different from university SLOs
Program SLOs	Knowledge	Skills	Attitudes and Professional Conduct	
1a.Basic knowledge and tools of the trade 1b. In-depth understanding	x	x		
2. Critical thinking	x	x		
3a.Ability to read 3b. Ability to communicate	x	x	x	
4. Technical skills	x	x	x	
5. Generate hypotheses and present original research,	x	x	x	

synthesize published information				

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

The learning outcomes will be assessed by a program assessment committee. Biochemistry M.S. and Ph.D. majors enrolled in the basic graduate courses (BIOCH 755/765) and following their degree defense will be assessed.

•Understanding of the structures and functions of biological molecules.

1: This outcome will be assessed by examination of a portfolio of work done by biochemistry majors in the courses (BIOCH 755/765) that are taken by all incoming graduate students. We will evaluate competence in this outcome based on (A) answers exam questions relevant to structure and function of biological molecules; and (B) a writing assignment that specifically addresses understanding and analysis of protein structure and function. [direct measure]

2. The thesis or dissertation defense will specifically address the question of biochemistry majors' view of their understanding of structures and functions of biological molecules. [indirect measure]

3. The Education and Professional Development Committee of the American Society for Biochemistry and Molecular Biology is in the process of developing assessment tools for use in biochemistry undergraduate programs. This may serve as a useful baseline for graduate students also. As these become available we will evaluate whether they may be useful in our assessment of this and other learning outcomes.

• Ability to read original literature and communicate it effectively to an audience

1: This outcome will be assessed using in-class surveys of audience members in the regular seminar course. The survey will incorporate a series of questions to determine how effective the communication skills of a student are with an audience of peers. In addition the faculty member in charge will provide a written evaluation for each enrolled student who makes a seminar presentation, each semester that they do so. These will be accumulated into a final portfolio. [direct measure].

2: A writing assignment in the course BIOCH 755, which requires use of a variety of computer resources (database and literature searching, molecular graphics, word processing) will be evaluated to assess the competence of biochemistry majors in this learning outcome [direct measure].

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

These two outcomes will be assessed by the program executive committee in the spring of 2006 (based on Fall 05/Spring 06 academic year), 2007 (2006/2007 academic year), and 2008 (2007/2008 academic year) after completion of the fall/spring introductory graduate courses (BIOCH 755/765) and the graduate seminar course. The results of the assessment will be discussed at a graduate biochemistry group faculty meeting early in the summer of those years.

3. **What is the unit's process for using assessment results to improve student learning?**
   [*Briefly describe your process for using assessment data to improve student learning.*]

Each of the six faculty members teaching in the introductory graduate courses (BIOCH 755/765) provides copies of exams used in the courses to all other members of the Biochemistry Department and an analysis of the performance of biochemistry graduate majors in the course. This provides an ongoing overview of student learning in those courses.

The assessment committee's data on student competence in the selected learning outcomes will be discussed at the meeting of the graduate biochemistry group. If areas of weakness are identified, the faculty will plan and incorporate appropriate changes in curriculum and course content to address the problems.