



**Revised Template  
Degree Program  
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: *Arts and Sciences*  
Department: *physics*  
Date: *Oct 12, 2004*

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

*Professor Michael O'Shea*  
*Professor Tim Bolton*

**C. Degree Program**

*Ph.D. in Physics*

**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. The number of learning outcomes to be addressed is decided by the unit in collaboration with its college, accrediting agencies, professional organizations, and industry.]*

**This is a complete list of our Student Learning Outcomes**

- i) Achieve a broad understanding of physics at the graduate level.**
- ii) Demonstrate progress in the selected research project.**
- iii) Bring to a conclusion original research that can be disseminated to the physics community.**

Special rationale for selecting these learning outcomes (optional):

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

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

Program SLOs	University-wide SLOs (Graduate Programs)			Program SLO is conceptually different from university SLOs
	Knowledge	Skills	Attitudes and Professional Conduct	
1. Achieve a broad understanding of physics at the graduate level	x	x		
2. Demonstrate progress in the selected research project.	x	x		
3. Bring to a conclusion original research that can be disseminated to the physics community.	x	x	x	
4.				
5.				

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

*[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. There is an expectation that half of the assessment methods/measures will be direct measures of student learning (see handout for examples of direct and indirect measures). Also indicate whether the measure is direct or indirect. If you are unsure, then write "Unsure of measurement type"]*

**Achieve a broad understanding of physics at the graduate level.**

GPA-The graduate student is required to maintain a grade point average (GPA) of 3.0 with the expectation that in the majority of the core courses in physics (Phys801 Mathematical Methods, Phys 811 and 911 Quantum Mechanics 1 and 2, Phys821 Advanced Dynamics, Phys831 and 931 Electrodynamics I and 2, Phys971 Statistical Mechanics), students will obtain either an A or a B. [direct measure]

Departmental exam – The graduate student is required to take and pass the departmental exam (there are five parts). If any exams are failed the student has the opportunity to re-take the exam once at the next offering. [direct measure]

Preliminary oral exam – The graduate student is required to take a preliminary oral exam (required by the graduate school) in which they give a presentation on an aspect of physics at the graduate level. This will be assessed and graded either pass or fail by a vote of the majority of the members of the student's supervisory committee. [direct measure]

General review -Physics faculty will meet as a large group to review the progress of students. Discussion will include all of the above assessments. [indirect measure]

**Demonstrate progress in the selected research project.**

Seminar – The graduate student will give a public seminar on their research. The student will present background on their Ph.D project, report their progress to date and discuss

any problems they are currently encountering. During and after the seminar the student will be asked questions by the audience of physics faculty, graduate students and any other interested audience members.[indirect]

General review -Physics faculty will meet as a large group to review the progress of graduate students. Discussion will include the above assessment. [indirect measure]

**Bring to a conclusion original research that can be disseminated to the physics community.**

Final Ph.D. oral exam – The graduate student will take a final oral exam administered by their supervisory committee in which the student presents their final results on their research project. An important part of this is assessing the scientific merit the originality of the work so that it may eventually be published, usually in the form of a long paper or several papers. This will be assessed and graded either pass or fail by a vote of the majority of the members of the student's supervisory committee [direct measure].

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

*[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.)]*

**Achieve a broad understanding of physics at the graduate level.**

GPA – core courses (Phys801 Mathematical Methods, Phys 811 and 911 Quantum Mechanics 1 and 2, Phys821 Advanced Dynamics, Phys831 and 931 Electrodynamics I and 2, Phys971 Statistical Mechanics) are offered once a year

Departmental exams – offered at the start of the fall and spring semesters Evaluation of this will occur in our departmental exams.

Preliminary oral exam – normally occurs at the end of the second year of graduate school

General review – occurs in a faculty meeting in each (fall and the spring) semester.

The process by which this SLO is evaluated (through course offerings, departmental exams, and a faculty meeting) will be discussed in a faculty meeting in Fall of 2005.

**Demonstrate progress in the selected research project.**

Seminar - The graduate student will give a seminar once a year. The student will receive feedback and suggestions during and after the seminar from faculty.

Evaluation of this will also occur in a faculty meeting each semester in which students are reviewed to determine if they are making satisfactory progress.

The process by which this SLO is evaluated (through a public seminar) will be discussed in a faculty meeting in Fall of 2006.

**Bring to a conclusion original research that can be disseminated to the physics community.**

Final oral exam - The graduate student will take a final oral Ph.D. exam in which they give a presentation and then discuss their results with their supervisory committee. This will occur once the student's research has been completed and they have written a thesis. While students have often published some of their work prior to their defense, this is not a requirement since publication times can be up to a year from the time of submission. For most students this will be approximately 5 years after they enter the Ph.D. program. The process by which this SLO is evaluated (structure/format of final Ph.D. defense) will be discussed in a faculty meeting in Fall of 2007.

4. **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.]*

**Achieve a broad understanding of physics at the graduate level.**

If any areas requiring improvement are identified then a request to consider improvements is forwarded to either the Graduate Affairs committee or the Curriculum committee within the physics department. These committees then consider possible changes to improve student learning. These suggested changes are then brought back to the faculty for a final decision. In the past these have taken the form of modifications to the departmental exam, changes in course syllabi, creation of new courses and cancellation of old courses.

**Demonstrate progress in the selected research project.**

If any areas requiring improvement are identified concerning the format or other aspects of the yearly seminar given by graduate students, then modifications are forwarded to either the Graduate Affairs committee or the Curriculum committee within the physics department. These committees then consider possible changes to improve student learning.

Suggestions that require modification to graduate school rules are forwarded to the Graduate Council via the Graduate School.

**Bring to a conclusion original research that can be disseminated to the physics community.**

If any areas requiring improvement are identified concerning the format or other aspects of the final Ph.D. oral exam, then modifications are forwarded to the Graduate Affairs committee within the physics department. This committee then considers possible changes to improve student learning.

Suggestions that require modification to graduate school rules are forwarded to the Graduate Council via the Graduate School.