

Student Learning Outcomes Department/Program Assessment Results Report

Department/Program: Physics Department

Degree: BS

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The purpose of this report is to communicate the assessment activities that have taken place during the last academic year, as well as how the results are being used to improve student learning at the program level. This report is meant to be brief, while answering the following questions:

1. **What was the focus of the program's student learning assessment for the past academic year?**

During Fall 2004, the department developed goals and objectives for the BS in Physics and these are now posted on the CSU Assessment website. These goals and objectives will be the foundation for our assessment student learning outcomes.

2. **What information was collected, how much, and by whom?**

Our department developed an Assessment Plan for the next two years.

Assessment Projects: Data will be collected over several quarters because of the small number of Physics majors. The goal will be to have at least 10 to 15 student samples before the department meets to discuss how students are doing.

- (a) **Physics 222** Winter quarter – Jorge Talamantes will collect data in the 222 course. Copies of the exams for this course will be collected over several quarters to assess Student Learning Outcomes for the course and the early work of physics majors. In future quarters, this will be collected by additional professors teaching this course. (Data have been collected from Winter 05). In the future, Dr. Talamantes will pick three questions from one exam (once per quarter). The level of difficulty of the questions will be: easy, mid-level, and challenging. He will then try to reach general conclusions in connection to the students' mastery of the material in relation to concepts in the MGO statement.
- (b) **Physics 490** Senior Seminar involves a research project that is orally presented by the student to several of the Physics Professors. We will develop a scoring rubric that combines assessment of critical thinking (as evidenced by their presentation) and public speaker skills. All attending Physics professors will

score each student on the rubric. These will be collected over several quarters to obtain evidence of student learning outcomes as developed from the MGOs.

- i. The assessment center developed a draft of a scoring rubric for this use. The faculty have approved a final version.
 - ii. Data collection will occur during the next scheduled senior seminar.
- (c) **Physics 307** Written projects are required in 307 and copies of the students' work will be collected for department assessment of student learning outcomes. A rubric will be developed for critical thinking, understanding of physics concepts and other identified concepts from the MGO statement. We have obtained a grant from the Assessment Center to do the rubric and scoring for data obtained in Fall 2004. The information will be available for next report.
- i. Rubric development support will be provided by the Assessment center
 - ii. Two physics professors will be asked to blind score (student and professors name removed) student work using the rubric.
 - iii. The department will receive a brief report and discuss the findings.
- (d) Department Discussions. The assessment data will be used in department discussions to develop plans for
- i. Evaluation of teaching methods.
 - ii. Matching student learning styles with teaching methods.

3. What conclusions were drawn on the basis of the information collected?

This is our first year of engagement in the student learning outcomes assessment process. Because our department is very small, all faculty have opportunities to closely supervise our students. We see significant variations among students in their ability to succeed in this major and we often work with these students on an individual basis. Two of our students have been selected for Project Smart Grad. Seven students have received a BS from us in the last three years. Three of those graduates had significant potential to go to graduate school – of those three, one is presently pursuing a Ph. D. The other two have been side-tracked due to their family circumstances: one is now pursuing an MBA, and the other one is working as an engineer. The remaining four graduates are employed as follows: one is teaching high school physics, and other three are working outside the field.

As a department, we will continue to monitor our graduates' career paths. Their success is one measure of their preparation as undergraduates.

4. How was information used to inform decision-making, planning, and improvement? Our most significant advancement during the 2004-2005 academic

year was the development of our departmental goals and objectives. We are currently involved in development of our scoring rubrics for the Student Learning Outcomes and will plan to have something to report for 2005-2006 year-end report.

Report prepared by Dr. Jorge Talamantes