



2008-2009 Assessment Plan Report

PROGRAM ASSESSMENT REPORT AY 2008-2009

Report Date: JUNE 1, 2009
School/College: ARTS & SCIENCES
Department/Program: PHYSICS & ASTRONOMY
Person completing the Report: HORACIO E CAMBLONG

1. **Overview Statement:** Assessment activities in the Physics major program were undertaken as planned during the AY 2008-2009, following the guidelines outlined in the "Program Assessment Plan." Accordingly:

- a. Two Physics program learning outcomes were assessed this academic year, within the scope of Learning Goal 2:
 - Learning Outcome 2 (a). Formulate, solve, and interpret problems by the use of physical principles, via mathematical and computational techniques.
 - Learning Outcome 2 (b). Describe and discuss the formulation, solution, and interpretation of a problem, by the use of physical principles, via a seminar presentation.

b. The learning outcomes above were assessed in the courses PHYS 210 (General Physics II), PHYS 350 (Physics Colloquium), and PHYS 371 (Methods of Mathematical Physics). The whole process was organized by the "assessment coordinator," Horacio Camblong (Physics & Astronomy Department Chair), providing precise procedural guidelines for data collection via embedded questions and videotaping, and for the evaluation of the gathered data against the assessment metrics. The faculty members teaching these courses were responsible for the required data collection: Thomas Bottger (PHYS 210), Horacio Camblong (PHYS 350), and Stephen Yeung (PHYS 371).

2. **Please Answers the Following Questions for Each of the Student Outcomes Assessed:**

a. **What did you do?**

Following the guidelines of our Physics Assessment Plan, the learning outcomes were assessed by means of *embedded questions or equivalent direct measures*:

- Embedded problems in the final exams were used for Learning Outcome 2 (a) in PHYS 210 and PHYS 370. These were selected as representative, standard problems with significant mathematical content, requiring solution by mathematical and computational methods.
- For PHYS 350, Learning Outcome 2 (b) was evaluated through the (videotaped) student seminars presented during the final class meeting.

b. **What did the faculty in the department or program learn?**



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The learning outcomes were gauged with a *ternary metric system*: above average, average (benchmark standard), and below average---roughly equivalent to A range through B, B- through C-, and D-F range, respectively. In any case, these are meant to be categories defined by comparison with the benchmark standard, regardless of the statistical course average for any given class section. The results for the three courses selected for assessment are summarized below:

- PHYS 210: Student performance was evaluated on the basis of a representative embedded problem for the 40 students registered in the class.
 - I. Above average: 14 students
 - II. Average: 18 students
 - III. Below average: 8 students
 - The results of the assessment activities are satisfactory. Most students showed adequate command of the skills needed to solve introductory physics problems. For the below-average students, their weaknesses appear related to poor understanding of basic physics and math.
- PHYS 350: Student performance was evaluated on the basis of their 10-minute seminar presentations---physics content and expository skills (out of 8 students, and a ninth student in the class with an unexcused absence or F).
 - I. Above average: 2 students
 - II. Average: 4 students
 - III. Below average: 2 students
 - The results of the assessment activities are satisfactory. Most students showed good understanding and expository skills during their presentations. For the below-average students, their weaknesses were centered on poor understanding of basic physics.
- PHYS 371: Student performance was evaluated on the basis of a representative embedded problem for the 10 students registered in the class.
 - I. Above average: 5 students
 - II. Average: 1 student
 - III. Below average: 4 students
 - The results of the assessment activities are satisfactory. Most students showed adequate to good command of the analytical skills needed to solve generic physics problems at this level. For the below-average students, their weaknesses appear related to poor basic math skills.

c. **What will be done differently as a result of what was learned?**



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No significant changes are required at this time. The results of the assessment activities can be regarded as satisfactory. For PHYS 350, the results suggest that clearer guidelines should be given to the students for their oral presentations. For PHYS 210, 371, and similar courses involving problem solving, perhaps more time should be devoted to problem discussions wherever appropriate. A faculty meeting in the Fall 2009 semester will address these issues in greater detail.

3. **Attach a copy of the components of the department/program assessment plan that have been modified since its initial submission:**
 - a. Program Mission
 - b. Program Learning Goals
 - c. Program Learning Outcomes
 - d. Program Learning Rubrics aligned with outcomes
 - e. Curriculum map that shows the courses that pertain to the outcome

NO CHANGES have been made this year.