General Information

1. Name / Number of Course / Sequence:
   PHYS 1510: General Physics II

2. SLO(s) being assessed:
   Student will understand and appreciate methods and issues of science and technology.

3. Department:
   Physics

4. Department Representative:
   Dr. Chin-Che Tin

5. AGSC Content Alignment:
   AREA III: Science and Math

Assessment Information

6. Assessment Method: [Explain how assessment for the measures associated with this SLO – not grading for the course as a whole was conducted.]

   The department has identified the following assessment areas: homework problems, laboratory experiences, classroom interactive sessions and test questions. Faculty may elect to use any or all of these assessment areas to evaluate the effectiveness of their teaching. However as a department it has been agreed that all faculty teaching Physics 1510 will use homework problems in Mastering Physics as the primary assessment tool. The five measures for SLO-10 have been entered into the software as our Learning Outcomes. Up to five problems are assigned throughout the semester that relate well
to each of these five measures associated with SLO 10 (i.e., a total of 25 problems) and
the performance of our students is compared to the National Average.

Data were collected for Spring 2011.

7. Findings: [What assessment data did each assessment method produce?]

   Spring 2011:

   % Complete: NA

   % Average Score: 91.1

   % National Score: 90.2

8. How did you or will you use the findings for improvement: [What questions / issues/ concerns
di your data raise for the faculty teaching the course? What discussion did the faculty have about the
findings? What future actions to improve student attainment of this outcome will the department /
program takes as a result of this analysis?]

   The percentage of student completing the assignments is typically about 75% as
indicated in the attached data. This means that 25% of the students have difficulty
completing the problems. This is typical in our introductory physics courses. Student
performance in assignments is always better than their performance in a true testing
environment, such as quizzes, tests and examination. Therefore, actual student
performance, as indicated by their final grades, is generally lower than that indicated by
the data presented here.
The lack of student preparedness and motivation are our main concerns.
As expected, there was a distinct performance difference between students who
participated in class and those who skipped classes.
The assessment data showed that students had achieved a mastery of the fundamental
concepts but still had issues with some of the more advanced concepts.
The instructors believe that frequent reviews would be helpful but these reviews are
restricted by limited class hours and the large amount of materials to be covered in the
syllabus. Students would benefit from weekly recitation sessions. Instructors would ask
TA's to more rigorously enforce the recitation policies and to conduct more peer-
instruction activities.

9. Additional comments: [What else would you like the Committee to know about your assessment of
this course or plans for the future?]
The names of the instructors are given in the assessment data. These data should not
be viewed as an assessment of the effectiveness of an instructor. In spite of much
efforts and time with group meetings, email notifications, etc., not all instructors have submitted assessment data and those that did should be commended for their contributions to this assessment effort.
The main problem for us is in the choice of the questions to satisfy the different measures within SLO-10.
The problems that we have used are typical textbook-type Physics problems with underlying historical foundation and principle that may not be obvious to others. For instance, it is not common to see a problem involving the basic Coulomb's Law to start with "In 1785, Coulomb discovered that electric force is an inverse-square law..." Instead you would see "If a 10 micro coulomb charge is 1-cm away from a 20 micro coulomb charge, what is the electric force between the two charges?"
The problems we have used are those from the textbooks. In adopting the online Mastering Physics assignment tool, we are restricted to the problems in the textbooks. We can author our own questions to make their relevance to the Learning Outcomes more obvious. But in doing so, we would lose using the national average as a comparison data.
As we progress with our assessment efforts, we will gradually tighten the number of allowed questions for our instructors. Instructors will be provided with a common set of questions that they have to include in their assignments.

10. Core Curriculum General Education Committee Comments:

Good attempt which shows progress and faculty input. There is a wide variation in assessment problems from instructor to instructor--some relate well to the measures, some don't. The instructors are of the opinion that if solving a problem requires use of discovery from long ago, that is demonstrating the philosophical and historical foundation of modern science--that may not be true.