

Year Year 2

### 1. Identify the PLO your program assessed this academic year

1). Graduates will have demonstrated a breadth and depth of understanding in physics, chemistry and biology sufficient to do advanced undergraduate course work in each of these fields

### 2. Identify the artifact(s) (i.e. student work) that you used to assess the PLO.

[Papers, presentations, portfolios, test items, specific assignments, capstone

Rubrics-Performance at specific questions on tests. PHYS 140 Exam 3 Q4: An excellent rating on this exam question should demonstrate: An ability to apply information given as initial values of functions. An ability to solve equations algebraically. An abil-Lab reports, survey questions

### 3. Identify the tools (e.g. rubrics, surveys, performance on standardized test questions) used to assess the artifact(s) (i.e. student work

Rubrics-Performance at specific questions on tests. PHYS 140 Exam 3 Q4: An excellent rating on this exam question should demonstrate: An ability to apply information given as initial values of functions. An ability to solve equations algebraically. An abil

### 4. Explain the results of the assessment activities

PHYS 140/141 Items PHYS - 140 Performance Number of students

(Percentage) Excellent Good Average Poor Unacceptable Exam 3 / Q4 3 (23.1%) 4 (30.8%) 2 (15.4%) 1 (7.7%) 3 (23.1%) Exam 5 / Q2 5 (38.5%) 1 (7.7%) 0 (0%) 0 (0%) 7 (53.8%) Exam 5 / Q5 11 (84.6%) 0 (0%) 1 (7.7%) 0 (0%) 1 (7.7%) Exam 5 / Q6 7 (53.8%) 0 (0%) 3 (23.1%) 1 (7.7%) 2 (15.4%) Total 50.0% 3.62% 11.54% 3.85% 25.0%

A 59.6% of the class performed above average. A 71.2% of the class performed average or above. Items PHYS - 141 Performance Number of students

(Percentage) Excellent Good Average Poor Unacceptable Exam 2 / Q4 4 (20%) 4 (20%) 4 (20%) 5 (25%) 3 (15%) Exam 2 / Q5 5 (25%) 0 (0%) 4 (20%) 0 (0%) 5 (25%) Exam 3 / Q3 1 (5%) 2 (10%) 2 (10%) 7 (35%) 8 (40%) Exam 4 / Q1 7 (35%) 3 (15%) 1 (5%) 7 (35%) 2 (10%) Exam 5 / Q4 13 (65%) 0 (0%) 3 (15%) 1 (5%) 3 (25%) Total 30% 9% 14% 26% 21%

A 39% of the class performed above average. A 53% of the class performed average or above. PHYS 140L/141L - Aggregate results for each rubric item are Experimental Design - 97.5 % meeting expectations, Data and Results - 97.1% meeting expectations, Discussion and Error Analysis - 94.1% meeting expectations. Results for majors within department (physics, EE, CE, ENMT, BPHYS) with an N=17 show similar results of 94.1%, 100%, and 94.1% meeting expectations for each rubric item respectively. EE 241/241L - In all three pieces of student work used in course assessment, 4/5 (80%) of the Biophysics students met benchmarks (of scoring at Excellent-Good-Acceptable levels) on all three assignments. On end of course survey, Physics and Biophysics student were surveyed as a group. 6/6 Biophysics/Physics students (100%) agree or strongly agree to the statement "I have formulated and solved the differential equations describing time behavior of circuits containing inductors and capacitors". 6/6 Biophysics/Physics students (100%) agree or strongly agree to the statement "I have used Maple and Multisim software to

solve mathematical equations, simulate circuits, and predict circuit behavior”.

**5. Where applicable, outline the steps you will take to make improvements to the program based on the results of assessment activities identified in #3.**

PHYS 140 From items 1 and 3 (Exam 2 / Q3 and Exam 5 / Q2), it is apparent that students have no enough background in vectors and have difficulties performing operations between them. PHYS 141 From item 3 (Exam 3 / Q3), it was apparent that the students a

**6. Are there any new resources needed to make program improvements? If so, please include the resources and provide justification for each in the Budget section of the Annual Report.**

PHYS 140/141 Students usually do not read the textbook, even if there is a reading material assigned. Serway is a good textbook but sometimes too wordy. It is also too thick and students are afraid of open it up. There are some others textbooks that are