University Assessment Committee
Outcomes Assessment Summary Form

This form is to be completed by a representative from each designated program/department. The information provided in this form will be used by the University of San Diego to inform stakeholder groups about USD’s commitment to the intellectual, spiritual, and overall development of students. A Pdf version of this form will be posted on the University’s Student Outcomes Website in the Evidence of Student Learning section.

Program Information
Program Name (e.g. BA Computer Science, PhD Nursing)

BA Physics

College/School Name (e.g. CAS, KSPS, SB, SMSOE)

CAS

Assessment Overview
Briefly share how student learning outcomes assessment is conducted within your program/department (e.g. number of outcomes, examples of assignments used, and frequency of assessment). See example below.

The physics program assesses five learning outcomes on a three-year cycle. The outcomes assess our students’ proficiency in the fundamentals of physics, both conceptual and problem solving, in the application of these fundamentals to describe the natural world, in laboratory and data analysis skills, and in scientific communication. As a means of assessment, the program will look to utilize students’ work-product from the advanced laboratory course, presentations made in the senior seminar, as well as longitudinal studies (throughout the major) of their conceptual and problem solving abilities.

Results and Actions Taken
Assessment Cycle

2017-2018

Briefly summarize your assessment results and how you are using these results to enhance student learning and improve program quality. See example below.

In the 2017-18 academic year, the physics program assessed students’ abilities to connect mathematical skills developed in the mathematics classroom with their physics knowledge to solve problems, and to further synthesize both to tackle otherwise unsolvable physics problems through approximate or analytic techniques. While this is a skill that professional physicists regularly use to understand the physical world, it remains a cognitively difficult skill for students to master. To assess this outcome, we analyzed student work on mid-term and final exams in an upper-division physics course. It was noted that while students could largely use mathematical skills, when prompted, to solve a physics problem, there remains difficulty in applying mathematical skills to simplify and solve physics problems utilizing physical intuition.

One possibly important proposed solution is the introduction into the physics curriculum of Physics 300, Mathematical methods of Theoretical Physics, which will be offered in Fall 2019. This type of course is a staple of other physics departments and one that we hope will begin to help students make connections between mathematical skills and physical intuition. The impacts of this curricular change will be assessed going forward.