



CALIFORNIA STATE UNIVERSITY, LONG BEACH  
VICE PROVOST FOR ACADEMIC PROGRAMS

Memorandum of Understanding  
Department of Physics and Astronomy  
College of Natural Science and Mathematics  
February 2016 (for 2016 review)

This Memorandum of Understanding outlines the consensus reached by the Department of Physics and Astronomy, the College of Natural Science and Mathematics, and the Division of Academic Affairs, based on the program review self-study in spring 2016, the external review and UPRC report in fall 2016. It describes the goals to be achieved, and the actions to be undertaken by all parties to this MOU to achieve these goals in the next program review cycle. Progress toward goals is to be addressed in an annual report.

Currently, the undergraduate programs offered by the Department are:

- B.S. in Physics
- B.A. in Physics
- Minor in Physics

While the list of undergraduate programs has changed, the B.A. in Physics curriculum was substantially modified to allow curriculum flexibility and to accommodate students who seek board job opportunities and the academic rigor without the upper level Physics requirements.

Currently, the graduate programs offered by the Department are:

- M.S. in Physics
- M.S. in Physics with Option in Applied Physics
- M.S. in Professional Physics (starting in AY 2016/17)

A number of strengths were identified in reports

- Areas of distinction and special competence include recognition from the American Institute of Physics for awarding the most undergraduate physics degrees in 2007 to 25 in 2014 and an estimated 35 in 2015). The Department also received two grants from the American Physical Society (APS) to increase the number of qualified high school physics teachers through Physics Teacher Education on a Phystec, and to increase underrepresented minorities (ethnic and racial diversity) in physics PhD programs (APS Bridge). As a result of their successes in improving the program to foster increased student success, the Department earned the Award for Improving Undergraduate Education from the American Physical Society.
- External reviewers also note that the Department has excelled at the feat of balancing a successful Physics masters and a successful undergraduate program. The

number of graduates from both programs is high in comparison to other Physics programs nationally. The quality of the programs is also high, as evidenced by the high rates of acceptance of the graduates into PhD programs.

- The faculty has also been a leader in improving student learning through instructional technology. A primary example is Koondisi asynchronous online group collaboration platform developed by the faculty to engage students in team learning in large GE courses. The Koondisi initiative has been a Chancellor's Office (CO) Proven Course Redesign project since AY2014-
- As stated above, in response to the need to increase the number of qualified high school physics teachers, the Department received the award (PHY20002013) from APS (American Physical Society) and has built a physics teaching network for physics majors, single subject credential students, physics and science education faculty, and teachers in LA and Orange counties. Two courses (PHYS 390) were added to provide students with pedagogical training and incentives for training future teachers.
- The Department also partners with the Bridge program, funded by NSF (National Science Foundation), to increase the number of California university students completing their bachelor's degree and successfully entering Astronomy Ph.D. programs; as a result three CSULB students have been selected as Bridge Scholars (30% of all Bridge Scholars).

Areas of Concern/Opportunities were noted in the reports

- At the time of the review, Program Mission and Student Learning Outcomes were not readily accessible on the program webpage.
- While there has been some fluctuation in the number of undergraduate non-FTEs (from a low of 464 in 2010 to a high of 532 in 2014), the percentage of non-FTEs has actually decreased from 93.9% in 2007 to 89.4%. In regard to majors, the percent of FTES has tripled from 1.9% in 2007 to 5.5% in 2014. Applications and Headcount of undergraduate majors were also on the rise at the time of the self-study.
- The number of faculty in the Liberal Studies Department dropped significantly since the previous reporting period, concurrent with the drop in FTES. They are the mainstay of the department.

of Program Review and Assessment. The next review cycle will be seven years beyond your previous external review from 2018-2023. A comprehensive self-study will be due June 2023 for a 2023-2024 Academic Year review process.

2. Develop an Assessment Plan of the SLO Map to include systematic assessments across the curriculum of student work; rewrite student learning outcomes and objectives using active and measurable terminology;
3. Develop measures to assess the MS in Physics program
4. Implement the assessment plan for the new MS in Professional Physics
5. Work with the College to address the issue of unmet demand for undergraduate offerings; consider the appropriate balance between General Education and major offering.
6. Update department website.
7. Work with the College to develop a plan for hiring future faculty as resources permit.

This MOU has been read and approved by:

Physics & Astronomy Department Chair: \_\_\_\_\_ Date: \_\_\_\_\_  
\_\_\_\_\_ Andreas

College of Natural Science and Mathematics Dean: \_\_\_\_\_  
Date: \_\_\_\_\_  
Curts Bennet

Vice Provost Academic Programs