Physics, BA (PHY) Baccalaureate Degree

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ACADEMIC YEAR COVERED BY THIS REPORT: 2021-2022

I. PROGRAM LEARNING OUTCOMES

Graduates will be able to: • Apply and integrate sound knowledge of multiple core areas of physics including mechanics, modern physics, electricity and magnetism, optics, and instrumentation (Outcome 1). • Demonstrate the design, completion, and analysis of fundamental physics experiments (Outcome 2). • Analyze and communicate physics knowledge and problem solving skills effectively in multiple oral and written representations (Outcome 3).

II. PROCEDURES USED FOR ASSESSMENT

A. Direct Assessment

In the spring of 2019, the current Physics Department became aware that there had been no previously developed assessment program for the B.A. Physics degree program. The Department is currently endeavoring to develop a plan for direct assessment of the program. This effort was significantly delayed due to complications and work load associated with the COVID 19 pandemic especially as the department's undergraduate committee had planned on devoting considerable time in the spring of 2020 to working on this issue. This issue is complicated in that there are two tracks within the B.A. Physics program that students can complete. One is the traditional B.A. program and another is the Physics Education Concentration which prepares students to become high school physics teachers. The American Physical Society (APS) is currently finalizing the Effective Practices for Physics Programs (EP3) Project. EP3 will provide a guide for self-assessment of undergraduate physics programs founded on documented best practices linked to measurable outcomes. The American Physical Society (APS) is a nonprofit membership organization working to advance and diffuse the knowledge of physics through its outstanding research journals, scientific meetings, and education, outreach, advocacy, and international activities. The WSU Physics Department is committed to developing and utilizing an assessment approach that is viewed as the gold standard, as outlined in the EP3 guide, as regarded by the

national physics community.

B. Scoring of Student Work

Per the department's efforts to develop a direct assessment plan for the B.A. Physics degree, how direct assessment will be quantitatively scored is a work in progress. In the absence of a standard assessment procedure, it just so happened this year that the BA student presented a senior thesis, so we were able to use the rubric designed for the BS Physics program. Rubric is attached. Regarding the assessment procedure, the rubric does not line up exactly with the learning outcomes. To make them line up, Outcome 1 will be evaluated by scores on the "Content" row of the rubric. Outcome 2 will be evaluated by the rows "Organization" and "Questions". Outcome 3 will be evaluated by the row "Language Use". Regarding the assessment procedure for direct measure, the surveys were summarized by assigning the following scores for each outcome: exceeds standard = 4 meets standard = 3 nearly meets standard = 2 does not meet standard = 1

C. Indirect Assessment

Exit interviews with recent graduates will be used to measure all three outcomes. Every third year an alumni survey will be conducted. Assessment of the program will also be accomplished indirectly via tracking outcomes of the current academic year's graduating seniors in regard to career trajectories.

III. ASSESSMENT RESULTS/INFORMATION:

1. Direct Assessment 2. Indirect Assessment

1. 1 student was evaluated. Outcome 1: 3.93, exceeded standard Outcome 2: 4, exceeded standard Outcome 3: 4, exceeded standard The BA Physics program was successful in meeting its objectives for the 2021-2022 academic year. 2. 1 student received the B.A. in Physics during the 2021-22 academic year. This student is currently employed full time at WPAFB.

1. None 2. As none of these students are currently in positions that directly utilize physics skills, no analysis in relation to learning outcomes can be done at this time. If and when the 3 teachers-in-training receive physics teaching positions, such analysis would be appropriate.

IV. ACTIONS TO IMPROVE STUDENT LEARNING

These results were shared at a faculty meeting. As mentioned, a more tailored assessment plan for the BA program is under development. The Physics Department Undergraduate Studies Committee (USC) will gather, analyze and summarize all assessment data and information. Based on its findings, recommendations for improvements in meeting objectives and learning outcomes will be made by the USC and communicated to the entire faculty. Results from the prior academic year will be presented to the department in the subsequent fall annually. Every three years, an alumni survey will be conducted. Based on the outcome assessments and the alumni survey, a summary of recommendations will be compiled every three years.

V. SUPPORTING DOCUMENTS

Additional documentation, when provided, is stored in the internal Academic Program Assessment of Student Learning SharePoint site.