

Weber State Physics Department Program Review 2019
Departmental Response to Review Team Report

The department would like to thank the review team (Hagen, Herzog, and Toberer) for their efforts in learning about the department and preparing their report. We particularly appreciated the opportunity to spend as much time with the team as we did on their visit of March 19, 2019. It's a testament to their general accord with our department that many of the strengths they identified (faculty commitment to teaching, accessibility of faculty and individualized instruction for majors, responsiveness to University requirements and initiatives, a long history of enthusiastic outreach, etc.) are things that we have identified in previous self-evaluations. Additionally, many of the questions the team proposed or suggestions for discussion align with our own internal conversations, either ongoing or nascent. Those questions will be addressed below, roughly in the order they are raised in the report.

The question of adequate credit (both for students and faculty supervisors) for undergraduate research is an important part of the ongoing discussions at the College level regarding faculty workload, and adequate support for research efforts within the College from the University. Since these issues are common across all CoS departments, it's appropriate for discussions to take place among the CoS Administrative Team and for policy recommendations to come from that group. Perhaps the unusual element for our department is that a large number of our undergraduate research students are also paid as hourly employees. That issue will be brought to the attention of the Administrative Team. It's also important that the department continues our discussion about research expectations for students, and that students are advised properly about their options for participating in research. Research is an important part of our students' scientific apprenticeships, especially as we require each student to present their own research in a senior seminar.

The question of adequate recognition of, and support for, our extensive outreach programs is a timely one. We have been commended by the College and University for our programs but these are essentially unfunded. With increased demands on our time from other areas and other University initiatives, we could be facing some tough decisions. Nonetheless, faculty and students in the department remain passionate about many of these programs. We'd like to work with the College and University on developing a model for sustainability of our outreach programs, especially as these align with our mission, recruitment efforts, and a general support of scientific literacy writ large.

The reviewers have suggested that we consider some revisions to our teaching methods, including the suggestion of more "student-centered" approaches, based on information we provided in the assessment portion of our Program Review Self Study and the brief conversations the review team had with our students over lunch. We'll address revisions in the paragraphs that follow. First, though, this prompt from the program review team has made us reconsider both our assessment and advising procedures. In collecting data and documenting our programmatic revisions for purposes of assessment, we haven't made clear how our approaches and updates to those have been student-centered (or otherwise a practice shown to have "high impact" or engagement). We'll rewrite charges to the department assessment committee accordingly so that we can better document the engaged practices in our courses and share them with one another and a broader community. With regard to advising, it seems that we haven't made clear to students in our program why we have designed some of the courses and the complementary experiences in those courses the way that we do. Hence, this directive is a reminder to make clear for students *why* we are recommending a particular course or a sequence of courses at a

particular point in their journey; we see no harm in letting students see more “under the hood” of our curriculum.

In terms of revision, a core group of faculty in the department is going to be working together on updates to our PHYS 1010, *Elementary Physics*, course. This is a course that’s already popular at WSU compared to other institutions, serves as a recruiting vehicle for our programs, and is regularly taught by a group of faculty already regularly sharing ideas for the course. We are poised to experiment with this course and make a contribution to the science of teaching and learning as it applies to this course. Improvement of student experience in this course will also fit into the current WSU emphasis on student experiences in courses they are likely to take in their first year.

In our upper-division courses, small class sizes have allowed us to complement lecture elements with project-based, laboratory, or course-based research experiences. Nearly half of the upper-division curriculum is already laboratory-based, and “lecture-based” courses employ various levels of interactivity, ranging from student projects and presentations to one-on-one work with faculty. We still continue to revisit and revise our methods in these courses, and document those in our ongoing assessment, as we suggest above.

For our 2000-level five-credit-hour service courses, we want to assure the reviewers and the University that we are well-versed in the literature regarding teaching practices in these courses, and furthermore that we are, as a group, constantly updating and revising our practices in those courses based on that literature, a sharing of ideas at the department level, and individual self-assessment. We welcome more discussion with College colleagues teaching parallel courses, particularly in Chemistry and Mathematics. All of this revision to our service courses takes place within the constraints of the programs those courses serve, University requirements for PS courses, and articulation agreements from the USHE system.

We recognize that the suggestion of pedagogical revision is, in part, made with an eye toward recruiting more students into our major programs. For students already at WSU, this means that activities in foundational courses that enhance learning in those courses should also serve as advertisement for opportunities in higher-level courses. We have incorporated “field trips” to our research labs for both our general education courses and introductory labs, as an example. Recruiting students to our programs who are not yet committed to seeking a degree at WSU, which helps achieve University goals for growth, is a more multifaceted process. This broader recruitment effort requires not just making our courses as inviting as possible, but making the whole department available through our community outreach events and full participation in WSU recruiting efforts, efforts which we plan to continue. Highlighting faculty and student accomplishments in the department could help us better compete with physics programs at other universities.

We are having internal discussions about possibilities for new degrees and certificates in the department, particularly the Materials Science cross-disciplinary program and the Engineering Physics degree mentioned by the review team. Some details on the possibility of an ABET accredited Engineering Physics program are provided as an appendix to this document; we had already looked at this program because of anticipated workforce trends at Hill Air Force Base. Worth briefly noting here is that the addition of the Engineering Physics degree could be contrary to the more general suggestion of streamlining our degree programs to allow for more timely completion of degrees. We expect to prioritize a direction for additional curricula in the coming academic year.

After receiving feedback regarding advisory groups, the department in 18/19 went back to the design stage, went through the exercise of redefining the advisory group's purpose and has written and adopted a new charter for the advisory group. We expect this will facilitate a closer working relationship with the group in the future, in keeping with the recommendation of the review team.

Finally, we thank the team for recognizing the challenges we are facing with regard to overall support for both our major and service programs. We hope to use recommendations from this report to make a compelling argument for additional resources while at the same time exploring ways to make more efficient use of existing resources.