

**Physics Department
Response to Review Team Report
April, 2013**

Overview

The department is grateful for the hard work and many insightful observations of the review team. In fact, we wish we could have spent more time with them. The combination of the one-day schedule, the all-external team, and the amount of time spent by the team with the dean left several of us feeling we had inadequate time to educate the group about all the things going on in our department. Much of the time and effort went to orienting the team to WSU and its students. As the review team pointed out in its report, we did not have the time to adequately discuss our Physics Teaching major. They also noted that “[d]ue to the limited duration of our review, some of these [pedagogical] techniques may be used more in the department than the self-study and our interviews led us to believe.” We recommend a two-day visit for future reviews, especially if the review teams are entirely extramural. Perhaps a member from WSU but with no previous connection with the physics department would be of benefit.

Teaching

We agree with the review team that our faculty is committed to quality teaching. While the team felt that the fact that “half the faculty have been teaching for 20 years or more” was an entirely negative attribute and cause of their “greatest concern”, we think it also speaks to an enduring focus on WSU’s primary mission of teaching and our ability to attract and retain physicists committed to that mission.

The fact that the review team saw “little evidence of innovative pedagogy” is, in retrospect, in large part due to a poor job that we did showing them all of our pedagogical innovations. We have a long history of innovating and participation in the scholarship of teaching physics. Current examples include hybrid online/face-to-face courses, “flipped” classes, at-home laboratories, integration of animated demonstrations into courses, and an extensive video collection of demonstrations that are used in interactive engagement settings advocated in physics education literature. This year alone, Stacy Palen, a faculty member just promoted to full professor, was commended as part of her evaluation for promotion for her innovative teaching; Adam Johnston received the Governor’s (UT) Medal for Science & Technology, in the Science Education category.

We recently completed a restructuring of our curricula to include multiple degree paths and opportunities for student engagement (detailed in our self-study), motivated by both our internal discussions and a careful study of trends in physics departments nationwide. In addition, our Applied Physics degree was specifically adjusted to meet the needs of regional industrial employers.

Research

We wholeheartedly agree with the team’s determination that we are short of dedicated research space. Addressing this deficiency is the highest priority for the department in the new science building. We also agree that it will be difficult to compete with peer institutions unless we are able to offer significant start-up packages (funding as well as space) to new faculty. In short, we feel that, in order for us to engage in more research and scholarly activity, the level of institutional support will need to increase as recognized by the review team.

We agree that we need a discussion about the meaning of “research,” probably at the college level, in order to define goals and make sure junior faculty are retained and are able to advance. An eye-opening part of this report was that our students probably have a narrow view of what “research” means, as they gave the impression that only a few experimentally minded faculty were actively engaging students in research projects. We clearly need to raise the profile of our less

obviously visible research programs, such as John Armstrong's computational studies of planetary systems, Adam Johnston's educational research, and Dan Schroeder and Farhang Amiri's recently funded Beishline fellowship project.

Service

The review team final report contains very little about service in which the Physics Department is unusually active. This includes outreach work through the planetarium, the Open House, and Science in the Parks, but also service to other communities. Dr's Johnston, Sohl, Ostlie, and Inglefield all have significant commitments to the College of Science. Dr's Inglefield, Armstrong, Palen and others are very active in Faculty Senate and its committees. We also serve the profession in various capacities: as editors of journals, conference organizers, and committee members for multiple professional organizations.

Our faculty hold in common a clear dedication to service to make change in our communities. This is not an accident. This value is a significant strength of the Department. Thoughtful and conscious decisions about the allocation of effort, including the relative value of service contributions, are essential to long-term planning.

Assessment

Here we agree with the overall observations of the review team, that our assessment has been somewhat reactive, focused on producing documentation for external deadlines. We feel that we can be more careful in planning for assessment and developing assessment strategies. The fact that we have just recently completed a major revision of our curriculum and lessons learned from our participation in the "Tuning" project make this an excellent time for our department to do some longer-term planning for assessment and, as the team suggested, separate in our own minds course-level assessment and program-level assessment.

Response to Recommendations

1. Insist that the plans for the new science building be revised to ensure that the department will have adequate space to meet its current and anticipated future needs.

Colin Inglefield serves as the representative for the department on the COS building steering committee. It is likely that no one on that committee would consider him anything but a vocal advocate for the needs of the department. The entire department has been engaged in the building programming process. The new building, as it is currently proposed, will increase the dedicated research space for the physics department. It's worth noting that the additional research space is probably still below the recommended minimum from the review team and that the studio classrooms suggested could not be included as very little classroom space is included in the proposed new building. At the time of this writing, no classroom space has been allotted to the physics department in the new building.

2. Develop a 5-10 year strategic hiring plan to expand the depth, breadth, diversity, and expertise of the faculty...

The department has been discussing priorities for upcoming hires, and has identified several short-term needs: an instructor-level position to work with our introductory lab program; at least one more experimental physicist who will contribute to the materials and/or applied portions of our program (see the next item); and an astrophysicist who will help maintain our strong reputation in this field that is so critical for student recruitment. As always, our highest priority in hiring is a commitment to WSU's primary mission of teaching and an ability to expand the opportunities available to our students. We agree that it would be beneficial to look a little further into the future and to formalize our priorities into a written plan.

3. Initiate a search next year, then replace retiring faculty immediately.

The department submitted requests for two positions next year, a tenure-track faculty line and an instructor-level position to help with our introductory lab program. Both requests were denied. C'est la guerre.

4. Develop an agreed-upon definition of the term "research" that the department and college can use for planning purposes...

We think this is a useful discussion to have, although it might be broader than just defining a word. In particular, we should develop some meaningful criteria for when the supervision of undergraduate projects is to be considered "research" and when it is to be considered "teaching," as well as how to couch extensive community service work with students. This would need to be a discussion at the college level. A committee is currently looking at revising our college tenure document, and they may provide some guidance on the issue.

5. Develop and implement a long-term assessment plan for program-level assessment...

We agree. Program-level assessment could also be facilitated through a revision of our capstone PHYS 4990 course. We are already at a point where we are discussing different ways to teach that course to accommodate the high number of students we often get in the spring semester. We will be looking at that course in the fall of 2013 with an eye towards some degree of revision in spring 2014. Another thing we continue to work on is better tracking of what becomes of our graduates and how our curriculum meets their needs later in their career pursuits. Adam Johnston will be taking the lead on developing a more strategic approach to assessment overall.

6. Increase the number of faculty attending meetings and workshops to remain current...

We actually do an excellent job, especially relative to the university, of attending meetings for research and professional development at the national level. In addition, we have a strong recent history of participation in, including hosting, regional meetings for both teaching and research. We would attend more meetings if the department was given funding dedicated for that purpose.

7. Expand the department's recruiting effort to improve diversity and the number of calculus-ready students...

Two members of our department (Adam Johnston and Dale Ostlie) were heavily involved in writing the recent college proposal to the NSF's STEP program. This is a major college-wide effort and the next steps will be determined by the response to that proposal. Whatever we do, we must keep in mind that attracting only calculus-ready students would not serve the entire "dual mission" of WSU. The issue of diversity among students is an institutional one, but one that is improving.

8. Increase recognition of faculty who supervise undergraduates within a research setting.

We agree with this, as resources allow. A different workload model for faculty supervising student projects would be of particular benefit. Such a model was recently proposed at the college level but was not supported outside of a small number of departments, including physics. We also need to do a better job to improve the visibility of our non-laboratory-based student research projects, for example through the department seminar series.

9. Encourage students to apply for summer research programs such as NSF's REU ...

We agree. In the past we have devoted some of our departmental seminar time to presentations for our students dealing with research opportunities within the department, finding a

job, or getting into graduate school. We should expand this list to include summer REU opportunities and perhaps other, less traditional, summer opportunities, such as community service.

10. Form an advisory committee composed of representatives from local industries who have interests in a physics-educated workforce.

This is an intriguing idea. We would be willing to have one faculty member take the lead on this recommendation and help provide some initial momentum if there were an appropriate amount of release time given.