



# *Astronomy Department*

## *University of Washington*

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March 23, 2011

To: James Antony, Associate Vice Provost and Associate Dean, the Graduate School

From: Suzanne L. Hawley, Professor and Chair, Department of Astronomy

Re: Department of Astronomy response to 10 year review committee report

We received the committee report from our recent 10 year review on February 8, 2011, only two weeks after the review committee site visit on January 24-25, 2011. We very much appreciate the quick response and extensive time and effort that has obviously gone into this thoughtful document, as well as into the preparation for the site visit, and the successful two days of meetings in the department. The department report that we prepared for the committee was meant to describe both the strengths and weaknesses of the department. The committee mentioned many of our strengths, including our outstanding research efforts which place us among the top ten astronomy programs nationwide, our teaching programs at all levels, and our diversity and outreach activities. They also pointed out some of the weaknesses we were aware of, such as the lack of a clear understanding of the research faculty position in the department, and some that were still in our collective subconscious, such as the detrimental effect of a particular physics class on our majors, the need for pointed research focus in our LSST effort, and the lack of a visionary hiring plan for faculty renewal in the next decade. Since receiving the committee report, we have had two faculty meetings and a departmental meeting to discuss various aspects. Of necessity, some of the discussion is ongoing, so some of our responses are still preliminary. However, we believe that we have already made good progress on many of the items that were raised. Below, we respond to each of the individual findings and recommendations that the committee delineated in its report.

### Undergraduate Major

1. The department should have discussions about Physics 227-228 with the chair of the Department of Physics in order to better understand how the course is being taught and, to the extent reasonable, to provide input, given how significant this entry course is for timely completion of the upper division physics courses needed to perform well on the GRE.
2. The department should assist Astronomy majors in their preparation for the Physics GRE by helping them set up study groups, perhaps with the aid of a graduate student.
3. The department should take steps to raise the graduate school ambitions of Astronomy majors, for example through opportunities to meet as a group with faculty who visit from other universities with highly ranked programs.

Response:

These are very helpful suggestions, and we are particularly grateful to the committee for pointing out the issues with Physics 227-228. We have already begun discussion with the Physics department about this course. The Physics department is also concerned about the GRE preparation and we are planning to work with them to implement a study plan for Physics and Astronomy undergraduate majors. We do have a formal program for our graduate students to meet with visiting colloquium speakers, and we will engage our undergraduates in discussion to determine if they would take advantage of a similar (separate) opportunity.

#### Graduate Program

4. The department should upgrade its TA training for graduate students, including a more focused, full day of TA preparation in their initial orientation program paired with follow up evaluation and mentoring during subsequent quarters of service as TAs.

Response:

This recommendation has elicited much discussion already, including a full departmental meeting to discuss the TA situation in our ASTR 101 and ASTR 150 courses. We do teach a course (ASTR 500) which is meant to provide training during the first quarter that a student is a TA. However, graduate enrollment in this course has been very low for the past few years. We are investigating how to reinvigorate ASTR 500 so that it can better address many of the concerns. The graduate students have also suggested that they would like to run a three hour session during our orientation (before fall quarter starts), where they would provide hands-on advice for getting through the first few classes, how to put together a syllabus, etc. The information will also be stored on a wiki for easy updating and accessibility. The older students who run the orientation would then be available for questions throughout the quarter. We plan to implement these initial graduate student suggestions starting in Fall, 2011. In addition, we plan to emphasize evaluation of TAs in recitation/lab sections to promote more frequent faculty mentoring and feedback.

#### Diversity and Outreach

5. The department should work with advancement officers, the Dean's Office, the Provost's Office, and the Office of Minority Affairs and Diversity to establish a more secure long-term funding base for the department's innovative and successful Pre-MAP.

Response:

We wholeheartedly agree with the goal of establishing secure funding for Pre-MAP and will continue to work with the offices mentioned in pursuit of this goal. We are gratified that the review committee recognizes the importance of Pre-MAP to the department.

### Advancement

6. The department should establish funding priorities at a range of price points, from \$10,000 to \$10,000,000, in coordination with college and university advancement officers, in preparation for the university's capital campaign.

7. The department should work with the Dean's Office and University Advancement to identify opportunities for effective faculty engagement in outreach and advancement activities.

#### Response:

The department development committee, chaired by Professor Connolly, has now prepared a list of funding priorities that is being considered by the full faculty. We expect to present this to the college advancement officers in the near future. We are also aggressively pursuing our outreach activities, with several planetarium events coming up this spring – for donors, for the general public, and for people within the University.

### Research

8. The faculty should decide which key scientific issues addressable by LSST and CCO are of highest interest and then use this to drive the planning for both new faculty positions and research resources. The necessary planning process, perhaps best done in a one-to-two day retreat, should also take into account the future use of the 3.5 meter telescope, including any instrumentation needs or changes in its mode of operations. Additional outcomes of the process might be a list of needs that can be addressed through advancement efforts and an indication of which departments are likely to be critical to the strategy, Physics and Computer Science and Engineering for example.

9. The department should identify the fields of theoretical astrophysics most relevant to their science goals, then work with the Physics chair (and the INT Director) to discuss common goals that would strengthen all parties. The points of common interest for theoretical astrophysics efforts across such a department boundary have historically been in cosmology, supernovae/transient science, and compact objects/gravitational waves. Independent of cooperation with Physics, the department needs to make progress on this.

10. The department must take a leadership role within the Astrophysical Research Consortium to identify a vision for the broad future of Apache Point Observatory that is both consistent and integrated with the department's research goals.

#### Response:

We very much appreciate the review committee's advice on focusing our research plans for the future. At an initial faculty meeting to discuss the committee report, there was much enthusiasm for a retreat away from the University, where we can take more time in a less rushed environment to talk about our future plans. Already, we have made some progress in the two faculty meetings we have had. Both multiwavelength science (using the 3.5m and other ground-based telescopes and space missions) and transient/variable object science are being discussed as major research areas for our LSST effort. On the theoretical side, there is widespread support for a stellar/ISM theorist (perhaps centered around star formation as incorporating both areas) and also for cosmology which would be a natural overlap with Physics. Professor Hawley has volunteered to serve on the ARC futures committee which is now considering proposals for the

post-SDSS-III era and the role of the 3.5m telescope in the future of APO. Professor Anderson is the PI of one of the post-SDSS-III proposals for transient/variable science which would fit very well with our proposed LSST focus.

### Faculty

11. The department should establish a focused plan for the next decade of faculty hiring that aligns with its strategic goals, so that it can manage the renewal of its faculty, an especially critical task given the likelihood of four significant retirements during this period.
12. The college and university should enable such a planning process, allowing the department (jointly with Physics) to build a core of at least 15 regular faculty in astronomy and astrophysics over the next decade so that it cannot just maintain its current status, but achieve more.
13. The department needs to adopt and clearly communicate a policy on hiring research faculty, an initial step being to normalize the discussion through a survey of other institutions that have incorporated large research projects into a department culture.
14. The department should provide mentoring to the mid-career faculty who are emerging as departmental leaders in order to prepare them to guide the department during the next decade and beyond, so that it is positioned to take best advantage of the opportunities that will arise.

### Response:

Again, we express our appreciation to the review committee for highlighting our need for faculty renewal in the next decade. While we had been operating from a discouraged position due to the current budget climate, the committee report has provided excellent impetus for us to move forward expeditiously with a hiring plan. We envision four hires in the next decade, to replace the four retirements, and several additional hires (possibly joint with other departments) to bring us to a critical mass of 16-20 faculty in astronomy and astrophysics. As pointed out by the committee, this is the level needed to take us from a top ten department to one of the very best programs in the U.S. and indeed the world. We will discuss the decade-long hiring plan in detail at our faculty retreat, but in the two recent faculty meetings, we have already reached agreement that our most immediate need is to hire in theory. Given our strong desire to cement ties with Physics, and to maintain our scientific breadth, we will focus on cosmology and radiative processes (ideally stellar or ISM). Subsequent hires will ensure that we maintain our lead in the subfields in which we are currently world-class (astrobiology, survey science, and numerical astrophysics). Good candidates for joint hires would be with ESS (astrobiology), Computer Science and Statistics (survey science), and Physics (numerical astrophysics).

The committee discussion and report has helped to crystallize our thinking about the research faculty (and associated research scientist) issues. We are investigating the situation at other institutions, as well as at other departments in the College and University, as recommended. In our most recent faculty meeting, we agreed that the first step is to understand how many research faculty we would ideally like to have in the department. If we decide to hire additional research faculty, we will clearly communicate that this means there will be a nationwide search, and that being at the UW is in no way a promise that current postdocs and/or research scientists will be hired. Both faculty (who are presently employing postdocs/research scientists whom they wish to keep here) and the postdocs/research scientists themselves must understand these ground rules before we proceed with any hiring. In addition, new postdocs arriving at the UW will have a

meeting with the chair where these expectations are made clear. We are also discussing with the College the pros and cons of long-term PI status for research scientists.

Mentoring of mid-career faculty is clearly essential for the continued success of the department, and we are fully in support of this recommendation and will quickly move to implement it.

#### Formalities

15. The graduate and undergraduate degree programs should be continued

16. The next program review of the Department of Astronomy should be in ten years.

#### Response:

Thanks again for all your efforts on our behalf. The last ten year review, in 2000, was instrumental in growing the program to its excellent position today, and this current review should propel us to even greater heights in the next decade.

#### Addendum: Response to GPSS report

We also thank the representatives of the Graduate and Professional Student Senate for organizing the graduate student survey, and attending the graduate student session with the review committee. Much of the discussion and survey results overlap the committee report, reflecting the generally happy and satisfied nature of our students. It was very interesting for us to receive feedback from the few students who did report on some challenging aspects of their graduate experience. The department leadership has discussed the report in detail with the (elected) Graduate Student Representative, Cliff Johnson. As mentioned above, we are actively pursuing the issue of better TA training, incorporating many suggestions that the graduate students themselves voiced at our recent departmental meeting. At a separate faculty meeting, we talked about the issue of student access to their faculty advisors, and the need for scheduled meetings preferably weekly, so that students can receive the attention they need and deserve. In addition, the faculty has begun discussions to formalize curriculum options for students who wish to pursue additional coursework in support of astrobiology, survey science, and/or numerical astrophysics. We also note that the fairly widespread frustration expressed by the graduate students about having a limited pool of advisors will be alleviated by the hiring plan we have outlined above. We will monitor the results of these new policies and continue active communication with the Graduate Student Representative to address these and any other issues that arise.