

## Whitman College Dept. of Physics - 2010

### Scholarship Guidelines for Tenure Track Faculty

The Department of Physics expects each of its members be an excellent teacher, an available and understanding advisor and mentor to many students, and a productive scholar who is active in his or her discipline of inquiry. The Whitman College Faculty Handbook articulates the expectations for faculty seeking to demonstrate excellence in research as part of their formal reviews for tenure and promotion. With this in mind there are important and special challenges related to combining science teaching and research at an elite liberal arts college. This document is intended to offer some guidelines for the junior faculty member working to establish an excellent research program in the Physics Department at Whitman.

A junior faculty member working toward tenure and promotion should keep in mind several guiding principles when developing a research plan. First, each faculty member must recognize the way in which models for research differ between a research university and a small liberal arts college and adapt their activities appropriately. Second, while publication and other forms of scholarly discourse are necessary for promotion and tenure, other factors such as student involvement in research are also highly valued. Finally, the faculty member must meet these aforementioned challenges in light of the high teaching demands and relatively limited resources available at a liberal arts college.

#### 1. Models for Research in the Sciences

Rather than encouraging a "one-size-fits-all" approach to scientific research, the Department recognizes that a diversity of approaches is valuable to the faculty, students, and more generally the College. Hence the Department encourages each faculty member to evaluate his or her personal strengths and interests to find the approach to scholarly engagement that works best given the available resources.

A range of research models exist depending on the nature of the research pursued by the junior faculty member. A successful program might involve a significant on-campus research laboratory relying on undergraduate student participation in the form of summer research assistantships, honors theses, and independent study projects. At the other end of the spectrum, the faculty research program may include few undergraduate participants due to the advanced nature of the work or the utilization of facilities and collaborators at other institutions.

Comparing these two models, research with extensive student involvement will proceed more slowly than research carried out with more mature collaborators. Further, the faculty member at Whitman will need to assume the roles of technician, support staff, purchasing agent, and student mentor for his or her program. In contrast, an effective collaboration with an active R1 University researcher will permit a faculty member to focus more directly on the research question. The pace of progress will be faster in these situations where the faculty researcher may have access to graduate students or other support staff.

Despite the challenges of establishing and managing a research laboratory at Whitman, the Department feels that encouraging such work is advantageous both to our students and to our scientific communities. If we do not, our undergraduates may lose out on the early stages of the scientific apprenticeship, missing opportunities to engage in research, which seeks to expand the boundaries of what is known. The junior faculty member choosing to integrate undergraduate students fully into their research program will likely have a decreased output of professional results compared to other models. However, publishable research with undergraduate student co-authors is highly valued at Whitman because it ties directly to the College mission to encourage our students to, “develop capacities to analyze, interpret, criticize, communicate, and engage.” The Physics Department considers these types of publications to be the strongest evidence of a successful research program.

To recap then: there are different models for successful engagement in scientific research at a liberal arts college. The goal of this document is to recognize that diversity and make explicit the need to provide support and encouragement for a range of different styles in approaching scientific scholarship. It is clear that some faculty members in the sciences are engaged in outstanding scholarly work without the involvement of undergraduates.

## 2. Components of Scholarship

### a. Publication

Although the rate of publication will be more modest for science researchers at liberal arts colleges than it is for university researchers, the Department recognizes the many benefits of publication-quality research and thus expects its members to achieve peer-reviewed publication, including print and electronic journal articles, chapters in books, entire books (including textbooks), and contributions to science literature for wider circulation (books, magazines, web encyclopedias, etc.). However, given the widely varying time and resource requirements for these different types of publications, the Department cannot recommend a numerical minimum requirement for the number and type of publications necessary for tenure and for further promotion.

### b. Grant Writing

Although publication should have a special importance in faculty evaluations of scholarship, the Department emphasizes that other forms of scholarship are valuable and even comparable to peer-reviewed publications. One such form is the peer review of grant applications. Grant writing is a very time-consuming process requiring considerable expertise and insight into one's field. Furthermore, given that external funding is so competitive, individual research grant proposals (e.g., proposals to such agencies as the NSF) face review processes equally stringent as those typically involved in journal

publications. In light of these facts, the Department views strong reviews of grant proposals as evidence of significant scholarly work. Receipt of external funding represents the highest achievement in this area.

c. Presentations, Invited Lectures, Conference Papers, Posters

Presentations, lectures, conference papers, and posters at local, national, and international meetings are valuable forms of scholarship. The Department strongly encourages all forms of professional interaction and considers these activities to be important components of engaged scholarly activity. Cases where an undergraduate collaborator is the primary presenter of the work elevate the value of these activities in the eyes of the Department and Whitman College.

d. Editorships

Editorships of professional journals and newsletters are worthy scholarly activities, however, not to the exclusion of original work, which furthers the knowledge base in one's field. Typically, editorial positions are held by those academicians who are already recognized as major contributors in their field, and the College should also recognize this achievement.

e. Reviews of Grants and Manuscripts

As with editorships, invitations to review grant proposals, manuscripts, and books are indicative of a level of accomplishment which the College will likely have already recognized. Nonetheless, the work involved in these reviews should be considered valuable scholarly activity.

f. Pedagogy

There is a growing recognition within the physics academic community that the people best prepared to conduct research on physics pedagogy are physicists themselves. This field has become a recognized sub-specialty within physics, which is now represented at most research universities. We consider ourselves to be expert teachers as well as physicists, hence we believe that research in physics pedagogy is an appropriate and valuable scholarly pursuit for our department, and that it should be evaluated according to the same "Components of Scholarship" rubric as any other professional activity.

Faculty progressing toward promotion to Professor in the Department of Physics are expected to continue developing as teacher/scholars. Professional work may take a variety of forms as the faculty member moves through their mid-career years. In some cases, research programs may move to a conclusion and a new direction of study will be initiated. In other cases, a program established prior to tenure will continue to be a fruitful area of investigation. The individual paths of faculty will be unique; however, a successful candidate for promotion to Professor will demonstrate continued success in some, but not necessarily all, of the areas (a-f) listed above.

As the guidelines for promotion indicate, “progress in professional activity should be consistently apparent” in the dossier of the successful applicant. For faculty in the Department of Physics, continued professional activity will be represented most directly by accomplishments in an area of focused investigation during the intervening years after receiving tenure. We acknowledge that a research trajectory may change after tenure. The establishment of a new line of successful inquiry by a faculty member is valued as a demonstration of growth, initiative, and creativity. The success of this work is again evidenced in the manner described above for the pre-tenure faculty. In all cases we assert a broad interpretation of professional activity. We recognize that work related to instruction can be as beneficial to students as any laboratory research program. For example, the authoring of textbooks or the development of laboratory materials requires an immersion into content that is an important overlap between teaching and formal professional activity.

As a faculty member establishes themselves within the Physics Department at Whitman, they will likely become more involved in service activities in relation to the our Department and/or the larger physics community. On campus we would expect faculty to maintain or enlarge their roles in support of student research, student thesis projects, and other independent studies. Because our curriculum is limited in scope, individual interests of students will occasionally require attention from a faculty member. Faculty moving toward promotion to Professor should have a track record of providing individualize research experiences to students majoring in Physics. This kind of work may or may not be associated with the research agenda of the faculty member. The Department of Physics values this kind of mentoring as a vital component of the unique opportunities we offer students at Whitman College. At the regional or national level, a faculty member making progress in their professional field may be involved in support or leadership roles in professional societies such as APS or AAPT. Alternatively, they may serve as a referee for journals, participate in the organization of professional conferences, or serve as a reviewer of other Physics Departments. While any of these activities are indicators of growth, the list is intended to be exemplary rather than exhaustive. All activities related to serving the local and broader physics community indicate a continued growth in professional work that would not be expected of the pre-tenure faculty member.