

Department of Astronomy

Guidelines for the Evaluation of Scholarship in the Department of Astronomy November 2010

Regarding Faculty Handbook Chapter 4, Part C, section 2, "Excellence in Professional Activity"

Preamble:

Research by faculty at the undergraduate level impacts the quality of the educational program. Active scholars pull recent developments from research journals directly into the classroom improving both the depth and breadth of courses. The opportunity for students to be directly involved in research allows learning to occur on different levels: both the theoretical in the classroom and the practical in the lab. The following guidelines regarding scholarly activity in astronomy are intended to be understood in light of our focus on the students and the primacy of teaching for faculty at Whitman.

Conferences are Chap 4, Part C, Section 2, Subsections d,e Evaluation of Conference Attendance & involvement in professional organizations:

In any given month, there are two to five conferences occurring on various (generally quite specialized) topics in astronomy. Some are part of on-going series (e.g., *Cool Stars, Stellar Systems & the Sun* or workshops held by the *Lunar & Planetary Institute*) and others are one-time events. Some are meetings of the Divisions of the American Astronomical Society (history, solar physics, planetary, high energy astrophysics, dynamical astronomy). While attending a significant number of these conferences would be exciting, the time and financial requirements to travel from Walla Walla to Padova (Prague, DC, Houston, Toronto, Bozeman. . .) significantly limit Astronomy Professors' abilities to do such. While not subject to the normal process of peer review, specialized conferences offer the opportunity to directly interact with the scientists who would be the reviewers on a journal article. Additionally, the papers published in the conference proceedings are edited by one of the foremost experts in the field. Thus specialized conference attendance should be given nearly the same weight in judging scholarship as a formally peer reviewed journal article. While astronomy faculty may be involved in different professional organizations, because of the relatively smaller size of the field it is highly likely that faculty will be members of the American Astronomical Society and that organizational involvement in the broader astronomical community will in some way be related to the AAS.

The American Astronomical Society also hosts two general conferences a year. The summer meeting is the smaller of the two and the date typically falls on or around Whitman's graduation. The winter meeting, however, is attended by the majority of

professional astronomers internationally and conveniently falls in the first or second week of January. Due to the large audience, the winter AAS meeting is the preferred conference to present new work, either as a talk or a poster. There is no difference in the scholarly impact of a submitted talk or a poster at a AAS meeting. Presenting work at AAS meetings is not subject to peer review; it does, however, form something of a first informal layer to the peer review process. There is an extremely high probability that the reviewer of any paper will have seen the work initially as an AAS poster or talk. Besides presenting work, the winter AAS meeting provides an ideal opportunity to learn about the most recent research (important discoveries are generally held until the meeting). As astronomy is a fairly young science (really!), large advances are made on a regular basis and the advances announced in January often get incorporated into classes in February. Finally, faculty members and students from every graduate astronomy program, including internationally, as well as representatives of governmental agencies and large corporate contractors are at the meeting which provides an ideal environment to advocate for students applying for graduate school or summer research programs, find grants and funding opportunities, form collaborations, and network.

Abstracts of papers presented at meetings of the American Astronomical Society are published in the *Bulletin of the AAS*.

Beyond involvement in activities of the AAS, astronomy faculty may be asked to be reviewers for grant applications or to provide peer-review for articles by others. Serving as a reviewer or referee, moderating a conference session or serving as an officer in the AAS or one of its divisions, are all valued modes of demonstrating active engagement with the broader astronomical community.

4.C.2.a,b,c

Evaluation of Peer-Reviewed Publication:

Astronomical publication is dominated by three large American journals: the *Astrophysical Journal* (ApJ), the *Astronomical Journal* (AJ), and the *Publications of the Astronomical Society of the Pacific* (PASP); and two European Journals: *Astronomy and Astrophysics* (A&A) and the *Monthly Notices of the Royal Astronomical Society* (MNRAS). Each of the journals has its own specialty: ApJ features more theoretical work, AJ focuses on observational work, PASP often covers papers on instrumentation. ApJ *Letters* are shorter; they offer a significantly more rapid publication venue, an option that was perhaps more important in a pre-digital era. The European journals tend to be more general although MNRAS has something of a theoretical bent. There are also a number of more specialized, newer, and/or smaller journals such as *New Astronomy* or sub-discipline-specific peer-reviewed journals such as *Solar Physics* and *Icarus* (planetary) and the interdisciplinary *Astrobiology*. *Science*, although more typically aimed at biological sciences, occasionally publishes articles in astronomy. Lengthy review articles appear in the *Annual Reviews of Astronomy & Astrophysics* (or companion *Reviews* such as *Earth & Planetary Science* or *Nuclear & Particle Science*). Planetary scientists may also find

their work accepted by geology journals. All of the journals whether the old guard or the newer ones have stringent peer-review policies resulting in a uniformly high standard of quality. Unlike other fields, the scientific merit of a paper does not depend on the journal in which it is published.

Astronomical journals and astronomers by extension use a unique format to cite papers. In general, the format is <Author List> <Year> <Journal> <Volume> <First Page>. Thus a paper might be cited as Musgrove, G., Swampland, N., & Pine, F. 2010, AJ, 235, 1675. Typically, the author list is given in order of effort with the first author being the collaborator who prepared the manuscript. Astronomers refer to papers they have written as “first-author” papers. Occasionally, the second, third, etc. authors will be ordered in terms of seniority, or, on work involving large teams, simply alphabetically. It is also important to note that the page number given is the starting page of the paper. Occasionally people outside of the field ask the question “Why did this person write so many one-page papers?” when viewing a CV; the answer is “they didn’t”.

Also to be noted is the fact that astronomy journals usually have fairly significant page charges for publication, which, unless such costs are covered by a grant, encourages succinct writing.

At large research institutions, it is typical for astronomers to produce two first-author papers a year along with several papers where their name falls further down the author list. This suggests that approximately four to six months of full-time effort is required to produce a paper (ignoring the bias that astronomers who end up at large research institutions are hired, at least in part, because they are more prolific than the average astronomer). Given the balancing act required of Whitman faculty with demands on teaching, advising, community outreach, and service to the College, this suggests that a first-author paper every two to three years is a reasonable scholarly expectation. Advising a student-authored paper requires a similar amount of time and effort, thus student-authored works completed at Whitman should be considered equivalent to first-author work by faculty. Indeed, publication is a near guarantee of admission to graduate school for a student which makes student-authored work preferred when compared to first-author papers by the faculty member, given the teaching priorities of the College.

4.C.2.f

Evaluation of Grants:

While there is a large amount of publically available grant money in Astronomy, a significant amount of it is given to large projects requiring full-time commitments to finish the projects in a fixed time period. This makes it difficult for Whitman astronomy faculty to receive large numbers of grants. The available grants are also extremely competitive: for example, grants to use the Hubble Space Telescope are typically over-requested by a factor of 7-15. As a result, any grant proposals

receiving positive reviews, let alone grants actually received by the faculty, should be viewed in an extremely positive light.