

NAME
BYU Department of Physics and Astronomy
Faculty Development Plan - June 2017

In accordance with the Rank & Status Policy and the Faculty Center, I have prepared this Faculty Development Plan that includes a self-assessment, professional goals, connections to the department and university aspirations, assessment of required resources, progress to date, and measurement criteria to determine future success in fulfilling these goals.

Executive Summary: based on various assessments and CFS expectations, I have identified 7 goals and 22 associated plans in the areas of citizenship, teaching, research, and mentoring that are focused on measurably improving my performance in these areas.

1. Self-Assessment

For clarity, I have divided this self-assessment into citizenship, teaching, scholarship, and mentoring.

1.1 Citizenship Strengths and Improvement Areas

I enjoy serving in BYU and in my professional field. I am willing to accept committee assignments, including volunteering for reasonable extra assignments. I am active in my professional field in serving as journal peer-reviewer, grant panelist, and conference participant.

A citizenship area where I would like to improve is interactions with other faculty in the Astronomy group. So far, I've held back somewhat in order to observe, but now I am ready to engage more deeply, e.g., in leading agenda items at meetings.

1.2 Teaching Strengths and Improvement Areas

Based on self-assessments, unofficial class feedback, and official teaching reviews, even in my first year, I am teaching at an "average" level for faculty in the department. While some students dislike some aspects of my course, others thoroughly enjoyed my courses. I believe that I am following many "best practices" in teaching, such as the use of writing assignments, focus on conceptual understanding, peer instruction, interactive lectures, formative assessments, psychological interventions, and other research-validated teaching techniques. I am effective at incorporating my research into the classroom, including direct engagement of the students in real scientific research as a significant component of my course. (I acknowledge the support of a CPMS High-Impact Teaching Stipend in this regard.) I also actively incorporate spiritually-strengthening components in my classes, which may students find enriching.

Based on self-assessment and student feedback, the main area I need to improve is organization, especially providing assignments to students earlier. So far, all my courses have been new preps and I enjoy developing my own customized curriculum, so this weakness will naturally improve as future courses are able to leverage the existing materials. Still, I would like to actively focus on improving this aspect of my teaching as I make updates to these classes and teach other new classes.

1.3 Research Strengths and Improvement Areas

One of my greatest research strengths is the ability to identify important and tractable projects that are fundable, publishable, and citable. I generally have many good ideas for research projects, including those that involve students (see Mentoring below). With my experience in grant writing and reviewing, I'm able to turn these ideas into good proposals and am regularly seeking funding from NASA, NSF, and other sources. My collaborative network is saturated and there is no need to actively seek additional support there.

To improve my research scholarship, I need to take these ideas to completion (e.g., submission of a paper to a Tier 1 peer-reviewed journal). With multiple projects, I can be slowly pushing forward many projects, but I'd like to work on finishing projects sequentially in order to make more consistent progress.

1.4 Mentoring Strengths and Improvement Areas

Even though I am relatively early in my academic career, I have extensive experience in mentoring undergraduate students and including them in scientific presentations and publications. I already have a solid group of undergraduate students at BYU and have been able to mentor them with the highly-appreciated support of my startup funds and a MEG grant.

The next step is to more actively recruit graduate students. In addition, the Faculty Development Series Spring Seminar has inspired me to add a spiritual component to my mentoring.

2. Professional Goals

Given the areas of improvement addressed above, I have identified the following goals in my faculty development. An overall unstated goal is to maintain the strengths identified above. I have numbered these goals and the associated plans I have to complete them.

2.1 Citizenship Goals

Goal C-1: Increase my support of the BYU astronomy group

Plan C-1a: Encourage the astronomy group to have more regular meetings (~1/month instead of ~1/2 months)

Plan C-1b: Propose and lead agenda items in astronomy group meetings

Plan C-1c: Support the astronomy group by taking on more service responsibilities, specifically 2 Planetarium nights / semester

Plan C-1d: Become fully trained on using the telescopes on the roof of the ESC so that I can support more astronomy activities

Plan C-1e: Visit West Mountain Observatory to learn more about how I can support it and how it can support my research

Plan C-1f: Ask 2 astronomy faculty to watch me teach an astronomy class and provide informal feedback. Do the same for them.

Plan C-1g: Present annually at the astronomy and/or theory group meetings

Goal C-2: Serve in the Planetary Science Community

Plan C-2a: Serve on the Local Organizing Committee for the 2017 Division for Planetary Sciences Meeting in Provo, Utah.

Plan C-2b: Attend ~4 scientific meetings per year (by me or my students)

Plan C-2c: Serve on ~2 scientific panels per year

2.2 Teaching Goals

Goal T-1: Have more organized classes, as measured by significantly increasing the “Well organized” score in my Student Ratings (currently ~3.6)

Plan T-1a: Use existing materials extensively in future classes

Plan T-1b: Give out major assignments no later than ~2 weeks in advance and minor assignments no later than ~1 week in advance

Plan T-1c: Spend time (e.g., 15 mins) on each major assignment to simplify and streamline the instructions

2.3 Research Goals

Goal R-1: Submit 3 journal articles per year to Tier 1 journals

Plan R-1a: Block out a minimum of 30 minutes each day where I work on writing the paper that is closest to completion

Plan R-1b: Block out a minimum of 30 minutes each day where I work on the most urgent research project

Goal R-2: Submit 3 funding proposals per year (unless no additional funding is needed)

Plan R-2a: For every rejected proposal: carefully read the reviews, get debriefed by the Program Officer, make changes, and resubmit at the next opportunity

2.4 Mentoring Goals

Goal M-1: Recruit 1 grad student for Fall 2018 and Fall 2019 and then maintain a group of 2-3 active graduate students

Plan M-1a: All funding proposals will include money to fund graduate students

Plan M-1b: Advertise for graduate students at every conference

Plan M-1c: Visit 2 institutions/year with non-negligible LDS populations, usually in the form of a colloquium, but including a student lunch. Support Eric Hirschman's requests for volunteers to visit other schools.

Goal M-2: Add a spiritually strengthening component to my mentoring as determined by each individual student

Plan M-2a: Ask existing students how they would like to incorporate a spiritual component in their mentoring and implement it.

Plan M-2b: Update my “Best Practices for Undergraduate Research” document to include spiritual components

Plan M-2c: Organize 1-2 brown bag lunches with other Physics faculty (and/or students) to discuss how to incorporate the Spirit in our research and mentoring.

3. Relationship to Department, College, and University Aspirations and Needs

The above goals are consistent with department and college expectations. For example, increasing course organization should improve student ratings, explicitly addressing a known

weakness. The above goals focus on the Mission and Aims of the University. For example, adding a spiritual component to mentoring combines University Mission of “inspired learning” with Aim of “Spiritually Strengthening”.

4. Resources Needs to Accomplish Goals

The main resource needed to accomplish these goals is my time. The reduced teaching load in 2017-2018 will help. Minimizing the teaching of new courses (as is already planned for 2017-2018) will help. Support from the Graduate Student recruitment program will help with Plan M-1c. The already planned startup budgetary support is sufficient for my current needs and goals.

5. Activities so far in achieving the goals

The goals and plans identified in this document focused on the future, so I have not yet completed any explicit plans for these goals. However, writing this document has solidified these goals and associated them with concrete plans.

Some preparation for these goals and plans have already been completed. For example, I already have materials for Physics 227 and 127 that will allow me to post assignments earlier (Plan T-1b). I already have multiple papers in progress where consistent daily writing would be beneficial (Plan R-1a). I have already identified the next several grant proposal opportunities (Plan R-2a, Plan M-1a). I am already working with undergraduates (Plan M-2a).

6. Measuring success

Arguably, the strongest measure of success is smoothly passing my 3 and 6 year reviews. These goals and plans are already well aligned with expectations for faculty in attaining Continuing Faculty Status.

Each of the plans was written as a specific action item where measuring completion should be straightforward. For example, Plan T-1b on giving assignments out with specific deadlines can be assessed as I teach and also retroactively by checking LearningSuite announcements.

For the Goals, success will be measured by:

Goal C-1: complete Plans C-1a,b,c,d,e,f,g

Goal C-2: complete Plans C-2a,b,c

Goal T-1: increase my Student Ratings on “Well Organized” to 4.0 (from 3.6)

Goal R-1: count the number of Tier 1 submitted papers

Goal R-2: count the number of submitted grant proposals

Goal M-1: have 2-3 active graduate students by Fall 2019 and maintain

Goal M-2: complete Plans M-2a,b,c

I believe the completion of these goals, in combination with maintaining existing strengths, will provide significant momentum to successfully completing the 3-year and 6-year CFS reviews.

NAME