

FACULTY DEVELOPMENT PLAN

NAME Ph.D. (Exercise Science Department)

Last Updated: June 2016

1. Teaching

1.1 Self-assessment

Before coming to BYU, I had worked primarily in research positions, with only a small amount of adjunct teaching experience. This past year I taught a section of a class that is also taught by others in the department. I quickly realized that I could not simply copy their material and course structure, but to be effective I needed to tailor the class around my own strengths. I therefore spent a substantial amount of up-front time and effort to organize and develop the class. I am not a particularly dynamic lecturer, but I also don't think that many students thrive in primarily lecture based formats. I decided that I could better utilize my strengths and reach the students interests more effectively if I moved away from the lecture format and structured the course around active applications. I instituted readings and quizzes prior to class time to prepare students, then began incorporating active learning experiences and discussions in class. Over time I feel that I can turn this into a very effective teaching method. My strengths are in guiding student-led discussions, responding to student questions, and in mentoring individual students. My first semester course was slightly disorganized, but my second semester I received very strong student ratings. I was rated particularly high in "helping students who indicate a need for assistance", "demonstrating respect for individual students", "providing meaningful opportunities and encouragement", and in "spiritually strengthening students". The student ratings matched closely my self-assessment.

1.2 Areas of improvement

The student ratings area that was rated below average for me was in "teaching challenging concepts and skills". I attribute this to some learning pains in organizing the course, explaining concepts, and setting clear expectations. I am working to improve these areas in the course development project. I would also like to continue to enhance the course (and future courses) through the goals listed below.

1.3 Teaching Goals:

For the next few years, I will likely be teaching the same course, and I have a number of goals to enhance this course and my own effectiveness in teaching it. First, I have created a clear course purpose and specific learning outcomes as part of the course development project. As I enhance the class (see subsequent goals), I'd like to work toward better aligning the instructional material, activities, and exams with the stated learning outcomes. Second, I'd like to include more active learning experiences and group projects during class time. These take time to develop and implement. Third, as I expand active learning and group work, I'd like to incorporate more advanced feedback and assessment techniques. To achieve these goals, I will continue to work closely with the center for teaching and learning. I have already created my own course reading materials and several in-class activities. I will continue to expand these.

Another teaching goal is to create a new graduate level course in Biomechanics. I have already identified a gap that this course would fill and have begun proposal development. My goal is to have this class approved for Fall 2017.

In all courses that I teach, I'd like to create a spiritually strengthening environment with active learning and discussion, where students of all personalities can participate and learn. One measure of effectiveness in accomplishing this is the percentage of students that are participating in classroom discussions (both as a whole class and in small groups), and is something that I will monitor. The main quantitative metric for assessing teaching effectiveness will be student ratings.

1.4 Outcomes to date

- Created custom course material using Learning Suite.
- Awarded TEG grant to purchase a force platform for in-class projects.
- High student ratings in second semester.

2. Scholarship

2.1 Self-assessment

Although employed by the Exercise Science Department, my background is interdisciplinary, with much of my education coming from Mechanical Engineering. My strengths are thus on the technical side of biomechanics, including methodology, measurement, and tools. I am also very good at study design and technical writing. I feel that the most impactful research in my field will occur through interdisciplinary collaborative efforts, and with my background, I am well positioned to lead some of these efforts. I have begun forming research collaborations with several other professors in my department that have similar interests. I have also sought connections with the Mechanical and Chemical Engineering departments and with the local clinical community. I have structured my research field around a theme, but have allowed flexibility within that theme to increase cooperative opportunities. While there is a danger here in getting too scattered in my research endeavors or try to do too many projects at once, I think the potential impact of collaborative research outweighs these negatives.

2.2 Areas of improvement

Because much of my research involves fairly technical analyses, it may be a challenge for me to involve EXSC students in a way that is mutually productive. Student involvement is addressed in the goals below.

2.3 Scholarship Goals

My first scholarship goal is to develop productive collaborations. I have been fairly successful so far in finding collaborations within my department and a few collaborations in the engineering departments. I'd like to strengthen these collaborations and add new ones, in particular with physicians and therapists in the local clinical community. I will accomplish this through networking and initiating contact with clinicians in the area, inviting them to participate in existing projects, and soliciting new research ideas.

My second goal is to create a productive student centered research program. This year I have begun to involve several undergraduates in my research, most of whom took my EXSC 362 class. This appears to be a good initial recruitment strategy, and I will let each class know of opportunities in my lab

and others. I will also be advising a graduate student starting in the fall (who also was a student in my class). The mechanism that I will attempt to use is to work closely with graduate students, and inasmuch as possible, let them supervise undergraduate students. I have also incorporated a form where interested students can list their contact information and goals. This will allow me to contact them when opportunities arise, and to tailor their involvement to their specific backgrounds and goals.

One action that ties into both of the above goals is the creation of a research group web page that can be used to showcase research projects and collaborative efforts, and highlight student involvement. I hope that this website will increase awareness of our research, to attract collaborations and potential graduate students. My goal is to have the website (footankle.byu.edu) functional after 1 year, and have students help update it as part of their research involvement.

My third goal is to be a productive researcher. I have set the following initial metrics for scholarly productivity: 1) Publish at least one first author paper and one co-authored paper each year (with at least one of these involving student authorship), 2) Secure at least one external grant prior to applying for rank advancement, and 3) Mentor at least 1 graduate student and 2 undergraduate students each year. To accomplish these goals, I will present at 1-2 conferences each year and interact with other scholars in my field, apply for one external grant each year, and attempt to submit a paper for publication every six months.

2.4 Outcomes to date

My first year has been fairly productive due primarily to work that I had initiated in my previous job. Productivity highlights include:

- 1st author manuscript accepted for publication in the International Journal of Biometrics.
- 1st author manuscript accepted for publication in Foot and Ankle International.
- Co-authored manuscript accepted for publication in IET Biometrics.
- Co-authored manuscript published in Computer Methods in Biomechanics and Biomedical Engineering.
- Co-authored manuscript published in Physiotherapy.
- Co-authored conference abstract accepted to the American Society of Biomechanics conference.
- Sponsored 3 ORCA applications, awarded 1.
- Applied for \$45K grant to NATA. Not awarded.
- Applied for \$2.5K grant to US Figure Skating Association. Pending.

3. Citizenship

3.1 Self-assessment

When I applied to work at BYU, I felt that I could be immediately beneficial to other faculty by providing technical expertise. In my first year, I have had several invitations to serve on thesis and dissertation committees, which I think helps validate this assessment. Related, I think that my critical evaluation skills have been recognized in the biomechanics community, as, over the past few years I have consistently received a fairly high number of external peer review requests. Going forward, I think my interdisciplinary background and previous industry experience provide me with some unique perspectives that I hope will be valuable to my department. I am very good at small group interactions, building collaborations, and in one on one mentoring. I am more reserved in large group meetings, and I

would like to extend myself more in seeking out service and leadership opportunities, and contributing to the direction of the department.

3.2 Areas of improvement

My last job was with the U.S. government, and for several years our travel abilities were severely restricted. I did not attend many conferences and my networking and relationships with other researchers in my field has suffered. I would like to establish stronger society relationships.

3.3 Citizenship Goals

My citizenship goals include the qualitative goal of maintaining good relations with faculty throughout the department and increasing collaborations, particularly interdisciplinary ones. I will continue to serve as a peer reviewer, accepting assignments when possible without overextending myself. I would like to get more involved in committee assignments and in my professional organization, and will seek for opportunities to do so.

2.4 Outcomes to date

I have had a number of citizenship related opportunities in my first year. Highlights include:

- Peer reviewed three journal articles (with two additional revisions) for three separate journals.
- Served as an abstract reviewer for the American Society of Biomechanics conference.
- Served as a grant application reviewer for the BYU Widtsoe grant program.
- Joined three collaborative research projects.
- Currently serving on three M.S. committees and one Ph.D. committee (including comprehensive evaluations).
- Integrated student researchers from Exercise Science, Mechanical Engineering, and Biophysics departments.

4. Relationship with Department and University

I have enjoyed my first year at Brigham Young University. Having not taught much previously, I found that teaching and interacting with BYU's outstanding students exceeded my expectations. I enjoy my colleagues and have begun to establish and contribute to meaningful research collaborations. I feel that I have made substantial progress in my first year and am on a good trajectory in all three areas. My above outlined goals are in line with Department and University goals; in particular: providing undergraduate mentoring opportunities, creating a scholarly impact, and teaching both intellectually and spiritually.

5. Resource Needs

As a department, we are limited in the number of graduate students that we can accept without external funding. This past cycle, I had three graduate students apply to work with me and hope that this trend continues. If so, I will need external funds to support additional students. I'd like to increase graduate student support through external grants as well as university fellowships and college funds.

Currently I am sharing lab space with up to 6 other Faculty. This is sufficient for my needs at the current time. In a few years I may be in position to expand my tool set, and would be interested in additional lab space when it becomes available.