

Faculty Development Plan

Department of Electrical and Computer Engineering

Overview

This document describes my comprehensive plan to my beneficial impact as a professional faculty member at BYU. It addresses three areas where I can contribute to the University's goals: Teaching, Scholarship, and Citizenship. The plan describes my current strengths and weaknesses in each area, expectations toward my performance, and my ongoing plans and goals to implement a meaningful scholarship enterprise, enact fulfilling teaching, and fulfill my citizenship responsibilities.

These plans are made in context to my position as Professional Faculty. Because this position is relatively unique at BYU, my job expectations have been modified relative to traditional faculty. In particular, I have reduced teaching expectations, expanded research expectations, and more narrowly defined citizenship expectations. These considerations are discussed in the "Expectations" sections below.

Teaching

Expectations: Because my primary purpose at BYU is to administer, use, and expand the role of a research instrumentation center at BYU, my department has agreed to lower my teaching expectations to no more than two classes per year. As a result, my development along this front is somewhat less extensive or ambitious than other areas.

Self-Assessment: My teaching strengths include significant experience guest lecturing for previous mentors on circuit design, image processing, and imaging hardware. I have also taken an Engineering pedagogy course, where I designed a few course assignments and learned some useful teaching concepts.

However, prior to this point, I have never been responsible for a full, semester long course. I certainly do not grasp the ideas behind the flipped classroom. And, I will be teaching, in Fall 2021, a brand-new course for which I do not have established materials.

In search of solutions to these issues, I attended the Summer 2021 effective teaching workshop and developed the following goals.

Goals

1. Design a culminating project for ECEN 576 that incorporates writing and communication skills, teamwork, principles of engineering for medicine, and a large portion of the semester's content. Design the project such that there is no truly correct answer such that any result must rely on evidence and justification to be determined to be correct

Progress: The project was designed over the course of the summer of 2021. I solicited feedback from peers outside of BYU and incorporated aspects I gleaned from the CTL summer workshop. I will acquire student feedback at the end of the course.

2. Request mid-semester feedback from CTL

Progress: I have yet to schedule this session but will do so soon.

Scholarship

Expectations: I have been tasked with two scholarship directives: 1) Develop a leading research program in my own field of image-guided surgical technology and 2) develop and cultivate collaborative research relationships across BYU campus. I am also expected to have advised a graduate student to completion of their degree by start of my sixth year.

Self-Assessment: My strengths in this area include an existing, productive scholarship program powered by relationships with collaborators at the Universities of Virginia and Michigan. I have proven capable of producing research ideas and generating funding for those ideas. BYU has also provided a large amount of the major capital equipment I need to perform my research program. Finally, I have a list of potential collaborators at the University of Utah to further integrate into my research program.

My weaknesses in this area are, first, that I under-negotiated startup support for graduate students. I anticipate running out of funding for my students by April 2022—unless I can secure more financial support. This aspect has me somewhat concerned about my ability to carry out my planned research program. Finally, I do not have previous training in managerial soft skills that can help me retain and motivate students. To address these issues, I have set the following goals.

Goals

1. Serve as author on two manuscripts submitted for review this calendar year. These manuscripts can come from my own research enterprise or from collaborations with others.

Progress: I have one article submitted (by a research collaboration here at BYU), and ½ of a second manuscript completed. I am on track for this goal.

2. To help with my funding issues, I have a goal to submit 4 grant applications this year.

Progress: I have exceeded this goal. In winter of 2021, I helped submit an instrumentation grant and an experiential learning grant proposal. In summer 2021, I submitted 3 additional grant proposals to the NIH and NSF.

3. Coach an "orphaned" graduate student I have inherited from a former faculty member to complete his thesis and defend.

Progress: The dissertation is now more than halfway to completion. I am skeptical, given the current rate of progress, that this goal will succeed this year.

4. Mentor 3 undergraduate students through the BYU IMMERSE program and into 3 conference abstracts.

Progress: I have hired three undergraduate students. Two students engaged with BYU IMEMRSE. I am uncertain whether any of these students will produce work sufficient for a conference abstract this year.

Citizenship

Expectations: Many of my citizenship expectations are circumscribed to administering the research facility over which I am charged. I manage usership, repairs, safety training, and supply logistics. I also consult with all faculty users and their students on how to obtain quality data sets from the facility's equipment.

Self-Assessment: My strengths in this area are, first, that I have protected time to perform these duties. Second, the research facility has, prior to my arrival, enjoyed a robust user base on which I can build. Finally, I have had some early success automating a portion of our training system and hiring an excellent assistant who can help me with some of the clerical burden. My weaknesses include little training or acquired administrative skills. I have never had to manage equipment or people. I also must manage the expectations of a variety stakeholders, including those of my supervisor, the deans or department chairs in two different colleges, and faculty users of the research facility.

Goals:

1. Spend 120 hours each year consulting with faculty and students outside of my lab who are using the research facility.

Progress: In the past 12 months, I have spent 80 hours consulting with users. I have a way to go before I achieve this goal.

2. Engage with faculty in a new department or college who have not previously used the facility per semester.

Progress: After receiving negative feedback from the BYU Center of Animation, I have identified my next target to be the BYU Department of Dance.

3. Engage with and mentor 2 graduate students whose degree program is outside of my department.

Progress: I have spent nearly 20 hours consulting with and mentoring one graduate student from the Department of Exercise Science. This student and I have submitted one manuscript for publication. I have spent about 8 hours mentoring one graduate student from the Department of Chemical Engineering.

4. Enhance capability of this research facility by installing and bringing online equipment capable of machine learning and advanced image reconstruction and segmentation.

Progress: This goal is complete. I have the computer up and running.

5. Streamline how our facility calculates, reports, and bills for equipment usage.

Progress: This goal is just getting started. I have only now been in discussion with the key people who help manage your billing and finances.