

# Sample 1

# Faculty Development Plan

## Self-Assessment

### *Teaching*

I feel that I have a natural ability to show enthusiasm in class and keep the class interesting. What I have not learned well yet is to incorporate active learning techniques into my teaching, and to believe that they help. I enjoy teaching the introductory courses slightly more than I enjoy teaching the more upper division and graduate level courses. I also strive to incorporate the gospel into my teaching.

### *Scholarship*

I have two main areas of research that I am interested in: crack/defect imaging and characterization (Nondestructive Evaluation [NDE]) in solid media, and various applications of focusing sound in air using time reversal. My strong relationship with Los Alamos National Laboratory affords me a strong collaboration and source of funding through subcontracts and co-writing of proposals. There are several areas of research at BYU that I have the opportunity to begin new collaborations and branch out into new areas of research.

### *Citizenship*

I have established myself quite well within the Acoustical Society of America (ASA) professional society. This is the premier society in acoustics research. I organize and chair a few technical, special sessions at conferences every year through the ASA. I am an associate editor for the top journal in this society and regularly review many papers from several journals. I was recently included as one of two candidates to serve as chair of one of the ASA's 13 technical committees, demonstrating recognition of my leadership in the ASA. I am also a technical program co-chair for the upcoming ASA meeting in Salt Lake City. I currently serve on the department's undergraduate committee.

## Professional Goals

### *Teaching*

I wish to learn more about active learning techniques, one so that I am more convinced that they actually help student learning, and two so that I can best help the students in their learning of the course material. I wish to lean on my perceived strengths as I start out my career at BYU by requesting to teach the introductory physics courses. As I get my research program more established I wish to develop my interest in teaching upper division courses by teaching a new upper division course, such as 318, 330, or 461. I plan to use the university's Spiritually Strengthening Faculty Questionnaire to help me develop in my ability to weave the gospel into all aspects of my teaching.

### *Scholarship*

In the first few years at BYU, I wish to continue my work in NDE, and to use my startup funding resources to conduct research that will lead to funded research opportunities in sound focusing in air. I will continue to write proposals with Los Alamos and plan to visit the lab once a year

during the summer to make plans for future proposals and keep that relationship strong. I am currently in the process of writing a proposal with [REDACTED] and others in Electrical Engineering to apply my sound focusing in air research to solve some issues related to the noisy operation of MRI facilities. I also wish to find areas that [REDACTED] and I can collaborate on proposals. One area [REDACTED] and I are looking at pursuing is to study blast noise through a new collaboration at Los Alamos through former connections I had there. Long term I have interest in applying acoustic techniques to characterizing nano structures and to see how acoustic techniques might aid astronomy research, such as planetary seismology and acoustic waves in gaseous galaxies.

### *Citizenship*

I wish to continue my strong involvement within the ASA. I strive to find new opportunities to be involved and rotate off of other responsibilities. BYU has a strong relationship with the ASA and I wish to further BYU's involvement and visibility within the ASA. I would like the opportunity to serve on various committees within the department and perhaps at other levels (college, university, etc.), however, in my first few years I hope to not have too many responsibilities in this area that might slow down my development as a teacher and as a scholar.

## **How Goals Fit within Department and University Aspirations and Needs**

### *Teaching*

I found my reading through the university's founding documents to be very inspiring. It is clear that teaching at BYU is intended to be interwoven with the gospel and that teaching methods can be rooted in gospel practices. Active learning methods are similar to the Come Follow Me gospel program that seeks to flip the classroom and engage the students in learning.

### *Scholarship*

My research areas provide opportunities for students to develop as researchers and work on cutting edge research in newly developing fields of acoustics research. Much of my research is well suited for undergraduates to get involved in meaningful research and publish journal articles.

### *Citizenship*

My citizenship goals allow me to provide service to my department and particularly provide individual service to many students in my department as I meet annually with 55 of them. Additionally I am able to offer service to my professional community, providing an example to the students who work with me.

## **Resources**

### *Teaching*

The department and university has the resources I need in place. These include the surveys (midcourse, end of semester, and spiritually strengthening surveys), demonstration equipment, Learning Suite, and i-clickers.

### *Scholarship*

I was provided a healthy amount of startup funds to purchase the equipment I needed and to pay students to get started on research with me. There are some delays inherent in getting this equipment ready and purchased but I am able to move research forward while these things are in progress.

### *Citizenship*

I was provided with a department committee assignment and I already have significant responsibilities within the Acoustical Society of America.

## **Progress toward Goals**

This section will be updated annually as progress can be reported on from previous years.

### *Teaching*

I have taught Physics 167 three times, Physics 561 twice, Physics 660 twice, and Physical Science 100 once. My student ratings in 167 have steadily improved over the three offerings. In 561 and 660 my ratings were high each time. My PS 100 ratings were quite high for that course's average. Students consistently comment on my incorporation of the gospel and enthusiasm for the course material.

### *Scholarship*

I have been able to publish 55 papers, 37 of which are peer reviewed articles. I was able to published a peer reviewed journal article with both of my 2 graduate students and all 5 undergraduate students I have worked with. I currently am working with 2 grad students and 4 undergrad students and have plans for each of them to publish their work. I was able to bring in \$215k in research funding as a principle investigator and another \$71k as a co investigator. I am working on proposals and exploring new funding avenues.

### *Citizenship*

I have been serving as an associate editor for the top journal in my field for 4 years, have organized 5 special sessions at ASA conferences, and am a technical program co-chair for the ASA meeting in Salt Lake City 2016. I also am currently serving on the undergraduate committee in the department.

# Sample 2

# Faculty Development Plan

Department of Physics and Astronomy - June 2016

I am a driven person and find satisfaction in identifying areas for improvement and developing creative solutions. I often find myself with more ideas than I have time to complete. This document will serve to focus my efforts on long-term priorities. It also identifies areas of personal strength and weakness.

Below, are my outlined goals in the areas of teaching, professional service (i.e. – Lab management), and citizenship. A plan for achieving my goals and resources needed to accomplish them are also included.

## Teaching

### **Expectations**

I am expected to teach four courses each year with the bulk of the courses being lab classes and a smaller subset being lecture courses with lab components.

### **Self-assessment**

My teaching experience includes recitations to undergraduate students, teaching lab courses to undergraduates, and teaching Sunday school. I have found that I excel at providing context and motivation for the topics and skills to be learned, listening to students and understanding where they are struggling, and leading student guided discussions. I particularly excel at working with introductory students. My excitement for the material helps motivate student learning.

I also recognize areas where I could improve. Among them are:

- Assessing student learning in a quantitative, actionable way.
- Choosing an appropriate number of changes to implement in a given semester.
- Scheduling sufficient time to prepare for future semesters.
- Helping students come to class prepared to learn.
- Grading papers in a timely manner.

### **Long-term vision**

Educational labs in our department seem to have focused heavily on demonstrating the physics principles from course work. Recently, however, our Lab Committee determined the need to incorporate the construction of knowledge as a learning goal in lab classes in accordance with recently released American Association of Physics Teachers (AAPT) recommendations. Over the next several years, I intend to adapt our lab courses to include a greater focus on teaching students to develop their own intuition by making meaningful inquiries, designing experiments that will answer them, and analyzing the results. I will seek to use best known instructional practices in this pursuit.

### **Goals**

1. Stay current with lab teaching techniques and best practices by:
  - a. Attending ALPhA immersion programs and AAPT conferences.
  - b. Presenting at AAPT meetings annually to get feedback.
2. Create new learning outcomes for labs that are in line with Lab Committee and AAPT guidelines.
3. Adapt Physics 140 and 108 course curriculum using a constructing knowledge approach.
  - a. Identify concepts and skills that meet learning objectives and outcomes.

- b. Identify/develop/adapt lab activities which accomplish objectives.
- c. Gather feedback on student learning gains through surveys and interviews.
- d. Rearrange the course schedule to allow more:
  - i. Laboratory exploration of phenomena.
  - ii. Student development of models.
  - iii. Class discussion on conclusions based on observations.
  - iv. Testing of models to identify limitations.
- e. Write/adopt pre-lab and post-lab assignments to encourage preparation for class and help assess student learning.
- f. Create improved learning assessments.
- g. Develop/identify help-guides for Lab TAs and Instructors. Some may include:
  - i. Videos of how the lab is done (procedural and examples of how to run a modeling curriculum).
  - ii. Troubleshooting guides for equipment.
  - iii. Recommended thought provoking questions to ask students.
4. Add resources to assist with TA training and instructor preparation in other lab courses.
5. Read one book about teaching and/or learning per year.

## **Professional Service**

### **Expectations**

The professional component of my position is focused on management of the physical aspects of the educational laboratories in the physics department. This includes:

- Hiring, training, and directing students who assist in setup of laboratory equipment and maintenance.
- Overseeing laboratory classrooms on the 4<sup>th</sup> floor of the Eyring Science Center.
- Managing laboratory equipment.
- Repairing, purchasing, and developing new equipment.

### **Self-assessment**

I am good at providing motivation to and connecting with students. This is essential to being a good manager. I also have experience in training. I am proactive and able to keep a long term view of potential improvements in the laboratory space. I am also good at budgeting my expenses.

Areas in which I recognize room for improvement are:

- Holding students to job expectations
- Setting up protocols
- Scheduling, including overscheduling myself

### **Long-term vision**

The fourth floor laboratory space was historically run on a fairly limited budget which required that significant time be spent in developing and repairing equipment. The previous approach also resulted in labs becoming outdated. I will shift the approach towards a purchase and replace model that is in line with our department direction. This approach will require more budgeted funds for equipment but will significantly free up time for a stronger focus on curriculum. Over the next several years, I intend to update equipment on all of the fourth floor labs. I also intend to set up protocols, training documents, and schedules which will make the best use of budgeted funds. My ultimate goal is to reduce the

number of TA and faculty hours required for setting up and repairing equipment. The time will instead be used to assess and improve laboratory curriculum. I hope to create an environment where physics teaching majors and applied physics majors can complete capstones related to physics teaching.

### **Goals**

1. Hire, train, and direct setup TAs
  - a. Recruit high quality TAs for setup with a focus on future teachers.
  - b. Create training documents on repair/troubleshooting and maintenance of lab.
  - c. Create video tutorials on how to use and setup equipment.
  - d. Create and maintain an expectations document for student workers.
  - e. Hold a monthly staff meeting for students to review expectations.
2. Oversee laboratory classrooms
  - a. Create training documents on lab course instruction and equipment use.
  - b. Create lab course schedules which allow adequate time for TA training each semester.
  - c. Schedule content and equipment support for lab TAs from setup TAs.
  - d. Maintain and assist in updating/editing/testing curriculum for 4<sup>th</sup> floor labs.
  - e. Develop and maintain a wiki to manage course schedule, content, and equipment.
3. Managing laboratory equipment and space
  - a. Create a schedule for ongoing updating lab equipment and room amenities in all labs (*e.g.* - Update equipment for 4 walk-in labs each year)
  - b. Create/buy and maintain a lab inventory system to aid in scheduling lab equipment.
  - c. Create a lab survey for each of the upstairs labs to identify equipment that is failing and/or difficult to use and to identify student perception of the labs and lab materials.
  - d. Reorganize lab equipment to reduce setup time.
  - e. Make desk space and computer access more convenient for group work.
  - f. Create yearly budget proposals for foreseeable expenses.

## **Citizenship**

### **Expectations**

My expectation in regards to citizenship is to fulfill assignments within the department, college and university. I am also expected to be involved within the larger physics teaching community.

### **Self-assessment**

I consider myself an effective committee member. I work well with other people.

### **Long-term vision**

Our department has a large number of undergraduate students. Because of that, we have an opportunity to generate statistical data that can contribute to understanding ways to improve student learning both at BYU and in the larger physics teaching community. I intend to seek collaborations within our department and university to improve undergraduate education in the physics department. I also intend to seek outside collaborations and contribute ideas and findings to the AAPT and ALPhA organizations.

### **Goals**

1. Continue to contribute to the Lab Committee.
2. Continue to head up the employee giving campaign.



3. Socialize with AAPT and ALPhA members at conferences.
4. Volunteer to serve on review boards for the AAPT.
5. Volunteer to host an advanced lab immersion program at BYU.
6. Attend faculty meetings and contribute to discussions.
7. Attend courses with a lab component regularly to assess and provide feedback to other faculty.
8. Develop/adopt and run a regular lab TA training on best teaching practices.

## **Resources**

I feel like I receive great support from my department and colleagues. Additional resources that will help me accomplish my goals are:

1. Clearly defined budget for lab upgrades and repairs (Reviewed on a yearly basis). My startup package is a good starting point but to stay current with labs it is important to have an ongoing financial commitment to improvements.
2. To determine an appropriate budget, I will need the individuals responsible for each lab course to provide their long-term plans (>1 year) for upcoming changes to lab classes.
3. Training on best management/scheduling practices.
4. 40-45 hours of setup TAs over the next year and potentially on an ongoing basis.
5. Support for RAs to develop labs on an as needed basis.
6. 10-15 hours of walk-in lab TA hours.
7. Feedback on my teaching and course structure from my mentor and other faculty members.
8. Assistance from the Center for Teaching and Learning in creating, collecting, and analyzing evaluations from TAs and mid-course and end of semester student surveys.
9. Department support of lab TA teacher training meetings.
10. Colleague recommendations on individuals that would be interested in collaborating on lab immersion programs.