Sample 1

SAMPLE

Faculty Development Plan

Computer Science Department

Self Assessment

My role as an Associate Teaching Professor in Computer Science fits my strengths, skills, competencies and interests so well that if feels like my position at BYU was made specifically for me. As a research professor at Penn State University, I found that I enjoyed teaching much more than research. My current role allows me to focus almost exclusively on teaching, which is where my greatest strengths and interests lie.

Strengths, Skills, Competencies and Interests

My prior experience as an Assistant Professor at Penn State Erie, and my professional experience as a Java instructor have given me skills and experience in teaching that make me comfortable and confident in teaching undergraduate computer science students. I also have 14 years of software engineering industry experience and have worked in most of the roles our undergraduate students will fill in their careers.

I have found that my students value my industry experience and I am able to use that experience to add depth and meaning to my interactions with students, both in and out of the classroom. I care deeply about the students and made a career switch back to academia because I find great satisfaction in helping student prepare to succeed in their careers. I also find joy in sharing my life experience and my love of the gospel with BYU students.

My students know that I care about them, and they respond well to that. I have also found that they appreciate my attempts to share spiritual and other life experience lessons with them that do not necessarily relate directly to the subject matter I teach. My primary interests are in software engineering, which aligns perfectly with my teaching and citizenship assignments at BYU.

Areas to Improve

I feel most comfortable and confident in traditional, lecture-based teaching situations. I have been successful with this teaching approach and my students have always responded well to it. However, I believe they can benefit more and retain more from a more active-learning

approach, with less lecture and more hands-on experiences. I plan to work with the Center for Teaching and Learning to revise my approach and incorporate more active-learning experiences into my classes.

Professional Goals

As a professional faculty member, my primary focus is on teaching. I do not have a research expectation in my position. However, I am expected to be actively involved in experiences that will ensure that I remain current in the field of computer science, and specifically in the areas where my teaching and citizenship are focused, which for me is software engineering. My specific goals in teaching, citizenship and keeping current, along with plans for how to achieve them, are described below.

Teaching

My teaching goals include the following:

1. Be recognized by my students as a highly-effective and caring teacher.
2. Effectively prepare my students for industry careers as software engineers.
3. Help my students prepare to live meaningful, fulfilling lives.

My three teaching goals are closely related. One of the ways I demonstrate caring to my students is by learning and knowing their names. I plan to learn all of my students' names by the end of the second week of each class. I also plan to invite students to have a 10-minute chat with me in my office sometime during the semester. I will allocate time each week for this and allow the students to sign-up for times. This will provide an opportunity for me to get to know them and also to be aware of any concerns they have about the class or about their education in general.

Although some of our students will continue their education in graduate school, most will spend the majority of their careers working as software engineers. This is the group of students I am best equipped to serve. I plan to do this by remaining current in my knowledge of software engineering practice, tools and technologies (see the "Professional Service / Keeping Current" section), and using this knowledge to effectively teach my students what they need to know and be able to do to succeed as software engineers.

I will continue to improve my effectiveness as a teacher by doing the following:

1. Working with the Center for Teaching and Learning to identify improvements to my teaching approach and methods,
2. Meeting regularly with and learning from my mentor--Ken Rodham--who is recognized by the Computer Science Department and the University as a highly-effective teacher,

3. Regularly attending the SIGCSE computer science teaching conference, and
4. Reading books or other literature on teaching.

One of the main reasons I wanted to work at BYU is its mission to "assist individuals in their quest for perfection and eternal life". One way I assist in this mission is to share some of my life's experiences and my testimony with my students during class. I have found that the topics I teach do not often directly relate to gospel topics and experiences, so I often take the first few minutes of class to share an experience or some knowledge I have gained that I think will benefit them. I also sometimes share my feelings about or experience with a particular gospel topic during this time. I have found that students enjoy and appreciate these comments, even though they often don't directly relate to the material of the courses I am teaching. I believe that sharing these additional experiences, values and feelings about the Savior and His gospel will help prepare my students to live meaningful, fulfilling lives.

Citizenship

I have three primary citizenship goals:

1. Be a supportive and positive colleague among my peers within the Computer Science Department.
2. Work with my colleagues to build a high-quality software engineering program within the Computer Science Department.
3. Participate in improving the undergraduate computer science curriculum and the overall undergraduate computer science student experience at BYU.

The first goal is very general and would be difficult to measure. However, listing it as a goal will be a reminder of the kind of citizen and colleague I want to be.

One of the reasons I was hired at BYU was to help the Computer Science Department build a software engineering program. This is directly in-line with my second citizenship goal. I was asked to chair the Software Engineering Committee, which is the Computer Science Department committee responsible for building and supporting our new Software Engineering Emphasis. This emphasis was just approved this year and will go into effect at the beginning of Fall semester next year.

I plan to work with my colleagues on this committee to build a nationally recognized software engineering program that will be seen by our students, their potential employers, and by other software engineering programs as a top-5 software engineering program.

We are in the very beginning stages of our plans to build a top software engineering program. Our first step is to build the classes required by the emphasis. Although we will continue to improve these classes over time, we will have most of this work done by the beginning of Fall semester 2019, with some classes being completed for the Winter 2020 semester. We are also

in the process of determining how we will measure our success and our improvement, so we can plan and track our progress toward our goal of becoming a top program.

My third goal is directly related to the second, but is more broad. In addition to working to build a top software engineering program, I want to help the department make decisions and improvements that will improve the overall undergraduate computer science student experience at BYU. I am currently serving on the department's undergraduate committee, which is the committee with primary responsibility for the undergraduate computer science program.

After almost one year at BYU, I have ideas about what would improve our undergraduate students' experience in our program, but need to continue to participate in committee meetings and work with my colleagues to help identify what improvements can and should be made. I believe the primary improvement is the creation of emphases that will allow the students to focus and gain in-depth knowledge within specific areas of interest. The department is actively working on this, with the creation of both a software engineering emphasis, and a data science emphasis this year.

Other ideas for improvement include the following:

1. Creation of a first-year-seminar to give students knowledge of the field of computer science, possible career paths, and the emphases available within our program; and
2. An in-depth review or our courses and how they are meeting the needs of our students.

Professional Service / Keeping Current

My professional service / keeping current goal is to regularly perform software engineering consulting services for external clients. This will allow me to keep my skills and experience current and relevant, and will continue to provide relevant experiences I can use to enhance my teaching. This will also provide me with valuable insights and current knowledge on the skills and experiences needed by our students to prepare them for successful industry careers. This current knowledge will also be valuable in my citizenship responsibilities as I work with my colleagues to build a high-quality software engineering program and work to improve the undergraduate student experience at BYU.

The difficult part of this goal is in finding external consulting work that I can do regularly within the restriction of only being available to consult one day per week. I am planning to sub-contract through an external consulting company to find some of this work. I also plan to develop and advertise specific, pre-packaged service offerings to enhance my ability to find consulting work.

Relationship Between Goals and Department and University Aspirations and Needs

I believe my goals in each of the three areas are closely related to the needs and aspirations of my department and to the university. My teaching goals directly relate to the mission of the university to *"assist individuals in their quest for perfection and eternal life"* and my goals of being a highly-effective teacher and of preparing my students for industry careers as software engineers is closely aligned with the parts of the university mission relating to *"provid[ing] a period of intensive learning in a stimulating setting"* and *"students should also receive instruction in the special fields of their choice"*.

My citizenship goals are directly related to the Computer Science Department's aspiration of creating a software engineering program/emphasis, and of becoming recognized as a top computer science program.

My Profession Service / Keeping Current goal to perform external consulting services is specifically listed in the department expectations document as one of several possible ways to meet the objective of keeping current. This goal will also directly support my teaching and citizenship goals.

Resources Needed

The only resources I believe I need to accomplish my goals are to serve on the department's software engineering and undergraduate committees to support my citizenship goals, and funds to travel to SIGCSE and to participate in other learning experiences each year. My department chair has already asked me to serve on these two committees, and the required conference and educational funds have been provided, so I believe I have all the resources I need to succeed.

Activities and Accomplishments in Achieving Goals

Teaching

My student evaluations in the three courses I have taught at BYU have been high, with average student ratings above the department and university averages. Several of my students have expressed appreciation, both in person and in student evaluations, for the quality of my teaching, my focus on industry experiences and skills, and for my sharing of my life's experiences and gospel insights and testimony. I believe this is strong evidence that I am achieving my teaching goals.

Citizenship

I am one of three primary faculty members who worked to get the software engineering emphasis approved this year, and I am actively working with the other two faculty members to prepare the remaining new classes and a major class redesign for next year. I am creating three one-credit lab courses that will be part of the emphasis, and I am chairing the committee responsible for the emphasis.

The committee believes that there is not a reputable and widely accepted ranking that will make it easy to track our progress in becoming recognized as a top software engineering program. We have identified three potential measures for the success and progress of our program. We will likely refine these over time, but the three we have identified are:

1. Student participation and eventually placement in the ICSE SCORE student project competition,
2. The number of emphasis graduates working in prestigious companies, and
3. The number of emphasis graduates in software engineering related leadership positions (such as Director, VP and CTO)

Professional Service / Keeping Current

Of all of my goals, the professional service goal of providing consulting services to external clients is the one I have made the least progress on. This is largely because I have been focusing my time and attention on my teaching and citizenship goals and partly because I am finding it difficult to obtain external consulting work under the restriction of only being available for consulting one day per week. I expect to begin making more progress on this goal during the Fall 2019 semester.

Sample 2

SAMPLE Faculty Development Plan

▼ **Self-assessment/**immediate challenges

- My most immediate weakness is around funding. I have no funding currently, except for my start up money, and I'm ignorant of the American funding model.

- Having just returned to academia from industry, I have no research in progress and filling a research pipeline will take some time.

▼ **Scholarship**

▼ *Current projects.* Initially I will continue working on and publishing based on the current (Amazon inspired) projects I have underway. While pursuing these projects, I will aim to submit 3 papers each year, targeting the venues listed below.

- *Improving incident response.* An incident is an event that degrades the performance or functionality of a software system intendedFSE to be highly-available. Incident response is the work engineers do to mitigate such an events. As a first step in this project, Esdras Kutomi (an MS graduate student) is conducting an interview study, with the goal of building a model of incident response.

- *Engineering a system to be tolerant to failures or degradations in dependencies.* Matthew Pope (a new MS graduate student) started working on this project in spring 2019, with the goal of evaluating novel and existing engineering techniques in a simulated, distributed environment.

- *Automated testing based on application tracing.* Peter West from Test Ramp (a local company) approached Sean Warnick and me about this project and we have two graduate students starting on it now (Barbara Chamberlin and Melanie Jensen). The goal is to reduce the cost of creating and maintaining user-interface regression tests for web applications.

▼ *Possible future areas of focus*. I will gradually develop a research theme or focus in a particular area of software engineering. My goals is to develop leadership and expertise in an emerging area, that will allow me to help define and build up a subfield. That theme may emerge from my current research projects, but for the sake of discussion here are two possible future areas of research.

- *Engineering intelligent systems,* which learn as they go, are less brittle to ongoing changes to context and dependencies, rely less on heuristics and more on models that are tied to feedback loops. Related terms include: resilient systems, anti-fragile, transparent-failure, etc.

- *Modern architecture* for building various types of systems, with a focus on techniques for reliability and performance, with minimal effort or expertise required of the software engineer.

▼ Research funding goals

- Submit one proposal each year, initially targeting NSF, Google Faculty awards and Microsoft Research.

- I will also volunteer to participate on one NSF panel each year.

▼ Venues I expect to target.

Rankings are from google scholar. Percentages are typical acceptance rates.
https://scholar.google.com/citations?view_op=top_venues&vq=eng_softwaresystems

- IEEE International conference on software engineering, #1, 20% - 25%

- ACM SIGSOFT International Symposium on Foundations of Software Engineering, #4, 20% - 25%

- IEEE/ACM International Conference on Automated Software Engineering, #12, 22% - 34%

- IEEE International Conference on Software Maintenance, #19, 25%-30%

- And possibly some journals like IEEE Transactions on Software Engineering (#2) and Empirical Software Engineering (#9)

▼ **Teaching**

▼ I intended to contribute in significant ways to the software engineering emphasis and associated course development, working closely with Ken Rodham and Jerod Wilkerson. These are likely larger teaching contributions than many faculty members undertake pre-CFS, but this will contribute to the department's initiative to build up this new emphasis. Specifically in 2019, I plan to:

- Introduce and evaluate a new version of CS 340 based on cloud technologies and a (partially) flipped classroom instruction model.

- Introduce a new capstone course for the software engineering emphasis, including soliciting projects from companies.

▼ Other teaching goals and plans

- Achieve teaching ratings inline with expectations.

- Arrange a teaching peer review each semester for each section I am teaching.

▼ **Citizenship and other activities**

▼ I don't expect to take on major service roles until post CFS. I am currently on the following three committees, but will request a reduction starting fall 2019.

- Graduate committee

- Expectations committee

- Software engineering committee

- I will participate in one or two program committees per year. The first will be for the experience track of the International Symposium on Foundations of Software Engineering conference in May 2019.

- I have no consulting planned at the moment, but I hope to do some research related consulting in the future as I develop my research focus.

▼ **Mentoring**

- ▼ Initially I will recruit one new graduate student each year and increase that as I grow my funding base. Given the practical nature of my research, I believe I can build my research program with largely MS students, including students that are planning on working in industry. I will include undergraduates as appropriate. My goal is to:

  - Help each student graduate on time.

  - Help each (MS) student publish at least one paper.