

# **SAMPLE 1**

**FACULTY DEVELOPMENT PLAN**

**Associate Teaching Professor**

**Department of Mechanical**

**Engineering Ira A. Fulton School of**

**Engineering February 2024**



**IRA A. FULTON SCHOOL OF ENGINEERING AT BRIGHAM YOUNG UNIVERSITY**

## **PERSONAL STATEMENT**

I left Brigham Young University in 1989 to pursue a career in industry where I could utilize the many lessons and skills gained as an undergraduate, grad student, and Assistant Professor at BYU. I am very grateful to return to this marvelous university, and for the opportunity to share my experiences, both professional and spiritual, with the amazing students here. My goal in returning is to inspire students with a greater understanding, appreciation, and commitment to each of the four AIMS and mission of the university, while instilling greater knowledge, wisdom, and testimony.

## TEACHING AND LEARNING

### STRENGTHS

I have the equivalent of five years of teaching Engineering courses at the university level (consisting of two years while a grad student and Assistant Professor at BYU, then an additional three years as an Adjunct Professor at the University of New Mexico and Western Washington University), but those experiences occurred over 15 years ago.

I also have over 30 years of experience in the practice of engineering, working in a number of different industries at many levels within various organizations. My broad depth and breadth of experience, both in industry and the church, has taught me many valuable lessons to pass on.

Throughout my career I have been characterized as a quick learner and good communicator, with a sincere and kind demeanor, approachable and generally well liked. These are traits that will help me inspire and mentor students.

### AREAS OF GROWTH

Since my teaching experience is somewhat dated, I have had much to learn to reestablish my teaching and technical skills, from the tools and processes, to the shift from leading and directing by example and authority, to teaching by “persuasion ... by gentleness and meekness, and by love unfeigned. ...by kindness, and pure knowledge ...”. As much as I welcome the opportunity to learn these new skills and teaching techniques, it is much easier said than done.

While I dove headfirst into this new endeavor in the Fall of 2022, student feedback has shown that there were areas of disorganization, uninspired teaching, and concepts not clearly explained that need attention. Improvements in student engagement, course organization, and lecture clarity are necessary for me to be the professor these students deserve.

I believe I also need improvement in finding better ways of integrating gospel related topics into lectures, instill more character building in all my interactions with students, and find ways to better mentor and engage students in general.

### SHORT-TERM OBJECTIVES (1 – 3 YEARS)

Work with other faculty to ensure courses are well organized with a clear syllabus at the start of each semester, and lecture content addresses each of the prescribed course outcomes.

Improve my teaching scores to department standards by continually receiving and implementing feedback from both peer faculty and students. I found that soliciting and implementing mid-semester feedback (as well as at the end of the semester) is highly useful

and impactful. Trends noted in the feedback are utilized to plan and implement teaching improvements.

Find more natural ways of sharing spiritual experiences and precepts with the students to provide an inspiring learning environment and promote the help of the Holy Ghost in all learning activities, both secular and spiritual.

### **LONG TERM OBJECTIVES (3 – 5 YEARS)**

Develop the skills and humility to be able to positively impact each student in my class by inspiring and instilling the 4 AIMS and mission of BYU more fully in each of their lives.

Create an environment where all students will be comfortable approaching me about any issues or questions they may have, where none will feel uncomfortable in my classroom or office, and all will feel appreciated and that they belong.

## **CAPSTONE PROFESSIONAL**

### **STRENGTHS**

I bring over thirty years of experience in both design and manufacturing, from entry level engineering to leading teams, organizations, even divisions. I have been closely associated with design and design issues in various industries including aerospace, defense, automotive, semiconductors, and communications. This experience includes helping to lead, manage, and dive into the technical details of dozens of projects simultaneously, which is very similar to running the Capstone program. I also have many years of experience sponsoring BYU Capstone projects.

### **AREAS OF GROWTH**

I came into the program unfamiliar with many of the tools and specifics of the processes, procedures, and limitations of the Capstone program, which has been a significant learning curve to master.

I have learned much about the program, the faculty, and the students as a result of instructing Capstone this past year, but still need to continually improve my teaching, organization, student engagement, and classroom skills. Additionally, I need to better understand the organization of the various documents and automated software tools utilized by the students, coaches, and instructors. There are many moving parts of Capstone and as I continue to learn and understand, need to evaluate the interactions, impacts, and options to both increase Capstone impact and opportunity, while reducing waste and inefficiency to reduce costs (in terms of monetary outlay by sponsors and BYU, as well as student time).

### **SHORT-TERM OBJECTIVES (1 – 3 YEARS)**

Work to significantly clarify and simplify the Capstone course materials so the students will spend more time doing creative design activities and better internalize the power of teamwork and creative thinking. Along with instilling the 4 AIMS, Capstone graduates need to know they are prepared to succeed and with a passion for excellence in all they do.

Continue to explore and implement other ways of improving the program for the students, coaches, faculty, and sponsors, including simplifying some of the tools and processes.

Adjunct and faculty coaches will be the focus during the next year (2023-24), as the program currently vastly underutilizes coaches who could provide the most significant improvements to the program and have highest impact on students. The first step will be to serve a coach during the 2023-24 school year (as well as a course instructor).

Evaluate the entire Capstone program, tools, curriculum, etc. during the summer of 2024 to propose necessary additions, changes, etc. to the Capstone Council & ME Dept, for approval.

Begin attending at least one Capstone related professional organization's annual conference to identify opportunities to be involved in the organization and promote student involvement.

### **LONG TERM OBJECTIVES (3 – 5 YEARS)**

Continue to improve the Capstone financial accounting so that we understand the details and specifics critical to maintaining a stable financial plan indefinitely. We were able to significantly stabilize and improve financial reporting accuracy during 2023, but the resolution of the system is still insufficient to manage properly. This information is necessary as we look at whether and when to increase Capstone costs and costs to sponsors, what elements we can afford to continue or not, what areas we could and should focus reductions towards, etc.

Work with the External Relations Managers and perhaps engage some outside expertise or consultants to develop a more sustainable process for pricing, finding, closing, etc. new projects and sponsors. There are a lot of variables that impact Capstone project costs and complexity (which in itself is a scalable cost). Hypothetically for instance, if we could sustainably and easily obtain say 70 projects a year if we changed the pricing model to say \$15K instead of \$22K, then maybe we would be able to reduce our recruiting load (and staffing costs). Likewise we might with additional automation, be able to reduce other staffing costs and complexity.

Develop a stable Capstone website plan for both utilizing more apps and tools that are commercially available and supported (and preferably already available through BYU) to accomplish Capstone functions, as well as potentially replacing some of all of the functions currently needed and provided in the Capstone website with other tools or even a comparable website suite of software.

Work to continually improve Capstone content that exposes students to relevant tools, processes, and technologies in the most time efficient way possible, as they work on industry sponsored and relevant projects, mentored by experienced engineers and faculty. This will require frequent updates to the lectures and other curricula, constant focus on improved coaching practices and activities (as well as utilizing better prepared and highly motivated coaches), while constantly improving the project recruiting process and practices while consistently finding and implementing cost reduction opportunities.

## CITIZENSHIP

### STRENGTHS

I am a natural collaborator, and have a great deal of experience managing organizations, projects, and programs using a combination of collaborative decision making and firm, but gentle, persuasion and direction when needed. I genuinely love my colleagues in the Department, admiring their respective strengths and particularly their collective focus to follow the example of Christ, focused on the well-being and eternal salvation of our students. I see this in the forefront of every decision we make and direction we take. I consider spending time with colleagues and working with them on various collaborations a joyful opportunity, not a burden or chore.

I currently lead the Capstone Council and act as the Director of Capstone for the Engineering Departments that include Mechanical Engineering, Electrical and Computer Engineering, and Manufacturing Engineering. This is a great citizenship opportunity that provides frequent opportunities to collaborate and build stronger bridges with other departments and colleagues.

I have also attended and participated in many conferences including paper presentations, so have somewhat of a network in place already, howbeit not so much in place in the engineering educational focus or capstone focus professional organizations.

### AREAS OF GROWTH

I need to understand the “costs vs benefits” that my continued participation in three different organizations will impact Capstone and specifically how it will impact my ability to influence the areas of design, engineering education, and Capstone. I need to better understand and leverage these areas to continually improve my teaching specifically, and the Capstone program generally.

### SHORT-TERM OBJECTIVES (1 – 3 YEARS)

Towards this end, I attended the ASME design conference in August of 2023, and have plans to attend the upcoming ASEE conference in June of 2024 as well as the Capstone conference in June of 2024. Based on my experiences at these three conferences, I plan to select one or possibly two of the organizations to focus my efforts including becoming more involved in the administration and organizational structure of the organization and begin working with students to mentor and submit appropriate paper presentation opportunities.

### **LONG TERM OBJECTYIVES (3 – 5 YEARS)**

Select one or possibly two different professional organizations to focus my participation based on how to best impact design, engineering education, and Capstone. After determining which organizations to focus on, continue to attend their yearly conference looking to identify sections and areas representing the best opportunities for impact on design, engineering education, and Capstone. As opportunities in those narrower areas become available, engage by volunteering or otherwise soliciting involvement by serving as reviewer, editor, lead, administrator, etc. as the opportunity dictates.



## NFS Course Development Project Report

February 2, 2024

**Goal: For the ME EN 231 course,** collaborate with my mentor, Dr. Spencer Magleby, to revise the Leadership Portfolio project to make it more impactful for students.

- Utilize Leadership portfolio to integrate all the elements of the course as well as synthesize the concepts and provide a cohesive plan to develop leadership skills throughout the student's career
  - Revise to make it more than a portfolio, but also a leadership development plan
  - Include writing elements frequently spread throughout the course so that it includes all elements of the leadership course
  - Include reflection and summarization of course activities
  - Utilize Leadership portfolio to integrate all the elements of the course as well as synthesize the concepts and provide a cohesive plan to develop leadership skills throughout the student's career

### Results:

- I was able to revise the portfolio contents as well as several of the class activities to help the students better synthesize the lecture content and make the portfolio more of a life time leadership development focus rather than just focusing on the current semester. This was implemented in a number of ways. The assignments were modified to require portfolio goals and planning to increase from the current semester horizon to a three to five year horizon.
- Additionally, I implemented an in-class journal writing assignment, which required each student to spend a few minutes after each lecture (two lectures were given per class period during the two-hour block), to summarize key topics and ideas they found relevant and important, as well as answer a couple of related thought provoking questions. After the students were given time to summarize and answer the questions, we discussed a few student responses as a class.
- To broaden the leadership experience and include another public speaking element, I created an extra credit opportunity for each student (if they so desired) to present an inspirational thought (scripture, quote, picture, musical piece, basically anything that they found inspiring) and both present the inspirational thought as well as describe why they found it particularly inspirational. This led to many inspiring moments and class discussions afterwards that many found meaningful.

- I believe all the elements of the original were met during the semester.

***Follow-up:*** I plan to continue to look for ways to make the portfolio more of a lifelong plan for developing greater leadership skills and ability. Additionally, I plan to continue the writing practice by utilizing the in-class journal summaries and answers to thought provoking questions more formally in future classes, and continue to provide extra credit to students willing to share an inspirational thought to the class.

## **NFS Professional Development Goals Report**

February 2, 2024

**Goal:** Develop and pilot a new Capstone coaching paradigm that significantly increases focus on the most important coaching elements (mentoring and feedback), while reducing non-essential tasks. Ideally, the result will be a paradigm that will enable coaches to be more effective and provide avenues for contributing by sharing their experiences more fully with Capstone students.

### **Focus Development:**

- Develop and distribute simple training in informal interviewing, team dynamics, signs of problems, etc.
- Establish goals with each coach regarding in-person time with the team each week.
- Include individual focus and team focus activities and recommendations in structural activities.

### **Structure Development:**

- Develop descriptions of suggested weekly activities for coaches (requiring 20 to 30 minutes per team) and provide simple instruction and resources to complete each activity.
  - Activities will include: project management, team building, inclusion, etc.
- Distribute to each coach and follow up with a brief survey at week's end looking for ways to improve the activities, instructions, and resources.
- At the end of the semester, evaluate effectiveness of each activity and make recommendations for appropriate improvements.

### **Results:**

- Simple training in interviewing, team dynamics, etc. have been developed and distributed through a number of avenues throughout this semester including lectures, coach training, surveys, and shared training elements. This has been used in a variety of ways with varying results.
- Our latest survey is establishing a time baseline for coaching, which we will share and provide specific expectations and ranges. This became more complicated as originally we viewed time spent as perhaps being insufficient to fully meet the needs of some of the project teams (and there are still cases where that occurs). We came realize that an

equally harmful practice was for coaches to spend too much time (effectively becoming “helicopter coaches” to borrow a nickname given some overly involved parents), which resulted in students being denied sufficient independence to fully experience the breadth and depth planned for a Capstone student. Some teams even went so far as to complain to their pod instructor and even the offending coach. Thus, we have been more circumspect in the way we plan to recommend coach time allocations and goals.

- The training hasn’t quite evolved to include individual focus activities yet.
- A detailed list for weekly activities was created, but not all activities were sufficiently developed to be effectively applied. Several bigger issues related to Capstone have diverted attention and resources (addition of Cybersecurity students, loss of Capstone website developers and expertise, etc.).
- Rather than seeking feedback from each coach each week, we opted to hold a single session with the coaches and solicit feedback from them as a group on the coach activities. This was useful feedback and particularly allowed us to gauge the collective interest in individual coaches sharing more of their professional expertise and experience with students.
- We have feedback on the activities and plan to formalize changes and improvements during the summer months when the cadence of Capstone is not so dominant.

***Follow-up:*** We plan to continue our focus on increasing coach efficiency and impact, while integrating their respective expertise and experience more fully in lectures, workshops, and other student engaged activities. This includes continuing to evaluate ways to better direct their time with students, their preparation before meeting with students (modules on specific topics like project management, team dynamics, etc.), their participation in lectures and possibly even additional workshops, their time spent reviewing student reports and providing feedback, etc.

## NFS Citizenship Development Goals Report

February 2, 2024

**Goal:** Build better collegiality with other faculty, faculty coaches, and adjunct coaches

### **Pod Coach Collaboration:**

- Send out a questionnaire to all pod coaches regarding pod lecture relevant expertise and experiences
- Invite coaches to present/share relevant expertise and experiences during pod lectures
- Organize and host several breakfasts with pod coaches to discuss their concerns, issues, ideas, etc.
- Meet one-on-one with each pod coach each semester (about mid-semester) to get to know them better personally and help them with any team issues they might have

### **Faculty Staff Collegiality:**

- Eat lunch with each Capstone instructor this semester
- Attend all college and department seminars and actively participate
- Attend weekly brown bag lunches with department colleagues

### **Results:**

- I was able to send out a questionnaire to explore Capstone coaches sharing their professional experiences and knowledge with students. There is great interest from many of the coaches to do so, and we piloted this experience sharing on several different occasions (DIE lecture, Subsystem Engineering lecture, Team Leader training lecture, etc.). The results were excellent, with the students not only being more fully engaged and interested in the topic, but the experience was energizing and fulfilling to coaches.

**Follow up:** plans are in place to send out another survey for coaches to provide specific topics they would like to address and provide more structure for schedule, time requirements, and points of emphasis.

- We held a single breakfast with all pod coaches to discuss their concerns, issues, ideas, etc. This was a tremendously valuable experience enabling us to gain lots of new ideas

to improve the Capstone experience for the students and also better involve our coaches.

**Follow up:** plans are in place to repeat this breakfast with all pod coaches each year to continue to look for ways to improve and also better engage the coaches in the purposes of Capstone.

- I was able to meet one-on-one with most of the coaches in my pods at the end of the semester. Scheduling conflicts with the off-campus coaches kept me from meeting with each one. The relationships definitely improved as a result of the one-on-ones and I was made aware of a number of student, coach, project, and program issues that I would have been aware of had we not held the one-on-ones.

**Follow-up:** I plan to attempt to meet with each coach in my pod each semester (about mid-semester) to continue to build these often multi-year relationships while providing opportunities to better understand issues related to students, coaches, projects and the Capstone program.

- I was unable to eat lunch with each Capstone instructor individually this semester (turns out lunchtime is one of the hardest times to schedule for many faculty), but we did eat all together this semester. Turns out we spend a lot of time together (weekly Capstone Council meetings, etc.), but I would still like to spend time each semester in a less work focused setting.

**Follow-up:** I am looking at taking the group to lunch each semester, in part to recognize their contributions but also to allow more relationship building and open ended discussion opportunities.

- I was able to attend all college and department seminars and actively participate this past semester.

**Follow-up:** I will continue to actively participate in and attend all department and college seminars.

- I was only able to attend a few of the weekly brown bag lunches with my department colleagues. Mostly this was due to the schedule changing to a time that was adjacent to the scheduled class time for my ME 362 course.

**Follow-up:** I will continue to attend the weekly brown bag lunches with my department colleagues as my schedule permits.

I discussed potential department committee assignments with my Department Chair that I will be pursuing as appropriate going forward.

## **NFS Course Development Project Grant**

Department of Mechanical Engineering

Feb 7, 2024

The Course Development Project grant will be utilized to purchase copies of potential software effectiveness tools (project management, team dynamics, brainstorming, etc.) small models, consumable materials, guidelines, demonstration kits, provide small payments to students working on focus projects (like reviewing textbooks, filling out detailed surveys, evaluating software, etc.) etc. to improve the Capstone course. These elements will of necessity be low cost and small.

Software effectiveness tools must be inexpensive and easy to use, so a few tools will likely be purchased and evaluated (by students and staff). Models may also be crafted and demonstrated to show how various ideas are utilized in the commercial and industrial spaces. Demonstration kits might also prove effective in demonstrating various design concepts and options.