

Citizenship Project Proposal:

MANUFACTURING ENGINEERING TECHNOLOGY – Name

My focus this next year will be in two areas:

1. To begin collaborations with my faculty colleagues at BYU.
2. To strengthen collaborations with researchers in my area at MIT where I already have existing relationships.

At BYU, my intention is to work with other faculty in the manufacturing engineering technology program to enhance student opportunities in entrepreneurship (e.g. with the venture lab) and improving the laboratory exercise for the MFG340 class by integrating those labs with other disciplines.

Also at BYU, beyond the manufacturing engineering technology program, I intend to pursue collaborations with faculty (and possibly students) in the Marriott School of Business. My background of having taught in a business school and interest in entrepreneurship, finance, and operations are aligned with some of the individuals in that school.

At MIT, I plan to increase my participation and visibility on an existing interdisciplinary team there that is focused on innovations within biomanufacturing. This will include collaborating on proposals, projects, workshops, and regular team meetings.

Success in this area will be measured based on increased interactions with faculty and students in the areas mentioned.

Course Development Project: Grant Proposal

MFG 340 – Quality Systems – Name

To better align with the message presented by President Worthen regarding the increased need for inspired learning and experiential learning in the classroom, I propose using the \$300 grant made available to support my course development project for the following:

1. The purchase of equipment to enable improved lab in the course integrating the content of MFG340 with other topics in the MFG curriculum.

I do not yet know what specific changes I plan for the labs in the course. In the fall term of 2018, I will be mindful of improvements that can be made to the laboratory offerings of this course.

The funds will be used during the spring/summer period of 2019 in order to prepare the laboratory instruction for the course being taught during the fall 2019 semester.

Faculty Development Plan and Proposed Development Projects

Name

Manufacturing Engineering Technology

September 4, 2018

This document contains a Faculty Development Plan as outlined in Section 3.1.2 of the “University Policy on Rank and Status.” Three sections, Scholarship, Teaching and Citizenship, are included, and each contain 1) self-assessments, 2) short and long-term goals, and 3) current progress towards my goals. Performance in these three areas will be used to determine continuing faculty status at the three- and five-year reviews.

1. Scholarship

1.1. Self-Assessment

1.1.1. Areas of Interest

1. Modeling of risks in pharmaceutical manufacturing based on regions and supply chains;
2. Benefit-risk models for new drug applications to the FDA

These areas are selected based on past experience, success, recognized expertise, interests and available funding.

1.1.2. Strengths, Skills and Competencies

- Experienced researcher with demonstrated history of successful project work
- Contacts in academia and industry (MIT, pharma companies)
- Past experience working and consulting for large pharma companies in manufacturing

1.1.3. Areas for Improvement or Growth

- I need to become more familiar with resources at BYU and beyond for research support.
- I need to continue to build relationships to expand my research base.
- I need to identify students interested and capable in my areas of interest.

1.2. Scholarship Goals

Building a solid foundation for continued scholarly success include the following key elements:

- 1) Continuing existing and building new collaborations
- 2) Continued funding
- 3) Recruitment and productive use of capable, motivated research assistants
- 4) Publication of research results in peer reviewed journals

The following short-term and long-term plans have been identified:

1.2.1.Short-term Plans (1-5 years)

- Submit NSF proposal for science of science and innovation policy grant in collaboration with team at MIT
- Continue research in areas of risk-benefit analysis
- Continue research in areas of manufacturing risk
- Engage multiple students in research activities annually
- Submit multiple peer-reviewed journal articles annually
- Have multiple peer-reviewed journal articles accepted annually

1.2.2.Long-term Plans (5-10 years)

- Continue collaborations (particularly external to BYU) that enhance contribution and relevance of my research
- Continue engagement of BYU students in research
- Continue publications

1.3. Relationship to Program Goals and Needs

As a goal of MET, we want to demonstrate excellence in a few specific research areas within manufacturing. In collaboration with others in the program, these scholarship goals with further strength our position as researchers generally and within the pharmaceutical domain specifically.

1.4. Required Resources

- Funding for travel to further collaborations
- Funding for student researchers

1.5. Progress to Date

- Established collaboration with biomanufacturing research group at MIT
- Drafting proposal to NSF for Science of Science and Innovation Policy in collaboration with the research group at MIT
- Assigned start-up funds from BYU

2. Teaching

2.1. Teaching Philosophy

My teaching at BYU will focus on instruction in the classroom and student mentoring through research projects. My current approach in the classroom contains more discovery-driven case-based logic than usually seen in traditional engineering lectures. This approach is coupled with descriptions of the theory and mathematical/logical applications. This approach is consistent with how top-ranked business schools encourage their faculty to approach the classroom discussions for technical content.

2.2. Self-Assessment

2.2.1.Areas of Interest

- Case teaching
- Use of software for technical analysis
- Mentored research opportunities

2.2.2.Strengths, Skills and Competencies

- History of demonstrated teaching excellence at prior institution
- Real-world industrial experience to share with students
- Passion for learning and helping other reach their potential

2.2.3.Areas for Improvement or Growth

- Balance structure and open-ended problem solving
- Teaching or coordination of laboratory exercises as prior experience did not include any teaching of laboratory exercises

2.3. Academic Goals

2.3.1.Short-term Plans (1-5 years)

- Have overall student evaluations of teaching in excess of 4.5 out of 5.0
- Have zero negative comments regarding intent or attitude (demonstrate positive leadership in the classroom)
- Increase relevance and value of laboratory exercises

2.3.2.Long-term Plans (5-10 years)

- Continue teaching excellence
- Develop curriculum for additional courses
- Help establish undergraduate curriculum to support ABET accreditation for MFG.

2.4. Relationship to Program Goals and Needs

Providing mentored research opportunities and excellent learning in the classroom helps to prepare our students to excel in their future endeavors.

2.5. Required Resources

- Eligible and capable TAs to support course teaching

2.6. Progress to Date

- History of excellent teaching at prior institution
- Participated in Faculty Development Series
- Taught one instance of MFG340 in the spring of 2018

3. Citizenship

3.1. Self-Assessment

3.1.1.Areas of Interest

- Support MFG program and its collaborations within BYU especially towards business-related initiatives and programs
- Disseminate research via conference proceedings, workshops, and journal articles.

3.1.2.Strengths, Skills and Competencies

- Established many collaborations
- Experience in reviewing publication topics

3.1.3.Areas for Improvement or Growth

- Increased participation in BYU internal collaborations at the interface of business and engineering
- Increased participation in industrial consortiums in the area of biomanufacturing

3.2. Professional Goals

3.2.1.Short-term Plans (1-5 years)

- Serve on committees for MFG as appropriate
- Become involved with BYU initiatives at the interface of business and engineering

3.2.2.Long-term Plans (5-10 years)

- Serve on college level committee as requested
- Lead/facilitate BYU initiatives at the interface of business and engineering

3.3. Relationship to Program Goals and Needs

Connection to business initiatives increases engagement of MFG students with their curriculum and colleagues in the Marriott School of Business.

3.4. Required Resources

none

3.5. Progress to Date

- Attended program faculty meetings and industrial advisory board (IAB) external relations committee

MFG 340 - Quality Systems – Fall 2018

Meeting Mondays 1pm – 1:50pm in TNRB W240

And Meeting Wednesdays 1pm – 1:50pm in TNRB W118

Instructor/TA Info

Instructor Information

Name: Name

Office Location: CTB 265K

Office Phone: 8014221777

Email: Name@byu.edu

TA Information

Name: Name Name:

Email: Name@gmail.com Email:

Name Name: Name

Name@gmail.com Email:

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Course Information

Materials

Required:

1. Quality Trainer by Minitab (online textbook with embedded quizzes)
2. Online readings and cases available for purchase at:

<https://hbsp.harvard.edu/import/565097>

3. FMEA book available for purchase on Amazon or the BYU Bookstore:
BASICS OF FMEA 2nd Edition by R. McDermott, ISBN: 9781563273773

Optional:

1. The Deming Dimension, by Neave
2. An Introduction to Design of Experiments, by Barrentine
3. Six Sigma for Dummies, by Gygi, DeCarlo and Williams

Learning Outcomes

Teamwork: Function effectively as a member or leader of a team

Communication: Understand how to communicate effectively to build relationship and to gain support and commitment of others

Variation: Asses the nature, types and impact of variation

Quality: Understand how to effectively define, measure, analyze, improve and control quality

Regulatory Standards: Understand the reason for, and impact of, national and international regulatory standards and certifications

System Improvement: Understand and implement system improvement concepts (lean, TOC, etc.)

Communication Tools: Use modern tools of communication such as charts, graphs, media, and other visual aids

Grading Scale

Grades	A	A-	B+	B	B-	C+	C	C-	D+	D	D-	E
Percent	93%	90%	87%	83%	80%	77%	73%	70%	67%	63%	60%	0%

Grading Policy

In-class exams	25%
Final exam	25%
Case write-ups (group work)	15%
Labs	15%
Quality Trainer quizzes prior to bold date in schedule	10%
Participation	10%

Planned Schedule

<u>Date</u>	<u>Planned Content</u>	<u>Quality Trainer</u>	<u>Pre-Reading from Online Readings</u>	<u>Case Pre-Read</u>	<u>Lab of the Week</u>
5-SEP	Course overview Quality dimensions				<i>None</i>
10-SEP	Quality Strategy Quality Systems		The House of Quality; Managing Quality section 1 – 2.4	Scharffen Burger	
12-SEP	Scharffen Burger				Funnel
17-SEP	Statistics overview; Variation	Chp 1	Managing Variability pp 1-4		
19-SEP	Variation	Chp 2			Minitab #1
24-SEP	Measurement systems analysis	Chp 8			
26-SEP	Improvement projects; Alcoa Power and Propulsion		Managing Quality with Process Control section 2.3; Alcoa Power and Propulsion	Bayonne Packaging	Pencil
1-OCT	Bayonne Packaging				
3-OCT	IN-CLASS EXAMINATION #1				<i>None</i>
8-OCT	Hypothesis testing	Chp 3			
10-OCT	Analysis of variance	Chp 6			Minitab #2
15-OCT	Analysis of variance	Chp 6			
17-OCT	Statistical process control	Chp 4	Managing Variability pp 4-11; Managing Quality with Process Control sections 1 – 2.2 and 3		Minitab #3
22-OCT	Statistical process control; Ben & Jerry's	Chp 4	Ben & Jerry's	Ritz Carlton	Dog Bones

24-OCT	Ritz Carlton				
29-OCT	Process capability	Chp 5			
31-OCT	Process capability	Chp 5		Excel Logistics	Minitab #4
5-NOV	Excel Logistics				
7-NOV	IN-CLASS EXAMINATION #2				<i>None</i>
12-NOV	cost of quality; Taguchi		Managing Quality section 2.5; Robust Quality		
14-NOV	quality by design; FMEA		The House of Quality; FMEA Basics		Taguchi
19-NOV	FMEA		FMEA Basics		
21-NOV	NO CLASSES – THANKSGIVING HOLIDAY				<i>None</i>
26-NOV	Design of experiments	Chp 9			
28-NOV	Design of experiments	Chp 9			Helicopter
3-DEC	Design of experiments	Chp 9			
5-DEC	Supply chain; Product stability			BP Supply	Catapult
10-DEC	BP Supply				
12-DEC	Review				<i>None</i>
18-DEC	Final Exam 2:30-5:30pm in TNRB W240				

University Policies

Honor Code

In keeping with the principles of the BYU Honor Code, students are expected to be honest in all of their academic work. Academic honesty means, most fundamentally, that any work you present as your own must in fact be your own work and not that of another. Violations of this principle may result in a failing grade in the course and additional disciplinary action by the university. Students are also expected to adhere to the Dress and Grooming Standards. Adherence demonstrates respect for yourself and others and ensures an effective learning and working environment. It is the university's expectation, and every instructor's expectation in class, that each student will abide by all Honor Code standards. Please call the Honor Code Office at 422-2847 if you have questions about those standards.

Preventing Sexual Misconduct

In accordance with Title IX of the Education Amendments of 1972, Brigham Young University prohibits unlawful sex discrimination against any participant in its education programs or activities. The university also prohibits sexual harassment-including sexual violence-committed by or against students, university employees, and visitors to campus. As outlined in university policy, sexual harassment, dating violence, domestic violence, sexual assault, and stalking are considered forms of "Sexual Misconduct" prohibited by the university.

University policy requires all university employees in a teaching, managerial, or supervisory role to report all incidents of Sexual Misconduct that come to their attention in any way, including but not limited to face-to-face conversations, a written class assignment or paper, class discussion, email, text, or social media post. Incidents of Sexual Misconduct should be reported to the Title IX Coordinator at t9coordinator@byu.edu or (801) 422-8692. Reports may also be submitted through EthicsPoint at <https://titleix.byu.edu/report> or 1-888-238-1062 (24-hours a day). BYU offers confidential resources for those affected by Sexual Misconduct, including the university's Victim Advocate, as well as a number of non-confidential resources and services that may be helpful. Additional information about Title IX, the university's Sexual Misconduct Policy, reporting requirements, and resources can be found at <http://titleix.byu.edu> or by contacting the university's Title IX Coordinator.

Student Disability

Brigham Young University is committed to providing a working and learning atmosphere that reasonably accommodates qualified persons with disabilities. If you have any disability which may impair your ability to complete this course successfully, please contact the University Accessibility Center (UAC), 2170 WSC or 422-2767.

Reasonable academic accommodations are reviewed for all students who have qualified, documented disabilities. The UAC can also assess students for learning, attention, and emotional concerns. Services are coordinated with the student and instructor by the UAC. If you need assistance or if you feel you have been unlawfully discriminated against on the basis of disability, you may seek resolution through established grievance policy and procedures by contacting the Equal Employment Office at 422-5895, D-285 ASB.

Academic Honesty

The first injunction of the Honor Code is the call to "be honest." Students come to the university not only to improve their minds, gain knowledge, and develop skills that will assist them in their life's work, but also to build character. "President David O. McKay taught that character is the highest aim of education" (The Aims of a BYU Education, p.6). It is the purpose of the BYU Academic Honesty Policy to assist in fulfilling that aim. BYU students should seek to be totally honest in their dealings with others. They should complete their own work and be evaluated based upon that work. They should avoid academic dishonesty and misconduct in all its forms, including but not limited to plagiarism, fabrication or falsification, cheating, and other academic misconduct.

Deliberation Guidelines

To facilitate productive and open discussions about sensitive topics about which there are differing opinions, members of the BYU community should:

- (1) Remember that we are each responsible for enabling a productive, respectful dialogue.
- (2) To enable time for everyone to speak, strive to be concise with your thoughts.
- (3) Respect all speakers by listening actively.
- (4) Treat others with the respect that you would like them to treat you with, regardless of your differences.
- (5) Do not interrupt others.
- (6) Always try to understand what is being said before you respond.
- (7) Ask for clarification instead of making assumptions.
- (8) When countering an idea, or making one initially, demonstrate that you are listening to what is being said by others. Try to validate other positions as you assert your own, which aids in dialogue, versus attack.
- (9) Under no circumstances should an argument continue out of the classroom when someone does not want it to. Extending these conversations beyond class can be productive, but we must agree to do

so respectfully, ethically, and with attention to individuals' requests for confidentiality and discretion. (10) Remember that exposing yourself to different perspectives helps you to evaluate your own beliefs more clearly and learn new information. (11) Remember that just because you do not agree with a person's statements, it does not mean that you cannot get along with that person. (12) Speak with your professor privately if you feel that the classroom environment has become hostile, biased, or intimidating.

Adapted from the Deliberation Guidelines published by The Center for Democratic Deliberation.

(<http://cdd.la.psu.edu/education/The%20CDD%20Deliberation%20Guidelines.pdf/view?searchterm=deliberation%20guidelines>)

Inappropriate Use Of Course Materials

All course materials (e.g., outlines, handouts, syllabi, exams, quizzes, PowerPoint presentations, lectures, audio and video recordings, etc.) are proprietary. Students are prohibited from posting or selling any such course materials without the express written permission of the professor teaching this course. To do so is a violation of the Brigham Young University Honor Code.

Mental Health Concerns

Mental health concerns and stressful life events can affect students' academic performance and quality of life. BYU Counseling and Psychological Services (CAPS, 1500 WSC, 801-422-3035, caps.byu.edu) provides individual, couples, and group counseling, as well as stress management services. These services are confidential and are provided by the university at no cost for full-time students. For general information please visit <https://caps.byu.edu>; for more immediate concerns please visit <http://help.byu.edu>.

Devotional Attendance

Brigham Young University's devotional and forum assemblies are an important part of your BYU experience. President Cecil O. Samuelson said, "We have special and enlightening series of devotional and forum assemblies...that will complement, supplement, and enrich what will also be a very productive period in your classrooms, laboratories, and libraries. We look forward to being with you each Tuesday...and hope that you will regularly attend and bring your friends and associates with you...A large part of what constitutes the unique 'BYU experience' is found in these gatherings where the Spirit has been invited and where we have the opportunity to discuss and consider things of ultimate worth and importance that are not afforded to the academic community on almost any other campus" (from the address "The Legacy of Learning",

30 August, 2005). Your attendance at each forum and devotional is strongly encouraged.

Plagiarism

Intentional plagiarism is a form of intellectual theft that violates widely recognized principles of academic integrity as well as the Honor Code. Such plagiarism may subject the student to appropriate disciplinary action administered through the university Honor Code Office, in addition to academic sanctions that may be applied by an instructor. Inadvertent plagiarism, which may not be a violation of the Honor Code, is nevertheless a form of intellectual carelessness that is unacceptable in the academic community. Plagiarism of any kind is completely contrary to the established practices of higher education where all members of the university are expected to acknowledge the original intellectual work of others that is included in their own work. In some cases, plagiarism may also involve violations of copyright law. Intentional Plagiarism-Intentional plagiarism is the deliberate act of representing the words, ideas, or data of another as one's own without providing proper attribution to the author through quotation, reference, or footnote. Inadvertent Plagiarism-Inadvertent plagiarism involves the inappropriate, but non-deliberate, use of another's words, ideas, or data without proper attribution. Inadvertent plagiarism usually results from an ignorant failure to follow established rules for documenting sources or from simply not being sufficiently careful in research and writing. Although not a violation of the Honor Code, inadvertent plagiarism is a form of academic misconduct for which an instructor can impose appropriate academic sanctions. Students who are in doubt as to whether they are providing proper attribution have the responsibility to consult with their instructor and obtain guidance. Examples of plagiarism include: Direct Plagiarism-The verbatim copying of an original source without acknowledging the source. Paraphrased Plagiarism-The paraphrasing, without acknowledgement, of ideas from another that the reader might mistake for the author's own. Plagiarism Mosaic-The borrowing of words, ideas, or data from an original source and blending this original material with one's own without acknowledging the source. Insufficient Acknowledgement-The partial or incomplete attribution of words, ideas, or data from an original source. Plagiarism may occur with respect to unpublished as well as published material. Copying another student's work and submitting it as one's own individual work without proper attribution is a serious form of plagiarism.

Respectful Environment

"Sadly, from time to time, we do hear reports of those who are at best insensitive and at worst insulting in their comments to and about others... We hear derogatory and sometimes even defamatory comments about those with different political, athletic, or ethnic views or experiences. Such behavior is completely out of place at BYU, and I enlist the aid of all to monitor carefully and, if necessary, correct any such that might occur here, however inadvertent or unintentional. "I worry particularly about demeaning comments made about the career or major choices of women or men either directly or about members of the BYU community generally. We must remember that personal agency is a fundamental principle and that none of us has the right or option to criticize the lawful choices of another." President Cecil O. Samuelson, Annual University Conference, August 24, 2010 "Occasionally, we ... hear reports that our female faculty feel disrespected, especially by students, for choosing to work at BYU, even though each one has been approved by the BYU Board of Trustees. Brothers and sisters, these things ought not to be. Not here. Not at a university that shares a constitution with the School of the Prophets." Vice President John S. Tanner, Annual University Conference, August 24, 2010

Scholarship Strategies Project Proposal:

MANUFACTURING ENGINEERING TECHNOLOGY – Name

I will continue to research, publish, and collaborate in areas related to:

1. Modeling of risks in pharmaceutical manufacturing based on regions and supply chains;
2. Benefit-risk models for new drug applications to the FDA.

As a means of furthering my research, I will complete the following scholarly goals prior to February 2019:

1. Complete a NSF proposal for their Science of Science and Innovation Policy in collaboration with MIT
2. Participated in a workshop on risk management in biopharmaceutical manufacturing
3. Submit a journal article on the topic of patient risks in biopharmaceutical manufacturing

I will strive to employ the following techniques to improve my effectiveness at Brigham Young University:

1. Participate in workshops and conferences relevant to my research.
2. Schedule several blocks each week for writing.

The methods I will use to evaluate my success in using these strategies to enhance my regular work habits during my concluding report are as follows:

1. Identify new opportunities associated with participation in a workshops and conferences.
2. Comparatively review writing in large blocks (current method) to scheduled writing periods several times each week.