

UNIVERSITY of UTAH		ME EN 5040 / 6040 Quality Assurance	
COURSE SYLLABUS		Class Number: 8588 (ME EN 5040)	
SUMMER 2021	MAY 17th - JUNE 25th	Class Number: 8589 (ME EN 6040)	
BUILDING: NONE - CANVAS			
ROOM: NONE - CANVAS			
TIME: 6:00-9:00 PM			
PREREQUISITES: Statistics, Risk Management			
INSTRUCTOR: Bryan Howard Ph.D. bryphow@gmail.com 435-760-3670 Office: None			
COURSE DESCRIPTION: Students will learn the basics of common quality systems, the basics of risk management, the basics of engineering product design, and the statistical methods used within the major elements of product design: design verification & validation, manufacturing process validation, and on-going mfg. quality monitoring.			
COURSE POLICES: Academic honesty policy: U of U policies and recommendations for academic honesty will be followed. Cheating and plagiarism will result in no credit for the assignment. Repeat offenses will result in failure of the class. No late assignments will be accepted without prior discussion with the professor. Students are expected to attend each lecture.			
REQUIRED TEXTS:			
Applied Statistics and Probability for Engineers, Fifth Ed., Montgomery		(ISBN 0-471-20454-4)	
SUGGESTED TEXTS:			
Sample Size Calculations, Practical Methods for Engineers and Scientists, Mathews		(ISBN 978-0-615-32461-6)	
Industrial Statistics with Minitab, Cintas		(ISBN 978-0-470-97275-5)	
The Certified Reliability Engineer, Bendow		(ISBN 978-0-87389-721-1)	
Practical Reliability Engineering, O'Conner		(ISBN 978-0-470-97982-2)	
Introduction to Statistical Quality Control Third Ed., Montgomery		(ISBN 0-471-30353-4)	
COURSE WEBSITE: University of Utah Canvas			
GRADING POLICY: NO CURVE, NO EXTRA CREDIT			
A	> 95 %	C	73 - 76 %
A-	90 - 94 %	C-	70- 72 %
B+	87 - 89 %	D+	67 - 69 %
B	83 - 86 %	D	63 - 66 %
B-	80 - 82 %	D-	60 - 62 %
C+	77 - 79 %	F	< 60%
DELIVERABLES			
MODULE 1 Quality Systems, Engineering Requirements, and Risk			
Lecture A - Introduction to Quality Systems (ISO 9001, ISO 13485, 21 CFR 820)			
Lecture B - Introduction to Design Requirements and Risk Control			
MODULE 2 Mathematical Methods for Design Verification & Design Validation			
Lecture C - Introduction to Design Verification (Hypothesis Testing, Tolerance Interval Analysis, Statistical Reliability Analysis)			
Lecture D - Introduction to Design Validation			
MODULE 3 Mathematical Methods for Process Validation			
Lecture E - Introduction to Manufacturing Process Validation - Continuous Measurement Data (Cpk, PkP)			
Lecture F - Introduction to Manufacturing Process Validation - Attribute Measurement Data (Binomial (%) and Poisson (DPU) Capability)			
MODULE 4 Mathematical Methods for On-Going Quality Monitoring			
Lecture G - Introduction to Manufacturing Quality Monitoring - Statistical Process Control (x-bar charts, s-charts, p-charts, n-charts, np-charts, c-charts, u-charts)			
Lecture H - Intro to Manufacturing Monitoring: Lot Acceptance Sampling - Incoming & Outgoing Inspect. (AQL/ α and RQL/ β)			
MODULE 5 PROJECT			
Design Project - Rope Cam-Lock			
Final Exam			