



ECTS COURSE INFORMATION FORM

Faculty	Faculty of Engineering		
Program	B.Sc. in Civil Engineering	Elective	
	B.Sc. in Computer Engineering	Elective	
	B.Sc. in Electrical-Electronics Engineering	Elective	
	B.Sc. in Industrial Engineering	Required	
	B.Sc. in Mechanical Engineering	Elective	

Course Code	IE 302			
Course Title in English	Quality Engineering			
Course Title in Turkish	Kalite Mühendisliği			
Language of Instruction	English			
Type of Course	Flipped Classroom/Lecture			
Level of Course	Undergraduate			
Course Category (by % of Content)	Basic Science	Basic Engineering	Engineering Design	General Education
	10	60	30	-
Semester Offered	Spring			
Contact Hours per Week	Lecture: 3 hours	Recitation: -	Lab: 1 hour	Other: -
Estimated Student Workload	133 hours			
Number of Credits	5 ECTS			
Grading Mode	Standard Letter Grade			
Pre-requisites	MATH 228			
Expected Prior Knowledge	Basic probability and statistics knowledge			
Co-requisites	-			
Registration Restrictions	-			
Overall Educational Objective	To learn statistical methods/problem solving techniques to improve product/service quality			
Course Description	This course covers the fundamental methods of quality engineering that are needed in today's industry applications. The emphasis is on the statistical tools of quality engineering systems. Moreover, the course discusses quality excellence models, cost models, quality audit programs and quality information systems.			
Course Description in Turkish	Bu ders günümüz üretim ve servis sektöründe gerekli olan temel kalite mühendisliği metotlarını kapsamaktadır. Kalite mühendisliği sistemlerinin istatistiksel araçları üzerine odaklanmaktadır. Ayrıca kalite mükemmellik modelleri, maliyet modelleri, kalite denetleme programları ve kalite bilgi sistemleri konularını içermektedir.			
Course Learning Outcomes and Competences	Upon successful completion of the course, the learner is expected to: <ol style="list-style-type: none">1. understand the major concepts of quality and key customer needs to improve product and service quality continuously;2. use the statistical process control methodology for monitoring and improving the production and service processes;3. perform process capability and measurement system capability studies;4. understand how to design and analyze engineering experiments.			

Relationship of the Course with the Student Outcomes	Level	Learning Outcome(s)	Assessed by
Student Outcomes	N=None S=Supportive H=High		Exam, Project, HW, Experiment, Presentation, etc.
(1) an ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics	H	1,2, 3	Exams, HWs, Quizzes, ALA (Lab Work)
(2) an ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors			
(3) an ability to communicate effectively with a range of audiences			
(4) an ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts			
(5) an ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives			
(6) an ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions	H	4	Exams, HWs, Quizzes, ALA (Lab Work)
(7) an ability to acquire and apply new knowledge as needed, using appropriate learning strategies			
Prepared by and Date	Asst. Prof. Duygu Taş / February 2020		
Semester	Spring 2019-2020		
Name of Instructor	Dr. Müge Gültekin Erzin		
Course Contents	Week	Topic	
	1.	General Introduction to Quality Improvement	
	2.	Probability Distributions	
	3.	Measurement System Analysis	
	4.	Capability Analysis	
	5.	Process Analysis (VSM, Muda)	
	6.	Data Analysis (Hypothesis Testing, Regression)	
	7.	Data Analysis (Hypothesis Testing, Regression)	
	8.	Design of Experiments	
	9.	Design of Experiments	
	10.	Risk Analysis (FMEA)	
	11.	Control Charts	
	12.	Control Charts	
	13.	Acceptance Sampling	
	14.	Acceptance Sampling	
	15.	Final Exam/Project/Presentation Period	
	16.	Final Exam/Project/Presentation Period	
Required/Recommended Readings	Textbook: Montgomery, Douglas C., Statistical Quality Control: A Modern Introduction, John Wiley & Sons, Inc, Seventh Edition, 2014.		
Teaching Methods	Lectures/contact hours using "flipped classroom" as an active learning technique/implement the methods learned in class at a computer lab		
Homework and Projects	There will be homework		
Laboratory Work	Yes (to implement methods learned in class)		
Computer Use	Yes – Minitab Software		

Other Activities	-												
Assessment Methods	<table border="1"> <thead> <tr> <th>Types of assessment</th> <th>Ratio (%)</th> </tr> </thead> <tbody> <tr> <td>Midterm Exam</td> <td>30</td> </tr> <tr> <td>Homework</td> <td>15</td> </tr> <tr> <td>Quizzes and Lab Work</td> <td>20</td> </tr> <tr> <td>Final Exam</td> <td>35</td> </tr> <tr> <td>Total</td> <td>100</td> </tr> </tbody> </table>	Types of assessment	Ratio (%)	Midterm Exam	30	Homework	15	Quizzes and Lab Work	20	Final Exam	35	Total	100
Types of assessment	Ratio (%)												
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Course Administration	<p>Instructor's</p> <ul style="list-style-type: none"> -office and phone number: TBD -office hours: TBA -email address: gultekinm@mef.edu.tr <p>The best way to contact me is via email. However, if discussing the subject over email is not possible or answering your question via email is complicated, I reserve the right to request that you make an appointment with me to discuss your questions.</p> <p><u>FOLLOWING RULES ARE NON-NEGOTIABLE!</u></p> <p>Attendance: Attendance is taken, but not graded. Students can attend only the sections they are registered to. You are responsible for the announcements made in class and in labs. (You may miss some of the quizzes and graded lab activities if you do not attend classes regularly.)</p> <p>Exam/Quiz/Homework/Lab Grading Appeals: Every effort will be made to ensure that grading is as objective and fair as possible. If you believe that there is an error in grading, please make an appointment with me within one week after the announcement of the grades. However, be advised that your grade could increase or decrease based on the second grading.</p> <p>Quizzes and Lab Work: No lab reports will be accepted or no make-up will be given for a missed lab. Lab works are to be done as a group and most of it cannot be reproduced outside the lab. No make-up will be given for a missed quiz. 10% bonus will be given to compensate for the missed quizzes and lab work.</p> <p>Missing a quiz or lab work: No make-up will be given since one of the worst quiz grades will be excluded in the calculation of the total grade.</p> <p>Homework: Not all homework will be graded. The lowest homework grade will not be included in the calculation of the final grade.</p> <p>Missing a homework: No make-up will be given since one of the worst homework grades will be excluded in the calculation of the total grade.</p> <p>Midterm: There will be one Midterm Exam.</p> <p>Missing a midterm: You are expected to be present without exception and to plan any travel around these dates accordingly. Medical emergencies are of course excluded if accompanied by a doctor's note. A note indicating that you were seen at the health center the day of the exam is not sufficient documentation of a medically excused absence from an exam. <u>The note must say that you were medically unable to take the exam.</u> If you fail to take the exam on the assigned day and do not have a valid excuse, you will be given a zero (0) on the exam. <u>Employment interviews, employer events, weddings, vacations, etc. are not excused absences.</u> Provided that proper documents of excuse are presented for absence in the midterm, a make-up will be given as soon as possible. It is the student's responsibility to contact the instructor in at most 3 days after the regular exam date, if they need to take a make-up.</p> <p>Final: There will be one Final Exam.</p> <p>Missing a final: Faculty regulations.</p> <p>Eligibility to enter the final exam: Students are required to achieve 25% success rate as the average of the midterm exam, quizzes, homework and labs in order to enter the final exam.</p> <p>A reminder of proper classroom behavior, code of student conduct: YÖK Regulations</p> <p>Statement on plagiarism: YÖK Regulations (http://students.mef.edu.tr/tr/lisans-ve-onlisans-yonetmeligi#)</p> <p>Disclaimer: The instructor reserves the right, when necessary, to alter the grading policy, change examination dates, and modify the syllabus and course content. Modifications will be announced in class. Students are responsible for the announced changes.</p>												

ECTS Student Workload Estimation	Activity	No/Weeks	Hours			Calculation	Explanation
		No/Weeks per Semester (A)	Preparing for the Activity (B)	Spent in the Activity Itself (C)	Completing the Activity Requirements (D)		
	Lecture/Flipped Classroom	14	1	3	1	70	A*(B+C+D)
	Midterm(s)	1	14	2	0	16	A*(B+C+D)
	Assignment, Project, Presentation	5	1	1		10	A*(B+C+D)
	Laboratory	5	1	1	1	15	A*(B+C+D)
	Final Examination	1	20	2	0	22	A*(B+C+D)
	Total Workload					133	
	Total Workload/25					5.32	
	ECTS					5	