



EASTERN MEDITERRANEAN UNIVERSITY
FACULTY OF ENGINEERING
DEPARTMENT OF INDUSTRIAL ENGINEERING
COURSE OUTLINE
SPRING 2023-24



COURSE CODE	IENG486	COURSE LEVEL	3rd Year
COURSE TITLE	Recent Topics in Quality Management	COURSE TYPE	Area Elective
CREDIT VALUE	(3, 0, 1) 3	ECTS	6
PRE-REQUISITE(S)	MATH322	CO-REQUISITE(S)	-
	Name	E-mail	Office
Instructor	Asst. Prof. Dr. Ali Berk Baştaş	ali.bastas@emu.edu.tr	IE-C104
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CATALOG DESCRIPTION

This course is designed to equip engineering students with the latest quality management and engineering concepts, tools, and techniques along with their implementation. The topics that will be covered include: Quality Management and its basic notions; Quality planning and risk management tools including Process Flow Mapping, Failure Mode and Effects Analysis, and Control Planning; Lean Six Sigma improvement methodology and application of its key stages such as Measurement System Analysis, Gauge Repeatability and Reproducibility, Process Capability Analysis; ISO9001 Quality Management System and its implementation; Quality Improvement Tools; 8D Problem Solving and Ishikawa Root Cause Analysis; Quality 4.0.

AIM & OBJECTIVES

The main aim of this course is to equip the students with the fundamental knowledge and understanding of recent topics in quality management. The associated course objectives are development of skills, knowledge and understanding in the following fundamental areas:

1. Identify and understand the notion of quality management, and its key principles
2. Conduct quality planning analysis of an industrial organization including implementation of key tools of Process Flow Mapping, PFMEA, and Control Plans
3. Identify, analyse and apply the Lean six sigma methodology, including its key steps such as measurement system analysis and process capability analysis
4. Identify and implement ISO9001 quality management system for an industrial organisation
5. Undertake quality improvement analysis and problem solving using key tools such as 8D and Ishikawa root cause analysis
6. Identify recent developments and future trends in the domain of Quality 4.0
7. Work as a quality improvement team to complete a comprehensive, applied quality management project

COURSE LEARNING OUTCOMES (CLOs)

On successful completion of this course, the students are expected to develop knowledge and understanding of:

- the notion of quality management, and its key principles
- recent developments and future trends in the domain of Quality 4.0

On successful completion of this course, the students are expected to develop their skills in:

- conducting quality planning analysis of an industrial organization including implementation of key tools of Process Flow Mapping, PFMEA, and Control Plans
- application of the Lean six sigma methodology, including its key steps such as measurement system analysis and process capability analysis

- implementation of ISO9001 quality management system for an industrial organisation
- Undertaking quality improvement analysis and problem solving using key tools such as 8D and Ishikawa root cause analysis
- Working as a quality improvement team to complete a comprehensive, applied quality management project

On successful completion of this course, the students are further expected to develop their appreciation of, and respect for values and attitudes to:

- Group dynamics, working in teams, respecting team work ethics and contributing to team work.

COURSE TEXTBOOK

- P. Charantimath, “Total Quality Management, 3rd Edition”, Pearson, 2017

SUPPLEMENTARY READINGS

- J. Beckford, “Quality Management Reconsidered for the Digital Economy, 5th Ed.”, Routledge, 2023.
- S. T. Foster, “Managing the Quality Integrating the Supply Chain, 7th Ed.” Pearson, 2017.

COURSE CONTENT & WEEKLY SCHEDULE

Week	Topics	Assessment Methods, %
WK1	Course Policy, Introduction	Quizzes: 20% Midterm Exam: 20% Final Exam: 30% Term Project: 30%
WK2	Quality Management Notion and Key Principles	
WK3-4	Advanced Quality Planning (PFM, PFMEA, and CPs)	
WK5	Lean Six Sigma (Define and Measure using MSA)	
WK6	Quality Improvement Tools (incl. 8D and Ishikawa Analysis)	
MTW1-2	Midterm Exams	
WK7	Quality Improvement Tools (incl. 8D and Ishikawa Analysis)	
WK8-9	Lean Six Sigma (Analyse using PCA, Improve and Control)	
WK10-11	ISO9001 Quality Management System	
WK12	Quality 4.0 and Future of QM	
WK13	Project Presentations & Review	
FW1-2	Final Exams	

DETAILED WEEKLY COURSE SCHEDULE

IENG486 Recent Topics in Quality Management Spring 2023/24 Term Plan					
Week	Week Commencing (Monday)	Lecture Ref.	Module	Textbook Ref.	Quizzes
WK1	12-Feb				
WK2	19-Feb	L00 & L01	Intro., Quality Management Notion and Key Principles	Chapter 1	
WK3	26-Feb	L02	Quality Planning (PFM, PFMEA, and CPs)	Chapter 13 & 14	
WK4	04-Mar	L02	Quality Planning (PFM, PFMEA, and CPs)	Chapter 13 & 14	Quiz 1
WK5	11-Mar	L03	Lean Six Sigma (Define and Measure using MSA)	Chapters 6&7	
WK6	18-Mar	L04	Quality Improvement Tools (incl. 8D and Ishikawa Analysis)	Chapter 8	Quiz 2
MTW	25-Mar	Midterm Exams			
MTW	01-Apr	Midterm Exams			
RW	08-Apr	Ramadan			
WK7	15-Apr	L04	Quality Improvement Tools (incl. 8D and Ishikawa Analysis)	Chapter 8	
WK8	22-Apr	L05	Lean Six Sigma (Analyse using PCA, Improve and Control)	Chapters 6&7	
WK9	29-Apr	L05	Lean Six Sigma (Analyse using PCA, Improve and Control)	Chapters 6&7	
WK10	06-May	L06	ISO9001 Quality Management System	Chapter 17	Quiz 3
WK11	13-May	L06	ISO9001 Quality Management System	Chapter 17	
WK12	20-May	L07	Quality 4.0 and Future of QM		
WK13	27-May		Project Presentations & Review		Quiz 4
FW	03-Jun	Final Exams			
FW	10-Jun	Final Exams			

ATTENDANCE & GRADING POLICY

Attendance will be taken every lecture session. Note that EMU regulations allow instructors to give a grade of **NG** to a student whose absenteeism is more than 30% of the lecture hours and/or who do not complete sufficient work that are included in the assessment of the course as outlined below. Students missing an examination **should provide a valid excuse within three days** following the examination they missed. One make-up examination will be given.

NG (Nil-grade) Policy: The following conditions **MAY** result in the student getting an NG grade from this course:

- I. Not attending the Final Exam without a valid excuse.
- II. Not attending the Midterm Exam without a valid excuse.
- III. Cheating and/or plagiarism during the exams, quizzes and/or project assignments.
- IV. Not attending the project presentation without a valid excuse.

Students missing an examination **should provide a valid excuse within three days** following the examination they missed. On the basis of the confirmation of the evidence provided for missing the exam, student may qualify for one make-up examination only.

Term Project – Late Submissions: A penalty (at least 50% reduction in the grade) for late submissions will be applied if the project report is not submitted on the specified due date and time. The project and lab tasks will be advised in separate documentation.

TEACHING/LEARNING METHOD

The teaching/learning methods adopted this semester will be in-class lectures, and through application of course materials in the form of a group term project. All relevant course materials will be provided via the course page implemented on the EMU Learning Management System LMS and the course group on MS Teams. The students will be provided with updates during the lectures and through posts on the course page on the EMU LMS (and on the MS Teams page of the course).

ACADEMIC HONESTY - PLAGIARISM

Cheating is copying from others or providing information, written or oral, to others. Plagiarism is copying without acknowledgement from other people's work. According to university laws, cheating and plagiarism are serious offences punishable with disciplinary action ranging from simple failure from the exam or project, to more serious action (letter of official warning suspension from the university for up to one semester). During the penalty period the student is not allowed to enter the University campus which means the student will not be able to listen the lectures, joining any kind of exams/presentations, submitting homeworks/projects etc. It will also cost the student to receive an **NG grade**. Disciplinary action is written in student records and may appear in student transcripts.

The term project reports will be submitted to the Turnitin portal on LMS, and penalties will apply to project reports exceeding a similarity limit of 25%.