

Course number and name	END 329 / Quality Management Tools and Techniques
Credits, contact hours, categorization of credits	3 credits / 42 hours / Engineering topic
Instructor or course coordinator	Şeyda SERDAR ASAN
Text book and other supplemental materials	<ul style="list-style-type: none"> • KS Krishnamoorthi, <i>A First Course in Quality Engineering: Integrating Statistical and Management Methods of Quality</i>, Pearson Education, 2011 • Donna C.S. Summers, <i>Quality</i>, 5th edition, Prentice Hall, 2013

Course information	
Content	This course is about continuous improvement philosophy. Course topics involve application of quality tools and techniques in service and manufacturing environments.
Prerequisites	None
Type	Selected elective

Course learning outcomes
<p>Students who pass the course will:</p> <ol style="list-style-type: none"> I. Understand principles of quality, quality management and continuous improvement II. Understand the necessity of and the differences between different approaches, tools and techniques for organizing for quality III. Classify and compute different types of quality costs IV. Measure the quality of goods/services and capability of processes V. Apply the problem solving systematic for continuous improvement VI. Understand and utilize quality tools and techniques to diagnose, analyze and solve problems VII. Gain the ability of working with teams

Student outcomes	Level of contribution
SO1. An ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics.	High
SO2. 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.	High
SO3. An ability to communicate effectively with a range of audiences.	Partial
SO4. 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.	Not applicable
SO5. 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.	Partial
SO6. An ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions.	Partial
SO7. An ability to acquire and apply new knowledge as needed, using appropriate learning strategies.	Little

Week	Topics	Learning outcome(s)
1	Evolution of quality thinking and Quality Management	I, II
2	Dimensions of Quality of Products and Services,	I, IV
3	Cost of Quality (Prevention Costs, Appraisal Costs, Failure Costs, Internal Failure Costs)	III
4	Problem solving methodology: PDCA cycle and 7 Basic Quality Tools	II, V, VI
5	Teamwork for Quality Improvement; 7 Management Tools	II, V, VI, VII
6	Process Mapping, SIPOC, Critical to Quality	I, IV
7	Measurement System Analysis	IV
8	Process Improvement & Process Capability Analysis	IV
9	Design of Experiments	V, VI
10	Failure Modes and Effects Analysis	V, VI
11	Quality Function Deployment	V, VI
12	TRIZ (Theory of Inventor's Problem Solving)	V, VI
13	Service Quality, Models of Service Quality	II, IV
14	Measuring Service Quality	II, IV