

## MME309: Total Quality Management

Programme: B. Tech

Year: II

Semester: IV

Course: Core

Credits: 3

Hours: 40

### Course Overview and Context:

The customer today has become extra quality conscious and over demanding than ever before. Quality management focuses on product/service quality and means to achieve it. Quality management Gurus and their teachings have brought a dramatic change in perception of quality. To cater to the rising demand of quality assurance engineers in manufacturing and service industry, this course shall prepare the mechanical-mechatronic engineering students to acquire skill in quality engineering.

### Prerequisite Courses: Nil

**Course Outcomes (COs):** On completion of this course, the students will have:

<b>CO1</b>	Analyze the need of quality and customer satisfaction	Unit 1
<b>CO2</b>	Acquire the knowledge of employee involvement and continuous improvement for quality.	Unit 2
<b>CO3</b>	Acquire the knowledge of statistical process control methods.	Unit 3
<b>CO4</b>	Understand the quality and environment management system.	Unit 4
<b>CO5</b>	Acquire the knowledge of some advanced strategies for quality.	Unit 5

UNITS	COURSE TOPICS	Lecture Hours	Student development
<b>UNIT 1</b>	<b>Quality concepts</b>	<b>08</b>	
	(A) Introduction, Definition, Basic approach, Quality Gurus, TQM framework, benefits. Quality Concepts, Evolution of Quality control, quality assurance, TQM Modern concept, Quality concept in design. (B) Customer-Supplier partnership, Control on Purchased Product, Procurement of various products, evaluation of suppliers, capacity verification, Development of sources, procurement procedure, customer satisfaction.		Employability, Entrepreneurship

	(C) Manufacturing Methods, Inspection and control of product, Quality Leadership, Quality in sales and services, Guarantee, analysis of claims.		
<b>UNIT 2</b>	<b>Employee involvement and continuous improvement</b>	<b>08</b>	
	(A) Quality functions, Motivation, Decentralization, Organizational structure, Economics of quality, Human Factor in Quality, Attitude of top management, co-operation, empowerment, appraisal, operator's attitude and responsibility. (B) Continuous Process Improvement, The Juran Trilogy, Improvement Strategies, Management tools, Types of Problems, PDSA Cycle, Problem-Solving Method, DMAIC, Kaizen, Reengineering, zero defects, quality circle, Audit.		Employability and Entrepreneurship
<b>UNIT 3</b>	<b>Statistical Process Control</b>	<b>08</b>	
	(A) Introduction, Pareto diagram, process flow diagram, cause and effect diagram, histogram, statistical fundamentals (B) Introduction to Control Charts, Variable control charts, State of control, out of control process, Process capability, Process performance, Control charts for attributes, Measurement system analysis, Scatter diagrams, TQM case studies		Employability, Entrepreneurship
<b>UNIT 4</b>	<b>Quality Management Systems</b>	<b>08</b>	
	(A) ISO 9000 series Quality Management Systems: Benefits of ISO Registration, ISO Series of Standards, Sector-specific Standards, ISO 9001 Requirements, Implementation, Documentation, Writing the Documents, Internal Audits, Registration. (B) Environmental Management Systems: ISO 14000 Series Standards, Concepts of ISO 14001, ISO 14001, Requirements, Benefits, Integrating QMS and EMS. Other EMS Systems, Relationship to Health and Safety.		Employability
<b>UNIT 5</b>	<b>Advanced concepts</b>	<b>08</b>	
	(A) QFD, FMEA, TPM, Reliability, Lean, Six Sigma, Benchmarking, Experimental design, Taguchi method. (B) Performance Measures, Cost of Quality, Deming award, Malcolm Baldrige and Rajiv Gandhi National Quality Award, Balanced Score Card		Employability, Entrepreneurship

**Text Books:**

1. D. H. Besterfield, G. H Besterfield, Hemant Urdhwareshe, *Total Quality Management: Revised Third Edition*, Pearson Higher Education 2013
2. H.Lal, *Total Quality management*, Wiley Eastern Limited

**Reference books:**

1. Greg Bounds, *Beyond Total Quality Management*, McGraw Hill
2. Menon, H.G, *TQM in New Product manufacturing*, McGraw Hill

**Additional Resources:** NPTEL, MIT Video Lectures, Web resources etc.

**Evaluation Methods:**

<b>Item</b>	<b>Weightage (%)</b>
Mid-term examination	30
Teacher's assessment (Assignment/Quiz/Case study/Presentation/Attendance)	20
End-term examination	50

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**Last Update: 22<sup>nd</sup> Nov. 2017.**