GUJARAT TECHNOLOGICAL UNIVERSITY

Master of Engineering
Subject Code: 3724705
Semester – II
Subject Name: Total Quality Management (Prog. Elective – III)

Type of course: Engineering

Prerequisite: N.A.

Rationale: This subject deals with fundamentals of Total Quality Management and its applications, which are useful for Mechatronics engineers.

Teaching and Examination Scheme:

Teaching Scheme			Credits	Examination Marks				Total Marks
				Theory Marks		Practical Marks		
L	T	P	C	ESE (E)	PA (M)	ESE (V)	PA (I)	
3	0	2	4	70	30	30	20	150

Content:

Sr. No.	Content	Total Hrs
1	Introduction : Introduction, definitions of quality, need for quality, evolution of quality, quality of design, quality of conformance, quality of performance	04
2	Quality Management: Quality management approaches, hierarchy of quality management (Inspection, quality control, quality assurance, Total Quality Management)	04
3	Cost of Quality: Introduction. Types of costs – prevention cost, appraisal cost, internal failure cost, external failure cost	02
4	Basic Concepts of TQM: Definition of TQM – TQM Framework - Contributions of Deming, Juran, Crosby and Ishikawa – Barriers to TQM	04
5	TQM Principles: Leadership, Customer satisfaction, Quality chain, Employee involvement, Continuous process improvement, Supplier relationship, performance measures, benchmarking	12
6	Quality Management Tools & Techniques: Pareto diagram, cause and effect diagram, Histogram, control charts, Quality circles	06
7	Quality Management Systems: Need for ISO 9000, ISO 9000 Quality System – Elements, Documentation, Quality auditing, Requirements and Benefits	04
8	Quality function deployment: Introduction, House of quality, areas of application	03

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Suggested Specification table with Marks (Theory): (For BE only)

Distribution of Theory Marks					
R Level	U Level	A Level	N Level	E Level	C Level
35	**30**	**20**	**5**	**5**	**5**

Legends: R: Remembrance; U: Understanding; A: Application, N: Analyze and E: Evaluate C: Create and above Levels (Revised Bloom's Taxonomy)

Note: This specification table shall be treated as a general guideline for students and teachers. The actual distribution of marks in the question paper may vary slightly from above table.

Reference Books:

1. Total Quality Management', Dale H. Besterfiled, et al., Pearson Education Asia, Third Edition
2. Total Quality Management', Poornima M. Charantimath, Pearson Education Asia, Second Edition
3. Total Quality Management (Text and Cases)' Dr. Uday Kumar Haldar, Dhanpat Rai & Co. First Edition

Course Outcomes:

After learning the course the students will be able to

Sr. No.	CO statement	Marks % weightage
CO-1	Develop an understanding on quality management philosophies and frameworks	30
CO-2	Develop in-depth knowledge on various tools and techniques of quality management	30
CO-3	Learn the applications of quality tools and techniques in both manufacturing and service industry	25
CO-4	Develop analytical skills for investigating and analysing quality management issues in the industry and suggest implement able solutions to those.	15

List of Experiments:

1. Study experiment on quality of design, performance and conformance.
2. Study experiment on types of inspection and procedure of quality control
3. Study experiment on quality assurance and elements of total quality management
4. Cost of quality
5. Study experiment on approaches suggested by various quality gurus like Juran, Crosby, Deming
6. Study experiment on TQM principles

7. Pareto diagram and Ishikawa diagram with the application
8. Control charts of attribute and variable type of data with interpretation of the charts
9. Study experiment on formation, objectives and functioning of quality circles
10. Study experiment on ISO system with understanding of various types of audit and fundamental clauses of ISO9001
11. Case study on QFD.

Major Equipment:

Computers may be needed as per requirement.

List of Open Source Software/learning website:

NPTEL