

**B. E. MECHANICAL ENGINEERING**  
**Choice Based Credit System (CBCS) and Outcome Based Education (OBE)**  
**SEMESTER – VII**  
**Professional Elective 2**

**TOTAL QUALITY MANAGEMENT**

Course Code	18ME734	CIE Marks	40
Teaching Hours /Week (L:T:P)	3:0:0	SEE Marks	60
Credits	03	Exam Hours	03

**Course Learning Objectives:**

- Understand various approaches to TQM
- Understand the characteristics of quality leader and his role.
- Develop feedback and suggestion systems for quality management.
- Enhance the knowledge in Tools and Techniques of quality management.

**Module-1**

Principles and Practice: Definition, basic approach, gurus of TQM, TQM Framework, awareness, defining quality, historical review, obstacles, benefits of TQM. Quality Management Systems: Introduction, benefits of ISO registration, ISO 9000 series of standards, ISO 9001 requirements.

**Module-2**

Leadership: Definition, characteristics of quality leaders, leadership concept, characteristics of effective people, ethics, the Deming philosophy, role of TQM leaders, implementation, core values, concepts and framework, strategic planning communication, decision making.

**Module-3**

Customer Satisfaction and Customer Involvement: Customer Satisfaction: customer and customer perception of quality, feedback, using customer complaints, service quality, translating needs into requirements, customer retention, case studies. Employee Involvement – Motivation, employee surveys, empowerment, teams, suggestion system, recognition and reward, gain sharing, performance appraisal, unions and employee involvement, case studies.

**Module-4**

Continuous Process Improvement: process, the Juran trilogy, improvement strategies, types of problems, the PDCA Cycle, problem-solving methods, Kaizen, reengineering, six sigma, case studies. Statistical Process Control: Pareto diagram, process flow diagram, cause and effect diagram, check sheets, histograms, statistical fundamentals, Control charts, state of control, out of control process, control charts for variables, control charts for attributes, scatter diagrams, case studies.

**Module-5**

Total Productive Maintenance (TPM): Definition, Types of Maintenance, Steps in introduction of TPM in an organization, Pillars of TPM – 5S, Jishu Hozen, Quality Maintenance, Planned Maintenance. Quality by Design (QbD): Definition, Key components of QbD, Role of QbD in Pharmaceutical Industry, Benefits and Challenges of QbD. Environmental Management Systems (EMS): Definition, Basic EMS, EMS under ISO 14001, Costs and Benefits of EMS.

**Course Outcomes:** At the end of the course, the student will be able to:

- CO1: Explain the various approaches of TQM
- CO2: Infer the customer perception of quality
- CO3: Analyse customer needs and perceptions to design feedback systems.
- CO4: Apply statistical tools for continuous improvement of systems
- CO5: Apply the tools and technique for effective implementation of TQM.

**Question paper pattern:**

- The question paper will have ten full questions carrying equal marks.
- Each full question will be for 20 marks.
- There will be two full questions (with a maximum of four sub- questions) from each module.
- Each full question will have sub- question covering all the topics under a module.
- The students will have to answer five full questions, selecting one full question from each module

Sl No	Title of the Book	Name of the Author/s	Name of the Publisher	Edition and Year
<b>Textbook/s</b>				
1	Total Quality Management	Dale H. Besterfield	Pearson Education India,	Edition 03. ISBN: 8129702606,
2	Total Quality Management for Engineers	M. Zairi	Wood head Publishing	ISBN:1855730243
<b>Reference Books</b>				
1	Managing for Quality and Performance Excellence	James R. Evans and William M Lindsay	Cengage Learning.	9th edition
2	Four revolutions in management	Shoji Shiba, Alan Graham, David Walden	Oregon	1990
3	Organizational Excellence through TQM	H. Lal	New age Publications	2008
4	Engineering Optimization Methods and Applications	A Ravindran, K, M. Ragsdell	Wiley India Private Limited	2nd Edition, 2006
5	Introduction to Operations Research- Concepts and Cases	F.S. Hillier. G.J. Lieberman	Tata McGraw Hill	9 <sup>th</sup> Edition, 2010