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| **TOTAL QUALITY MANAGEMENT** |

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| **Course Code** | 18ME762 | **Credits** | 3 |
| **Course type** | OE | **CIE Marks** | 50 |
| **Hours/week: L-T-P** | 3-0-0 | **SEE Marks** | 50 |
| **Total Hours:** | 40 | **SEE Duration** | 3 Hours for 100 marks |

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| **Course learning objectives(CLO’s)** | |
| 1. | To teach basic concepts of total quality management. |
| 2. | To explain the importance of customer satisfaction and employee involvement. |
| 3. | To teach continuous process improvement and performance measures. |
| 4. | To impart knowledge of tools and techniques of total quality management. |
| 5. | To explain principles and practices of total quality management. |

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| **Pre-requisites:** Study of Management and Entrepreneurship. |

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| **Unit – I** | **08 Hours** |
| **PRINCIPLES AND PRACTICES OF TQM:**  **Introduction:**Definition of TQM, basic approach, Gurus of Total Quality Management, TQM framework, Definition of Quality, Dimensions of quality, Obstacles in implementing TQM, Benefits of TQM.  **Leadership**: Definition, characteristics of quality leaders, Deming’s Philosophy, Role of TQM leaders, Quality council, Quality statements, Strategic planning. | |

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| **Unit – II** | **08 Hours** |
| **Customer Satisfaction:** Customer satisfaction, Internal and external customer, Customer perception of Quality, Feedback, Using customer complaints.  **Employee Involvement:** Motivation-Maslow’s hierarchy of needs, Herzberg’s two factor theory, Employee wants, Achieving a motivated work force, Employee surveys, Suggestion system, Recognition and Reward, Gainsharing, Performance appraisal, Benefits of employee involvement. | |

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| **Unit – III** | **08 Hours** |
| **Continuous Process Improvement:** Introduction-how is improvement made, Input/Output process model, Juran Trilogy, Improvement strategies, Types of problems, PDSA cycle, Problem solving method, Kaizen, Six sigma.  **Supplier Partnership:**Principles of Customer/Supplier relations.  **Performance Measures:** Objectives of performance measures, Typical measurements, criteria, strategy, Performance measure presentation, Cost of quality, Categories of Quality costs. | |
| **Self-learning topics:**Malcolm Baldridge National Quality award, Deming Prize. | |

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| **Unit – IV** | **08 Hours** |
| **TOOLS AND TECHNIQUES OF TQM:**  **Benchmarking:**Definition and concept of Benchmarking, Reasons to Benchmark, Process of Benchmarking.  **Quality Management Systems:** ISO introduction, Benefits of ISO registration, ISO 9000 series of standards, Sector specific standards, ISO 14000 series of standards.  **Quality Function Deployment:**Definition, Voice of customer, House of quality, Building a House of Quality, QFD process, Benefits of QFD. | |

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| **Unit - V** | **08 Hours** |
| **Quality by Design:** Definition, product development flow diagram, Rationale for implementation, Benefits of QFD.  **Failure Mode and Effect Analysis:** Definition, stages of FMEA, Design FMEA document, Process FMEA document, Example of FMEA document preparation.  **Statistical Process Control:** Control charts-importance, Variable control charts, Control charts for Attributes, Numericals. | |

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| **Online Resources** | |
| 1. | NPTEL course: Total Quality Management-I by Prof. Raghunandan Sengupta, IIT Kanpur link: https://nptel.ac.in/courses/110/104/110104080/ |
| 2 | NPTEL course: Total Quality Management-II by Prof. Raghunandan Sengupta, IIT Kanpur link: https://nptel.ac.in/courses/110/104/110104085/ |

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| Books | |
| 1. | Total Quality Management, Dale H Besterfield, Pearson Publication, Revised 3rd edition, 2011. |
| 2. | Total Quality Management, Poornima M Charantimath, Pearson Publication, 3rd edition, 2017. |

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| **Course Outcome (COs)** | | |
| At the end of the course, the student will be able to | | Bloom’s Level |
| 1. | **Understand** the concepts of total quality management. | **[L2]** |
| 2. | **Explain** the importance of customer satisfaction. | **[L2]** |
| 3. | **Interpret** the need of continuous improvement process in an organization. | **[L2]** |
| 4 | **Understand** various principles and practices of total quality management. | **[L2]** |
| 5 | **Analyze** various tools and techniques of total quality management. | **[L3]** |

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| **Program Outcome of this course (POs)** | | **PO No.** |
| 1. | **Engineering knowledge**: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems. | **[PO1]** |
| 2. | **Life-long learning:** Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change. | **PO[12]** |

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| **Course delivery methods** | | **Assessment methods** | |
| 1. | Black Board Teaching | 1. | Internal Assessment |
| 2. | Power Point Presentation | 2. | Assignment |
| 3. | Videos | 3. | Seminar |
|  |  | 4. | Mini-project |

**Scheme of Continuous Internal Evaluation (CIE):**

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| Components | Addition of two IA tests | Addition of two assignments | Course  Activity | Total  Marks |
| Maximum Marks: 50 | 30+30 | 10+10 | 20 | 100 |
| Writing two IA tests is compulsory.  CIE will be reduced to 50 marks for the calculation of SGPA and CGPA.  Minimum marks required in CIE to qualify for SEE: 20 out of 50 | | | | |

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| **Self-Study topics shall be evaluated during CIE (Assignments and IA tests) and 10% weightage shall be given in SEE question paper.** |

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| **Scheme of Semester End Examination (SEE):** | |
| 1. | It will be conducted for 100 marks of 3 hours duration. It will be reduced to 50 marks for the calculation of SGPA and CGPA. |
| 2. | **Minimum marks required in SEE to pass: 40 out of 100** |
| 3. | Question paper contains 10 questions, 2 from each unit. Students have to answer FIVE full questions choosing one from each unit. **Marks split-up**   |  |  | | --- | --- | | Unit No. | Marks | | 1 | 20 | | 2 | 20 | | 3 | 20 | | 4 | 20 | | 5 | 20 | |

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| Prepared by B S Jagathi | Verified by Dr. Shivakumar S |