TOTAL QUALITY MANAGEMENT AND RELIABILITY (MEE401)

Proposed Syllabus

MEE401 TOTAL QUALITY MANAGEMENT AND RELIABILITY	L	T	P	C
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Version No. 1.01
Prerequisite MEE308 Industrial Engineering and Management
Objectives:

1. To enable the students understand the principles of Quality Management
2. To provide students details of quality planning and TQM techniques
3. To provide in depth knowledge of reliability and maintainability

Expected Outcome:
Student will be able to

1. Implement TQM in industries
2. Possess the knowledge of quality planning and TQM techniques
3. Design systems with reliability and maintainability

Unit I Principle of Quality Management

Definition of quality – Deming, Miller – Crosby Theories – Service and Product quality – Customer orientation. Evaluation of Total quality Management – Inspection – Quality Control – TQM System – Human component, Introduction to Six Sigma concepts.

Unit II Quality Planning

Planning – SMART Goal setting – Designing for Quality – Manufacturing for Quality – Process control – CPK – Process capability. Scientific Approach to TQM – Data based approach – Quantification – Statistical tools – Quality control tools – New 7 tools, Sampling and Control Charts.

Unit III TQM Techniques

Benchmarking – Definition – Types – Steps – Metrics – Case studies – Quality Function Deployment – Definition – steps – Case studies – Corrective Techniques – Preventive techniques – Failure Mode and Effect Analysis – 5S. Continuous Improvement Techniques – Different techniques such as POKA YOKE etc. – Deming wheel – Case studies

Unit IV Reliability

Definition – Mean fracture rate – Mean time to failure – Mean time between failure – Hazard rate – Hazard models – Constant hazard – Linearly increasing hazard – Weibull model – System reliability – Series – Parallel and Mixed configuration – Simple problems

Unit V Maintainability

Reliability improvement – Redundancy – Element – Unit and stand by redundancy – Reliability allocation for a series system – Maintainability and availability – System downtime – Reliability and Maintainability trade off – Simple problems
Textbooks

1. Dale H Besterfield, (2008), Total Quality Management, Pearson Education
2. L.S. Srinath, (2005) Reliability Engineering, Affiliated East West Press, New Delhi.

Reference Books

1. Samuel K Ho, (1996), TQM – An Integrated Approach, II Edition, Kogan Page Ltd., USA.
2. Joel E. Rose, (1993), Total Quality Management, II Edition, Kogan Page Ltd., USA.

Mode of Evaluation Quiz/Assignment/ Seminar/Written Examination
Recommended by the Board of Studies on: 12.05.2012
Date of Approval by the Academic Council: