Six Sigma and Total Quality Management

Course Objectives

The objective of this course is to understand the concept and culture of total quality management and to develop skills to use Statistical Quality Control techniques and other quality tools in solving quality-related problems. Learn approaches to achieve customer satisfaction at a competitive price are the core of lean concept.

Syllabus

Fundamentals of Quality and TQM, Quality Philosophies and Practices, Statistical Process Control, Non-statistical Quality Tools and Techniques, Quality Awards and Certification.

Expected Outcome

After successful completion of the course, the students will be able to understand the Total Quality Management and Six Sigma practices, able to prepare and analyse quality control techniques for better decision making.

References

1. Mikel Harry Ph.D, and Richard Schroeder, Six Sigma: The Breakthrough Management Strategy Revolutionizing the World's Top Corporations, RHUS, 2006.

2. T.M. Kubiak , The Certified Six Sigma Black Belt Handbook, Pearson Education, 2009

3. Dale H. Besterfield Ph.D. P.E., Carol Besterfield-Michna , Glen Besterfield , Mary Besterfield- Sacre., Total Quality Management, Pearson Education, 2003.

4. Juran, J.M., and Gryna, F.M, Quality Planning and Analysis, McGraw-Hill Higher Education, 1993.

5. Schroeder, R.G., Operations Management: Contemporary Concepts and Cases, McGraw-Hill Education (ISE Editions), 1999.

6. William J Stevenson, Operations Management, McGraw Hill Education (India) Private Limited, 2009. 2010.

7. Thomas Pyzdek, Six Sigma Handbook, McGraw Hill Education India Pvt Ltd., 2015.

8. T.M. Kubiak, The Certified Six Sigma Black Belt Handbook, Pearson Education, 2009

9. R. Panneerselvam and P. Sivasankaran, Quality Management (Kindle Edition), PHI Learning, 2014

COURSE PLAN

1.Introduction : Quality definitions and dimensions; Reliability and maintenance; Quality costs; Quality and productivity; Quality policies and goals, Six Sigma – Definition, Key Concepts of Six Sigma –Critical to Quality, Defect, Process Capability, Variation, Origin of Six Sigma, Myths about Six Sigma, Benefits of Six Sigma.

2 Six Sigma and Quality: Key Elements in Six Sigma- Customers, processes, employees, Organisation- Leadership, Sponsors, Team Leaders , Methodology - DMADV Methodology, DFSS Methodology, Project Team Formation, SIPOC Process Map, Measure Phase, Analyse Phase, Improve Phase, Control Phase – Quality Control, Standardisation, Control Methods and Alternatives, Technical tools - Critical-to-quality tree, Process Map, Histogram, Pareto Chart.

First Internal Examination

3 Quality Philosophies and Practices: Quality gurus and their contributions; Three major philosophies of quality management, Strategic QM; TQM and its building blocks; TQM vs. traditional organizations; Benefits and obstacles in TQM. Practices leading to TQM- QCs, QTs, TPM,5S, ZDc, Poka-yoke, QFD, Taguchi's QF. Causes of variation in quality; Acceptance sampling; Inspection vs. acceptance sampling; Quality indices and operating characteristic curves; Single and double sampling plans; Control charts for attributes; Control charts for variables; Interpretation of control charts.

4 Non-statistical Quality Tools and Techniques: Seven tools- flowcharts, check sheets, histograms, Pareto chart, scatter diagram, control chart, cause-and-effect diagram; Continuous improvement techniques; benchmarking process; Six-sigma approach.

Second Internal Examination

5 Quality Awards and Certification: Malcolm Baldrige award and its criteria, ISO-9000 principles, ISO-9000 series and certification., e-Six Sigma, Division Six Sigma Council, Global Six Sigma Council, KANO Analysis, Leading Six Sigma Training (LSS), Leading Teams Training (LT).

Final Examination