MMIE/MMIP/MMCM – 301 Total Quality Management

UNIT- I

Total Quality Management, Evolution of TQM, Historical perspective, People involvement, Teamwork, Discipline, Supplier involvement, Defining the immediate customer, Quality at source. Various quality awards, Total employee involvement, Competitive Benchmarking.

UNIT- II

Elements of TQM : Learning from Quality Gurus: Edward Deming, Joseph M. Juran, Ishikawa, Philip B. Crosby, etc. and their Applications in Today's Business Environment , Ishikawa Diagram, FMEA, FMECA, Just-in-time philosophy, 5S, TPM, Kaizen and continuous improvements, Life cycle costing.

UNIT- III

Place of quality control in industries, Quality control organization, inspection and quality control. Cost and Economics of Quality systems. Statistical Process Control, Design and application of control charts for variable and attribute. Acceptance Sampling: Various Sampling plans. Selection of sampling plans for different situations. Applications of quality control in industries.

UNIT- IV

Quality Assurance, Process capability studies. Fundamental concepts of Six sigma, General methodology of Six Sigma. Latest developments in six sigma methodology, six-sigma and cost control, ISO-9000; ISO-14000: Concepts, Certifications, Methods and Implementations.

UNIT- V

Application of TQM to service type organizations, Service guarantees, Case studies on application of TQM to service type organization, QFD, Reliability: Distributions encountered in controlling Reliability, MTTR, MTTF, Failure density, Measurement and Tests, Maintenance and Reliability, Life testing. Pitfalls and difficulties in implementation TQM and Methods of Avoiding Them

Books & References Recommended :

1. TQM by Dale H Besterfield Pearson
2. Quality Control by Besterfield Pearson
3. Dhillon, Reliability, Wiley Eastern
4. Grant E.L. and Leave Worth, Statistical Quality Control, TMH.
5. Amitava Mitra; Fundamentals of Quality Control and Improvement; Pearson; 2001
6. K Sridhar Bhatt, TQM, Himalaya Publications. 2005
7. J. M. Juran and Frank M. Gryna (Edts.), Juran's Quality Control Handbook, New York, McGraw Hill Publications, 2001.
8. Tapan P. Bagchi, ISO 9000: Concepts, Methods and Implementation, Allahabad, Wheeler Publishing, 1996.

MMIE/MMIP/MMCM – 302ERP & Supply Chain Management

Unit 1 Introduction: Definition, importance, expenditure and opportunities in SCM; integration of inbound, outbound logistics and manufacturing to SCM, flow of material money and information, difficulties in SCM due to local v/s system wide (global) optimization and uncertainties in demand and transportation; Bull-whip effect; customer value; IT, ERP, info-sharing and strategic partnerships;

Unit 2 Design of SC network: Plant and warehouse-network configuration; data collection and aggregation; transportation and mileage costs; warehouse capacity, costs and potential locations; service level requirements; variance reduction by pooling demands; cross docking and transshipments distribution

Unit 3 Inventory models: Necessity of inventory in process and safety stock, problem of excess inventory and cycle time (=WIP/ Throughput), JIT/ lean mfg; basic EOQ/ EPQ models for constant review Q-system(S,s); periodic review, base stock P-system; service level, lead time variance and safety stock;; ABC, VED and other analysis based on shelf life, movement, size, MRP technique and calculations, lot sizing in MRP, linking MRP with JIT; evolution of MRP to ERP to SCM and e-business.

Unit 4 Strategic alliance and integration: Outsourcing benefits and risks; dependency on capacity and knowledge; modular and integral products; framework for make/ buy decision based on dependency and modular/ integral products; issues to be addressed in strategic alliance; use and merit/ demerit of third party (3PL) logistic; push, pull and push-pull based supply chains; push-pull boundary, appropriate strategy on matrix of demand uncertainty and economy of scale; coordination and leadership issues; change of purchasing role and vendor rating, variability from multiple suppliers; supply contracts and revenue sharing;

Unit 5 Role of IT: Value and impact of centralized information on Bullwhip effect; effective forecasts; locating products in SC; lead time reduction; dimensions of customer value; relationship and customer satisfaction; strategic pricing; IT infrastructure;; standardization and compatibility; interface devices, communication and databases; performance measurement in supply chain management; Decision Support Systems for SCM

References:

1. Deshmukh & Mohanty; Essentials of SCM; Jaico Publishing House
2. Levi DS & ES, Kaminsky P; Designing and Managing the Supply Chain; TMH
3. Chopra, Meindl, Kalra; Supply Chain Management; Pearson Education
4. Exploring the Supply Chain by Upendra Kachru, Excel Books
5. Supply Chain Management, by Janat Shah, Pearson Education
6. Vollman, Berry et al; Manufacturing planning and control for SCM; TMH.
7. Bowersox DJ, Closs DJ, Cooper MB; Supply Chain Logisti Mgt; TMH
8. Burt DN, Dobler DW, StarlingSL; World Class SCM; TMH

W.E.F. July 2014

MMCM – 303 Finite Element and Computer Aided Engineering

Unit -I

Analysis problems in engineering, Continuous and discrete systems, Solution by differential formulation, Variational formulation, Approximate solution method (Rayleigh-Ritz method).

Unit -II

Concept of :Shape functions, Element matrices, Global matrix, Assembly, Boundry conditions.

Unit -III

Solution of FE equations, Post processing, Convergence requirements, Treatment of distributed loads.

Unit -IV

Application to structural mechanics problems Longitudinal/Axial bar problem, Beam problem, Plane stress/strain problem, Isoparametric formulation, Axis symmetric problem, Bending of plates. Weighted residual approach.

Unit -V

CAE: Collaborative Design System,VRML, Product Data Exchange (IGES/STEP), System Customization and Design Automation. Concurrent Engineering. Product Data Management System

BOOKS & References Recommended:

1. Finite element method: Chandrupatla & Belegundu
2. Finite element procedures: K.J.Bathe
3. Computer Inegrated Manufacturing: Alavudeen, A, Venkateshwaran, N, PHI
4. CAD/CAM, Chris McMahon, Jimme Browne, Pearson Education, Asia
5. Matering CAD/CAM, Ibrahim Zeid, Tata McGrawHill