MA850   Six Sigma for Product Development   4-0-0-4

Introduction to Quality Management - Six Sigma Fundamentals, Quality Control tools, Quality Function Deployment, Quality Cost Systems and Quality Policy Deployment. DMAIC andDMADV- Project Selection & Charter, DPMO, QFD, process capability, Root Cause Analysis, Hypothesis Testing, correlation, multiple linear regression, polynomial regression, reliability of equipment and products, Fault Tree Analysis, ANOVA, factorial experiments and fractional factorial experiments.Integer Programming Problem(IPP) -Mixed IPP -Dynamic programming problem (DPP) - Application of DPP-Solving LPP through DPP approach. Prioritization and selection of alternative solutions, confirming the accuracy of the process improvement by Statistical Process Control.

Lean Six Sigma -Introduction - History of Lean – Toyota Production System and itscomparison to other methods - The seven Wastes - their causes and the effects – An overview of Lean Principles and its concepts . Tools of Lean Manufacturing- Continuous Flow - Continuous Flow Manufacturing and Standard Work Flow - Total Productive Maintenance (TPM) - Value Stream Mapping – Current state and Future State. Deliverables of a Lean Six Sigma Project.

Implementation of TQM. Taguchi methods - Taguchi's loss function, Introduction to orthogonal arrays – test strategies, steps in designing, conducting and analyzing an experiment, parameter and tolerance design, control and noise factors, signal to noise ratios, experimental design in Taguchi Methods, orthogonal arrays and parameter Design.Response surface designs – Introduction to response surface methodology,Method of steepest accent, Models properties and Analysis.Analysis of second order response surface,experimental design for fitting response surfaces.

Textbooks/References:

1. Larson Alan,"Demystifying Six Sigma : A Company-wide Approach to Continuous Improvement", Jaico, Mumbai, 2007.
2. Siddiqui,N.A and AbhishekDwivedi, " Introduction to six sigma: methods approaches and applications,New age international publications,2017.
3. George, Michael. L. "Lean Six Sigma: Combining Six Sigma Quality with Lean Speed", Tata McGraw Hill Education, New Delhi, 2002.
4. Taghizadegan, Salman , " Essentials of lean six sigma" ,Elsevier2006.
5. Sheldon DonaldH,"Class A ERPimplementation:integrating lean and six sigma",Cengage learning, 2004