SARDAR PATEL UNIVERSITY
Programme & Subject: M.Sc (QPM)
Semester: III
Syllabus with effect from: June - 2015

Paper Code: QP - 304	**Total Credit:**
Title Of Paper: Design of Experiments	

Unit	Description in Detail	Weightage (%)
I	A review of basic concepts of design of experiment. Factorial Experiments: Concepts of main effects, interaction, Analysis of full 2n and 32 factorial designs, Confounding: Total and partial confounding. Analysis of 2n and 3n confounded design.	10
II	2(n-p) Fractional Factorial Designs: Basic Idea, Generating the Design,The Concept of Design Resolution, Plackett-Burman Designs for Screening, Enhancing Design Resolution via Foldover, Aliases of Interactions: Design Generators, Blocking, Replicating the Design, Adding Center Points,Analyzing the Results of a 2(n-p) Experiment.	10
III	3 (n-p) Fractional Factorial Designs: Overview, Designing 3(n-p) Experiments, Box-Behnken Designs, Analyzing the 3(n-p) Design, ANOVA, Parameter Estimates.	10
IV	Central Composite and Non-Factorial Response Surface Designs: Overview, Design Considerations, Alpha for Rotatability and Orthogonality, Available Standard Designs, Analyzing Central Composite Designs, The Fitted Response Surface, Categorized Response Surfaces. Taguchi Methods: Robust Design Experiments: Overview, Quality and Loss Functions, Signal-to-Noise (S/N) Ratios, Orthogonal Arrays, Analyzing Designs, Accumulation Analysis	10

Basic Text & Reference Books:-

- Kshirsagar A.M. (1983) Linear Models (Marcel Dekker)
- John P.W.M.(1971) Linear Models (John Wiley Ltd.)
- Jeff Wu C. F., Hamada M. (2000): Experiments: Planning, Analysis and parameter design optimization, John Wiley & Sons.
- Montgomery D.C. (2001): Design and Analysis of Experiments, 5th edition, Wiley New York.
- Angela Dean and Daneil Voss (1999): Design and Analysis of Experiments, Wiley.
- Phadke, M.S. (1989): Quality Engineering using Robust Design, Prentice-Hall.