SARDAR PATEL UNIVERSITY
Programme & Subject: M.Sc (Mathematics)
Semester: III
Syllabus with Effect from: June-2013

Paper Code: PS03EMTH04	**Total Credit: 4**
Title Of Paper: Differential Manifold - I	

Unit	Description in detail	Weighting (%)
I	Differential calculus in Banach spaces, chain rule, derivatives of multilinear maps, derivatives of determinant, directional derivatives, derivatives in matrix spaces.	25%
II	Higher derivatives, Taylor's theorem, smooth functions with compact supports in $\mathbb{R}^n$.	25%
III	Differential manifolds, examples, smooth maps, diffeomorphisms, tangent spaces to a manifold, basis theorem, level surfaces as manifolds, tangent spaces of level surfaces.	25%
IV	Derivatives of smooth maps, sub manifolds, vector fields, commutator bracket, differential of a function.	25%

Basic Text & Reference Books:-

- S. Kumaresan, A course on Differential Geometry and Lie Groups, TRIM 22, Hindustan Book Agency, 2002.
- F. Warner, Foundation of Differentiable Manifolds and Lie Groups, Springer-Verlag, 1984.
- M. Spiwak, A Comprehensive Introduction to Differential Geometry, Published or Perish, 1970