SARDAR PATEL UNIVERSITY
Programme & Subject: B.Sc (Mathematics)
Semester: III
Syllabus with Effect from: June-2012

Paper Code: US03CMTH01	**Total Credit: 3**
Title Of Paper: Advanced Calculus	

Unit	Description in detail	Weighting (%)
I	Line integral ; Evaluation of line integrals ; Double integral :Def-inition and Examples ; Mean value theorem ; Change of variables in double integral , Application of Double integral (Area , Volume)	
II	Application of Double integral (Total mass , Centroid , Moment of Inertia) ; Change of order of integration in Cartesian and Polar form ,Line integral independent of path.	
III	Green's theorem and its application with Examples; Area of plane region; Vector form of Green's theorem .	
IV	Surfaces ; Tangent plane and Normal line to the surface ; Firstfundamental form ; Area of a surface ; Surface integrals ; Moment of inertia of surface	
V	Triple integrals : De¯nition and Examples ; Divergence theorem of Gauss and its applications with Examples ; First and Second form of Green's Theorem	
VI	Application of Triple Integral (Total Mass ,Moment of Inertia ,Volume) Stoke's theorem and its applications with Examples.	

Basic Text & Reference Books:-

- E.Kreyszing , Advanced Engineering Mathematics , Fifth edition , NewAge International (P) Ltd., New Delhi , 1997.
- Shanti Narayan , A course of Mathematical Analysis ,S.Chand & Company Ltd.
- Dr.Dinesh Karia,M.L.Patel,N.Y.Patel,B.P.Patel,A Textbook of Calculus with an Introduction to Di®erential Equations.
- B.S.Grewal,Higher Engineering Mathematics.