19BSM303: Calculus-III										
Teaching Scheme					**Examination Scheme**					
L	**T**	**P**	**C**	**Hrs/Week**	**Theory**			**Practical**		**TotalMarks**
					MS	**ES**	**IA**	**LW**	**LE/Viva**	
3	**1**	**--**	**4**	**4**	**25**	**50**	**25**	**--**	**--**	**100**

OBJECTIVES

1. To familiarize functions of several variable concept, including its limit, continuity, differentiability.
2. To get acquainted with the use of partial derivatives by introducing directional derivatives.
3. To decide maxima, minima using several methods including Lagrange's multiplier.
4. To study the double and triple integrals and the applications of the same associated with engineering field.
5. To enhance the understanding of vector calculus by learning some milestone theorems thoroughly.

SYLLABUS

UNIT	**10**
Functions of several variables and examples; Limits and Continuity, Partial derivatives, Differentiability, Linearization and differentials, The chain rule; Directional derivatives.	
UNIT II	**12**
Extreme values and saddle points; Lagrange's multipliers; Taylor's formula; Double Integrals, Change of order of integration; Areas, Moments and center of mass; Double Integrals in Polar form; Triple Integrals.	
UNIT III	**8**
Line Integrals; Vector fields, Gradient, Divergence and Curl, Work, Circulation and flux; Path Independence, Potential functions and conservative fields.	
UNIT IV	**9**
Green's theorem in plane; Surface Area and Surface Integrals; Parameterized surfaces; Stokes Theorem; The divergence theorem.	
APPROXIMATE TOTAL	**39 Hours**

OUTCOMES

1. Students obtain the skills necessary to deal with models in engineering and science involving *calculus of several variables*.
2. Students must get a clear picture of partial derivative. Moreover, the applications of partial derivatives in deciding extrema.
3. Students should understand the concept of double and triple integrals, and should be able to use those concepts in relevant applications.
4. Students must understand the vector differential and vector integral calculus.

TEXTS AND REFERENCES

1. H. Anton, I. Bivens, S. Davis, Calculus: Early Transcendentals, Tenth Edition, John Wiley and Sons.
2. George B. Thomas and Ross L. Finney, Calculus and Analytic Geometry, 9th Edition, Peaerson.
3. E. Mendelson, Beginning Calculus, Third Edition, Schaum's Series.