Objective

(1) To familiarize integration concept, familiarize integration formulas and to countercheck anti-differentiation by its inverse problem sciences
(2) To familiarize different integration techniques

(3) To tackle several integration applications with deep concentration to engineering.

(4) To familiarize iterated integration as plane area and as volume and to analyze volume in general regions.

BSM 201 CALCULUS AND ANALYTIC GEOMETRY -II										
Teaching Scheme					**Examination Scheme**					
L	**T**	**P**	**C**	**Hrs./Week**	**Theory**			**Practical**		**Total Marks**
					MS	**ES**	**IA**	**LW**	**LE/Viva**	
3	1	---	4	4	25	50	25	---	---	100

Unit-1

Integration Concept/ Formulas: Anti-Differentiation, The Definite Integral, Simple Power Formula, Simple Trigonometric Functions, Logarithmic Functions, Exponential Functions, Inverse Trigonometric Functions, Hyperbolic Functions, General Power Formula, Constant of Integration, Definite Integral.

[10]

Unit-2

Integration Techniques: Integration by Parts, Trigonometric Integrals, Trigonometric Substitutions, Rational Functions, Rationalizing Substitutions, Definite Integrals. Wall's Formula   [10]

Unit-III

Applications: Improper Integrals, Plane Area, Arc Length, Area Between Curves, Centroids, Moments of Inertia, Volumes, Work   [10]

Unit-IV

Multiple Integrals: Double Integrals over Rectangle, Iterated Integrals, Double Integrals over General Regions.   [9]

APPROXIMATE TOTAL   **39 Hours**

Texts and References

1. George B. Thomas and Ross L. Phinney, Calculus and Analytic Geometry, 9th Edition, Addison-Wesley.

2.   R. Ellis and D. Gulick, *Calculus with Analytic Geometry* Harcourt, Brace, Jovanovich (1978).
3. E. J. Purcell *Calculus with Analytic Geometry,* 3rd Ed., Prentice-Hall (1978).

Course Outcomes:

1. Students obtain the skills necessary to deal with models in engineering and science involving *differential calculus of one variable*.

2. Students gain a familiarity with the *elementary special functions* (e.g. exponential, log, and trigonometric functions) which arise in engineering and science.

3. Students learn the basic calculus and analytic geometry concepts in order to understand the development of many models in engineering and science.