

Subject Code: 2SC1040401

Subject Title: Advanced Calculus

Course Objective:

This course is designed to enable students to acquire the understanding and practice the applications of Jacobians and integrals applied to real life mathematical problems.

Teaching scheme (hours) per week		credit		Theory Marks		Practical Marks		Total
Theory	Practical	Theory	Practical	University Assessment	Cont. Assessment	University Assessment	Cont. Assessment	
3	--	3	--	70	30	--	--	100

Subject Contents			
Unit No.	Topic	Total Hours	Weight (%)
1	Improper Integral : Beta function and Gamma function, Convergence of Beta function and Gamma function, Relation between them, Its Simple properties and applications, Several forms of Beta function.	13	28
2	Multiple Integral : Double Integral, Integral on non rectangle regions, transformation to polar coordinate Change of the order of integration, Triple integration, transformation to polar and cylindrical co-ordinate.	13	28
3	Vector Analysis, Line & Surface Integral : Gradient of scalar function, Divergence and Curl of a vector function, Line integral, Surface Integral, Green's theorem, Stoke's and Gauss's Theorem.	13	28
4	Jacobians: Definition, Jacobian of function, Jacobian of implicit functions and Theorem.	9	16

Course Outcome:

After successfully completion of the course, the student will be able to ...

- Understand the several forms of beta and gamma functions.
- Know about multiple integrals.
- Understand the concept of linear transformations.
- Understand the concept of Jacobian.

List of References:

- 1) Integral Calculus, Shantinakaran S. Chand, New Delhi (Course Book)
- 2) Advanced Calculus, D V Widder , Prentice Hall , New Delhi
- 3) Advanced Calculus Vol : I & II, T M Apostol, Blaisdell
- 4) Advanced Calculus, R C Buck, MacMillan.
- 5) Differential Calculus, Shantinakaran, Dr. P.K.Mittal, S. Chand, New Delhi