

COURSE OBJECTIVES AND COURSE OUTCOMES

S. Y. B. Sc. SEMESTER - III

MATHEMATICS PAPER - I

SUBJECT: CALCULUS - III (USMT301)

Sr. No.	Course Objectives	Course Outcomes
1)	Understanding of limits and continuity of functions of several variables, directional and partial derivatives	Students will understand Euclidean spaces and its open and closed sets, limits & continuity of vector valued functions of several variables, how to calculate directional and partial derivatives of scalar fields and mean value theorem for derivatives of scalar fields
2)	Differentiability of scalar fields, properties of gradient vector, higher order partial derivatives	Concept of total derivative of scalar valued function of several variable and how to calculate it, relationship between continuity, differentiability and partial derivatives, chain rule for scalar fields, gradient and its properties, tangent plane, level curve, higher order mixed and pure partial derivatives
3)	Differentiability of vector fields & applications.	Concept of derivatives of vector valued function of several variables, jacobian matrix, Taylor's expansion of function of two variables and how to solve problems on maxima-minima with or without constraints including method of Lagrange's multipliers

COURSE OBJECTIVES AND COURSE OUTCOMES

S. Y. B. Sc. SEMESTER - IV

MATHEMATICS PAPER - I

SUBJECT: CALCULUS - IV (USMT401)

Sr. No.	Course Objectives	Course Outcomes
1)	Introducing Riemann integration using upper sums and lower sums	Students will understand Riemann integration via approximation of areas, Riemann's criteria for Riemann integrability, examples of integrable and non-integrable functions and the properties of Riemann integrable functions with their proof
2)	Introduced Indefinite Riemann integral and Different forms of Fundamental theorem of calculus	Primitive of a function, Fundamental theorem of calculus, Mean value theorem and its applications and applications to integration by parts and Leibnitz rule
3)	Different types of Improper integrals and applications of Riemann integral	How to solve problems of Type I and Type II integrals using comparison test, Beta and Gamma functions and their properties and applications of integration for area bounded by the curves, volume of solids, arc length etc.