

Department of Data Science
University of the Punjab, Lahore

Calculus and Analytic Geometry

Course Outline:

Limits and Continuity; Introduction to functions. Introduction to limits, Techniques of finding limits, indeterminate forms of limits. Continuous and discontinuous functions and their applications, Differential calculus; Concept and idea of differentiation. Geometrical and Physical meaning of derivatives. Rules of differentiation, Techniques of differentiation. Rates of change. Tangents and Normals lines, Chain rule, implicit differentiation, linear approximation. Applications of differentiation; Extreme value functions, Mean value theorems. Maxima and Minima of a function for single-variable, Concavity, Integral calculus: Concept and idea of Integration, Indefinite Integrals, Techniques of integration, Riemann sums and Definite Integrals, Applications of definite integrals, Improper integral. Applications of Integration: Area under the curve, Analytical Geometry; Straight lines in R^3 , Equations for planes.

Recommended Books:

1. Calculus and Analytic Geometry by Kenneth W. Thomas.
2. Calculus by Stewart, James.
3. Calculus by Earl William Swokowski: Michael Olinick: Dennis Pence: Jeffery A. Cole