**Prerequisites:**
No prerequisites.

**Objectives:**
This course is designed to learn fundamental concepts, techniques, and applications of calculus.
- To understand the fundamental concepts of calculus.
- To study techniques of differentiation and integration.
- To study numerical differentiation and integration and some numerical approximation methods.

**Course Description:**
This Course Teaches Applied calculus I

**Contents:**
- Limits, continuity and there properties.
- Differentiation; derivatives, properties of differentiation. Chain rule.
- Derivatives of algebraic, trigonometric and trigonometric functions. Exponential, logarithmic, and hyperbolic functions, and their derivatives. Implicit differentiation and inverse function’s derivative. Derivatives of high order. L’Hospital’s Rule and undetermined forms.
- Absolute and local extrema, critical points, tests for local extrema, concavity and inflection points, and applications. Rolle’s theorem and the Mean Value Theorem. Curve sketching using calculus. Optimization problems.
- Differentials and applications.
- Antiderivative functions and indefinite integral. Integral methods, integration by substitution and by parts, trigonometric integrals, integration of rational functions.
- Areas under curves. Definite integral and its properties. Mean value theorem for the integral. The fundamental theorems of calculus. Numerical differentiation, Newton and fixed point iteration methods.

*The instructor should stress on using mathematical software through out the course*

**References:**
- *CALCULUS*, By Larson, Hostetler & Edwards, Publisher: Houghton Mifflin
- *SCHAUM’S OUTLINE OF CALCULUS*, Frank Ayres, Elliott Mendelson Graw Hill Mc