CSC114 DIFFERENTIAL AND INTEGRAL CALCULUS

Learning Outcomes
- Distinguish between various types of numbers.
- Apply basic geometric concepts such as Pythagoras theorem.
- Differentiate standard functions.
- Integrate standard functions.

Content
Basic Mathematics: Numbers and simple functions, Trigonometry, Complex numbers, Analytic Geometry; Differentiation: Derivatives of functions including inverse trigonometric, hyperbolic, inverse hyperbolic, and logarithmic functions; Methods of differentiation; Rules of differentiation: product rule, quotient rule, chain rule; Higher derivatives; Applications of differentiation: Maximum Points and Minimum Points, Newton Raphson method for solving equations; Integral calculus: Integration as the inverse of differentiation, Definite integrals, Standard forms, Application of integration to length, area and volume; Techniques for Integration: Integration by Parts reduction formulae, substitution, Partial fractions, Average value of a function, Elements of numerical integration.

Pre-requisites
None

Delivery
Lectures and Tutorials.