**INTEGRAL CALCULUS (S)**

**MT102S / NUIM / School of Mathematics and Statistics**

Objectives:To introduce students to Integral Calculus.

Anti-derivatives, area, the definite integral, indefinite integrals, the Fundamental Theorem of Calculus, the substitution rule, areas between curves, inverse functions, inverse trigonometric functions. Techniques of Integration. Tables of integrals, integration by parts, trigonometric integrals, Substitution, integration of rational functions, trapezoidal rule, Simpson''s Rule. Applications of Integration: Volumes and surfaces of revolution, length of a curve.

Learning Outcomes

On successful completion of the module, students should be able to:

•Integrate the basic functions and combinations of these functions using standard techniques.

•Use integrals to find areas and volumes.

•Compute an integral numerically to a given degree of accuracy.

•State the Fundamental Theorem of Calculus.