



Calculus (2)

Course Code	Course Num.	Course Name	Credit Hours	Lec	Lab	Tut	Prerequisites
MAT	106	Calculus (2)	4	3	0	2	MAT 105

Syllabus:

Integration: Review the Formulas and Techniques; Integration by Substitution in Definite Integrals; Integration by Parts; Trigonometric Techniques of Integration; Integration of Rational Functions Using Partial Fractions; Integrals involving logarithmic, exponential, and hyperbolic functions; Numerical integration; Improper Integrals.

Volume: Slicing, Disks and Washers; Arc Length; Area of Surface of Revolution.

Infinite series: Sequences of real numbers; Convergence, divergence of infinite sequences; Infinite series; Convergence tests of positive series (ratio test, root test, p-series test, comparison and limit comparison tests). Alternating series; Absolute and conditional convergence; Power series.

Parametric equations: Polar coordinates and conic sections: Plane curves and parametric equations, calculus and parametric equations, Arc Length and surface in parametric equations, polar coordinates, calculus and polar coordinates, conic sections, study of conic sections in polar coordinates.

Functions of Several Variables: Limits and Continuity .Partial Derivatives, the total derivative, the gradient and directional derivatives; Double Integrals in Cartesian coordinates; Triple Integrals in Cartesian coordinates.

References:

1. *Calculus Early Transcendental Function*, R. T. Smith and R. B. Minton, McGraw-Hill, 3rd edition. **(Main Reference)**
2. *Essential Calculus with Application*, Richard A. Silverman, Dover Publications.
3. *Calculus*, O. Swokowski, et al, PWS Pub. Co.; 6th edition (1994).
4. *Calculus Early Transcendentals*, C. Henry Edwards, David E. Penney, Prentice Hall, 2008.
5. *Schaum's Outline of Calculus*, Elliott Mendelson, Frank Ayres, McGraw-Hill, 1999.

