MAT 130: Calculus and Analytic Geometry-II (Calculus-II)

Course Description: Area between two curves, Length of plane curves, Area of surface of revolution, Volumes by slicing disks and washers, Volumes by cylindrical shells, Hyperbolic functions and hanging cables & Integrations. Integration by parts, Trigonometric integrals, Trigonometric substitutions, Integrating rational functions by partial fractions, Improper integrals. The Polar coordinates, Area in polar coordinates, Tangent lines and arc length for parametric and polar curves, Conic sections in calculus.

Credit hours: 3

Pre-requisites: MAT 120

Contents:

1. Integration by Substitution, Integration by parts, Trigonometric integrals, Wallis Sine, Cosine formulas, Trigonometric substitutions, Integrating Rational functions by partial fractions, and Improper Integrals
2. Hyperbolic functions and their integrals, and length of hanging cables
3. Area between two Curves
4. Volumes by slicing: Disks and Washers, Volumes by Cylindrical shells
5. Length of plane a curve and Area of a surface of revolution
6. Parametric equations; Tangent lines, arc length for parametric curves and area of a surface of revolution generated by revolving a parametric curve
6. Polar coordinates, Graph of polar curves and their slopes, Tangent lines, Length of polar curves and Area of the region bounded by polar curves
7. Conic sections in Rectangular and Polar coordinates