

Applied Calculus (2)

Course Code	Course Num.	Course Name	Credit Hours	Lec	Lab	Tut	Prerequisites
MAT	1113	Applied Calculus (2)	4	3	0	2	MAT 1112

Syllabus:

Integration: Anti-derivatives, Indefinite Integral and its properties, Area under curves and The Definite Integral, First and Second Fundamental Theorems of Calculus, Integration by Substitution, Numerical Integration.

Integration Techniques: Integration by Parts, Integration of Rational Functions Using Partial Fractions, Trigonometric Techniques of Integration, Integrals involving Logarithmic, Exponential, and Hyperbolic Functions, Improper Integrals.

Applications of Definite Integrals: Area between curves, Volumes by slicing, Volumes using Cylindrical Shells, Arc Length and Surface Area.

Infinite Series: Sequences of Real Numbers (Definitions and Examples, Convergence and Divergence of Sequences, Arithmetic Sequences, Geometric Sequences), Infinite Series, Infinite Series, Integral Test and Comparison Tests, Alternating Series, Absolute Convergence, Ratio Test and Root Test, Power Series, Taylor Series, Fourier Series.

Parametric equations: Plane Curves and Parametric Equations, Calculus and Parametric Equations, Arc Length and Surface in Parametric Equations, Conic Sections.

References:

1. **Calculus, Early Transcendental Functions**, R. Smith, R. Minton, McGraw-Hill, 4th edition 2014.
2. **Calculus**, O. Swokowski, et al, PWS Pub. Co., 6th edition, 1994.
3. **Calculus Early Transcendentals**, C. Henry Edwards, David E. Penney, Prentice Hall, 2008.