

Applied Calculus (1)

Course Code	Course Num.	Course Name	Credit Hours	Lec	Lab	Tut	Prerequisites
MAT	1112	Applied Calculus (1)	4	3	0	2	

Syllabus:

Preliminaries: Solving Linear Equations and Inequalities, Absolute Value, Solving Inequalities Containing an Absolute Value, Equations of Lines, Quadratic Equations and Inequalities, Special Product Formulas, Polynomials, Factoring Polynomials; Functions: Domain, Range, and Graphs of Functions, Common Functions, Composition of Functions, Inverse Function; Trigonometry: Unit Circle, Angles and Their Measurements, Important Trigonometric Identities, Trigonometric Functions (Sine, Cosine, and Tangent Function), Inverses Trigonometric Functions, Exponential and Logarithmic Functions, Laws of Exponents and Logarithms.

Limits And Continuity: The Concept of Limit, Computation of Limits, Limits Involving Infinity, Asymptotes, Continuity, Intermediate Value Theorem, The Bisection Method.

Differentiation: The Derivative, Computation Of Derivatives, The Power Rule, Product and Quotient Rules, Chain Rule, Tangent Lines, Derivatives Of Trigonometric and Inverses Trigonometric Functions, Derivatives of Exponential and Logarithmic Functions, Implicit Differentiation, Rolle's Theorem and The Mean Value Theorem.

Applications of Differentiation: Linear Approximations and Newton's Method, Indeterminate Forms and L'Hopital's Rule, Maxima and Minima Values, Increasing and Decreasing Functions, The First Derivative Test, Concavity and The Second Derivative Test, Graphing Functions.

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.