Semester I

Subject Name: Real Analysis	**Duration: 6 hrs /Cycle**
Subject Code: 1PGM1(2015 on)	**Credit : 4**

Unit I: Continuity: Limits of Functions- Continuous Functions - Continuity and Compactness- Continuity and Connectedness- Discontinuities- Monotonic Functions - Infinite Limits and Limits at Infinity.

Unit II: Differentiation: The Derivative of a Real Function- Mean Value Theorems - The Continuity of Derivatives - L'Hospital's Rule - Derivatives of Higher Order - Taylor's Theorem - Differentiation of Vector - valued Functions.

Unit III: The Riemann - Stieltjes Integral: Definition and Existence of the Integral - Properties of the Integral - Integration and Differentiation - Integration of Vector - Valued Functions - Rectifiable Curves.

Unit IV: Sequences and Series of Functions: Discussion of Main Problem - Uniform Convergence - Uniform Convergence and Continuity - Uniform Convergence and Integration - Uniform Convergence and Differentiation - Equicontinuous Families of Functions - The Stone -Weierstrass Theorem.

Unit V: Some Special Functions: Power Series - the Exponential and Logarithmic Functions - the Trigonometric Functions the Algebraic Completeness of the Complex Field- Fourier series - The Gamma Function.

Text book: Principles of Mathematical Analysis by Walter Rudin, 3rd Edition, Tata McGraw-Hill international Edition (1976).

Chapters: 4, 5, 6, 7, 8.

Reference books: 1. Mathematical Analysis by T.M. Apostol, 28th Reprient 2002, Narosa Publishing House.

2. Introduction to Real Analysis by S.K. MAPA, 4th Edition 2004, Sarat Book Distributors.