

Semester II

Subject Name: Measure Theory	Duration: 6 hrs /Cycle
Subject Code:2PGM1 (2015 on)	Credit : 5
Unit I: Measure on the Real Line: Lebesgue Outer Measure - Measurable Sets - Regularity - Measurable Functions.	
Unit II: Integration of Functions of a Real Variable: Borel and Lebesgue Measurability - Hausdorff Measures on the Real Line - Integration of Non-negative Functions - The General Integral.	
Unit III: Integration of Functions of a Real Variable (Continued): Integration of Series - Riemann and Lebesgue Integrals - The Four Derivates.	
Unit IV: Inequalities and the L^p Spaces: The L^p Spaces - Convex Functions - Jensen's Inequality - The Inequalities of Holder and Minkowski - Completeness of $L^p(M)$.	
Unit V: Signed Measures and their Derivatives: Signed Measures and the Hahn Decomposition - The Jordan Decomposition - The Radon-Nikodym Theorem.	

Text Book: Measure Theory and Integration by G. de Barra, 1st Edition 1981(Reprint: 2008), New Age International Publishers.

Chapters: 2(sect. 2.1- 2.4, 2.5, 2.6), 3(sec.3.1 - 3.4), 4(sec.4.1 only), 6(sec.6.1 - 6.5), 8(8.1 - 8.3).

Reference Books: 1. Principles of Mathematical Analysis by Walter Rudin, Third edition, McGraw Hill, International Student Edition (1976).

2. Real analysis by H.L Royden, Third Edition, Prentice-Hall of India Private ltd (2004).