1.	Title of the Course	Multivariable Calculus and Measure Theory
2.	Course Number	MA5202
3.	Status of the Course	Core
4.	Structure of Credits	3-1-0-4
5.	Offered To	PG
6.	New Course/Modification to	Modification To MA5202
7.	To be Offered by	Department of Mathematics
8.	To take effect from	July 2019
9.	Prerequisite	Nil
10.	Whether approved by the Department	Yes
11.	**Course Objective:** To introduce the calculus of real-valued functions of several real variables, Lebesgue measure theory and then the properties of Lebesgue p-integrable functions.	
12.	**Course Content:** Functions of several variables, open sets in Euclidean spaces, limits, continuity, differentiation of functions of several variables; Inverse function theorem; Implicit function theorem; Review of Riemann-Stieltjes integral; Lebesgue measure, Lebesgue outer measure, Lebesgue measurable sets, measure on an arbitrary sigma-algebra; Measurable functions, integral of a simple measurable function, integral of positive measurable functions; Lebesgue's monotone convergence theorem; Lebesgue integrability; Dominated convergence theorem; Lp-spaces; Differentiation and fundamental theorem for Lebesgue integration; Product measure; Statement of Fubini's theorem.	
13.	**Text book(s):** 1. Royden H L, *Real Analysis*, Prentice Hall of India (1995). 2. Rudin W, *Real and Complex Analysis*, McGraw-Hill, International Editions (1987).	
14.	**Reference(s):** 1. Barra G D, *Measure and Integration*, Wiley Eastern Ltd (1981). 2. Edwards H M, *Advanced Calculus: A Differential Forms Approach*, Birkhauser (1994). 3. Folland G B, *Advanced Calculus*, Pearson (2012). 4. Rana I K, *An Introduction to Measure and Integration*, Narosa Publishing Agencies (1997).	