

1.	Title of the course	Functional Data Analysis
2.	Course number	MA619L
3.	Structure of credits	3-0-0-3
4.	Offered to	PG
5.	New course/modification to	Modification To MA6033/12
6.	To be offered by	Department of Mathematics and Statistics
7.	To take effect from	July 2022
8.	Prerequisite	CoT
9.	Course Objective(s): To introduce and explore basic functional data. To impart knowledge of how functional data arises. To develop statistical and mathematical techniques to deal with smooth functional data having systematic patterns.	
10.	Course Content: Exploring functional data, phase plane plot, representing function by basis function and some useful basis, smoothing functional data by least squares and weighted least squares technique, choosing the number of basis functions, smoothing by roughness penalty, fitting functions, registration, principal component analysis, canonical correlation, and discriminant analysis, functional response and multivariate and functional covariates, functional linear models with scalar and functional response.	
11.	Textbook(s): 1. Bosq D, <i>Linear Processes in Function Spaces: Theory and Applications</i> , 1st Edition, Springer (2000). 2. Ramsay J O and Silverman B W, <i>Functional Data Analysis</i> , 2nd Edition, Springer (2005).	
12.	Reference(s): 1. Kokoszka P and Reimherr M, <i>Introduction to Functional Data Analysis</i> , 1st Edition, CRC Press (2017). 2. Ramsay J O and Silverman B W, <i>Applied Functional Data Analysis</i> , 1st Edition, Springer (2002). 4. Srivastava A and Klassen E P, <i>Functional and Shape Data Analysis</i> , 1st Edition, Springer (2016).	