1.	Title of the course	Spatio-Temporal Modelling
2.	Course number	MA624L
3.	Structure of credits	3-0-0-3
4.	Offered to	PG
5.	New course/modification to	Modification To MA6032/12
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 characterize and build tools for spatio-temporal processes. To unravel the functionality of environmental, epidemiological models via statistical mechanism.	
10.	**Course Content:** Statistical preliminaries: conditional probabilities, hierarchical modeling, inference and diagnostics, posterior distribution, graphical representation of statistical dependencies; Spatial random processes: geostatistical, lattice, spatial point processes, and random sets; Spectral analysis of spatio-temporal data, empirical orthogonal functions, principal oscillation pattern, spatio-temporal canonical correlation, covariance function, and kriging, spatio-temporal statistical models, hierarchical dynamical spatio-temporal models.	
11.	**Textbook(s):** 1. Cressie N and Wikle C K, *Statistics for Spatio Temporal Data*, 1st Edition, Wiley (2011). 2. Hristopulos D T, *Random Fields for Spatial Data Modeling*, 1st Edition, Springer (2020).	
12.	**Reference(s):** 1. Cressie N, *Statistics for Spatial Data*, 1st Edition, Wiley (1993). 2. Diggle P J, *Statistical Analysis of Spatial and Spatio-Temporal Point Patterns*, 3rd Edition, CRC Press (2014).	