1.	Title of the course	Statistics and Random Processes
2.	Course number	MA205L
3.	Structure of credits (L-T-P-C)	3-0-0-3
4.	New course/modification to	New
5.	To be offered by	Mathematics and Statistics
6.	Prerequisite	None
7.	**Course Objective(s):** To discuss theoretical concepts of multivariate distributions, limiting distributions, discrete and continuous time stochastic processes. To solve real-world problems using concepts of probability theories and random processes.	
8.	**Course Content:** Review of probability theories; Joint distribution of random variables; Covariance and correlation; Transformation of random variables; Convolution; Moment generating function; Characteristic function; Notion of convergence; Weak law of large numbers; Central limit theorem; Concepts of statistical inference; Point estimation; Methods of estimation: MME, MLE; Confidence intervals; Testing of hypotheses; Bayesian inference; Discrete-time discrete state space processes: Markov chain, limiting stationary distributions; Continuous-time discrete state space processes: Poisson process.	
9.	**Textbook(s):** 1. Pishro-Nik H, Introduction to Probability, Statistics, And Random Processes, Blue Bell, PA, USA: Kappa Research, LLC (2014). 2. Ross S M, Stochastic Processes, 2nd Edition, John Wiley (1996).	
10.	**Reference(s):** 1. Papoulis A, and Unnikrishna Pillai S, Probability, Random Variables and Stochastic Processes, 4th Edition, McGraw Hill Education (2002). 2. Kreyszig E, Advanced Engineering Mathematics, 10th Edition, Wiley (2015). 3. Karlin S, and Taylor H M, First Course in Stochastic Processes, Academic Press (1975).	