1.	Title of the course	Probability Theory for Engineers
2.	Course number	MA503L
3.	Structure of credits	2-0-0-2
4.	Offered to	PG
5.	New course/modification to	Modification To MA5022/12
6.	To be offered by	Department of Mathematics and Statistics
7.	To take effect from	July 2022
8.	Prerequisite	Nil
9.	**Course Objective(s):** To introduce the notion of random phenomena, theories, and their applications to allied sciences. To describe the methods addressing randomness and demonstrate the existence of different distributions in nature. To find transformed distribution functions using different techniques.	
10.	**Course Content:** The axioms of probability, conditional probability, independence, Bayes' rule, random variables, distribution functions, expectation and variance, properties of expectation, covariance and correlation, multivariate normal distributions, transformations of random variables, sum of random variables, moment generating functions, characteristic functions, Chebychev's inequality, notions of convergence, law of large numbers, central limit theorem, the concept of statistical inference, the method of maximum likelihood estimation.	
11.	**Textbook(s):** 1. Kreyszig E, *Advanced Engineering Mathematics*, 10th Edition, John Wiley & Sons (2010). 2. Sheldon R, *A First Course in Probability*, 8th Edition, Prentice-Hall of India (2010).	
12.	**Reference(s):** 1. Billingsley P, *Probability and Measure*, 3rd Edition, John Wiley & Sons (2012). 2. Casella G and Berger R, *Statistical Inference*, 2nd Edition, Cengage Learning (2001). 3. Chung K L and AitSahlia F, *Elementary Probability Theory: with Stochastic Processes and an Introduction to Mathematical Finance*, 4th Edition, Springer (2003). 4. Durrett R, *Elementary Probability for Applications*, 1st Edition, Cambridge University Press (2009).	