Indian Institute of Engineering Science and Technology, Shibpur
Department of Mathematics

B.Tech. Third Semester (For all Engineering Branches)

Subject: Mathematics-III

(MA-2101)

Weekly contact periods: 3– 0 - 0 (L – T - P) **Full Marks: 100** **Credit- 3**

Sl. No	Module Name and Topics	No. of Lecture Classes
1.	**Probability:** Axiomatic approach to probability theory, Univariate probability distributions – discrete and continuous. Standard distributions: Binomial, Poisson, Geometric, Exponential, Normal, Uniform and Gamma. Bivariate distributions – concepts of joint and conditional distributions, Mathematical expectation, variance and covariance. Correlation coefficient. Tchebycheff's inequality.	13
2.	**Statistics:** Concept of Statistics, Idea of sample correlation coefficients, curve fitting: Method of Least Square, Simple Regression models.	5
3.	**Laplace Transform:** Definition, Laplace transform of elementary functions, basic operational properties, Inverse Laplace transform, Convolution theorem, applications to initial value problems involving Ordinary Differential Equations.	8
4.	**Linear Programming Problem:** Basic solution, reduction of feasible solution to basic feasible solution, convex combination, convex set, extreme points, hyperplanes, slack and surplus variables, Simplex Method, Charnes' Big-M method.	13
	First half: Sl. No. 1,2 **Second half: Sl. No. 3, 4**	**39**

References:

1. A. Mood, F. Graybill & D. Boes: Introduction to the theory of statistics, McGraw Hill Education, 2017.
2. P. G. Hoel, S. Port & C. Stone: Introduction to probability Theory, Houghton Mifflin, 1971.
3. S.M. Ross: A first course in probability, Pearson Education India; 9th edition, 2013.
4. Amritava Gupta: Groundwork of Mathematical Probability and Statistics, Academic Publishers 6th edition, 2012.
5. P.M. Karak: Linear programming, New Central Book Agency (P) Limited, 2011.
6. J.G. Chakraborty & P.R. Ghosh: Linear programming and Game theory, Moulik Library.
7. R.V. Churchill: Operational Mathematics, McGraw-Hill 3rd edition, 1972.
8. Schaum's Outline of Laplace Transforms, Murray R. Spiegel, McGraw Hill, 1965.