



# INDIAN INSTITUTE OF TECHNOLOGY TIRUPATI

भारतीय प्रौद्योगिकी संस्थान तिरुपति

Yerpedu-Venkatagiri Road, Yerpedu Post, Tirupati District, Andhra Pradesh - 517 619

1.	Title of the course	Engineering Mathematics II
2.	Course number	MA104L
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.	<p><b>Course Objective(s):</b> To discuss fundamental concepts of linear algebra and its applications. To develop theoretical concepts of matrices, linear independence, eigenvalues, and eigenvectors. To describe the fundamentals of probability theory and its applications. To discuss methods to solve applied problems using numerical examples.</p>	
8.	<p><b>Course Content:</b> Matrices: vectors, addition, scalar multiplication, matrix multiplication, linear independence, rank, Linear systems of equations: solutions, existence, uniqueness, Gauss elimination, Gauss-Jordan elimination, Determinant, inverse of a matrix, Cramer's rule, Matrix eigenvalue problems: eigenvalues, eigenvectors, eigenbases, diagonalization, Special matrices: symmetric, skew-symmetric, orthogonal matrices, Experiments, outcomes, events, Probability definitions, conditional probability, independence, Bayes' theorem, random variable: definition, discrete random variable, continuous random variable, Probability distributions: cumulative probability distribution, probability mass function, probability density function, mean, variance, binomial distribution, Poisson distribution, exponential distribution, normal distribution, Distributions of several random variables.</p>	
9.	<p><b>Textbook(s):</b></p> <ol style="list-style-type: none"> <li>1. Kreyszig E, Advanced Engineering Mathematics, 10th Edition, Wiley (2015).</li> <li>2. Bertsekas D and Tsitsiklis J, Introduction to Probability, 2nd Edition, Athena Scientific (2008).</li> </ol>	
10.	<p><b>Reference(s):</b></p> <ol style="list-style-type: none"> <li>1. Strang G, Linear Algebra and Its Applications, 4th Edition, Cengage (2014).</li> <li>2. Hoffmann K and Kunze R, Linear Algebra, 2nd Edition, Pearson (2015).</li> <li>3. Ross S, A First course in Probability, 10th Edition, Prentice Hall of India (2022).</li> <li>4. Drake A, Fundamentals of Applied Probability Theory, McGraw-Hill (1967).</li> </ol>	