



# RAJASTHAN TECHNICAL UNIVERSITY, KOTA

## Syllabus

II Year-III Semester: B.Tech. Computer Science and Engineering  
(Data Science)

### 3CDS2-01: Advanced Engineering Mathematics

Credit-3  
3L+0T+0P

Max. Marks : 100 (IA:30, ETE:70)  
End Term Exam: 3 Hours

| SN           | CONTENTS  | Hours     |
|--------------|---|-----------|
| 1            | <b>Random Variables:</b><br>Discrete and Continuous random variables, Joint distribution, Probability distribution function, conditional distribution. Mathematical Expectations: Moments, Moment Generating Functions, variance and correlation coefficients, Chebyshev's Inequality, Skewness and Kurtosis. | 7         |
| 2            | <b>Binomial distribution</b> , Normal Distribution, Poisson Distribution and their relations, Uniform Distribution, Exponential Distribution. Correlation: Karl Pearson's coefficient, Rank correlation. Curve fitting. Line of Regression.   | 5         |
| 3            | <b>Historical development</b> , Engineering Applications of Optimization, Formulation of Design Problems as a Mathematical Programming Problems, Classification of Optimization Problems  | 8         |
| 4            | <b>Classical Optimization using Differential Calculus:</b> Single Variable and Multivariable Optimization with & without Constraints, Lagrangian theory, Kuhn Tucker conditions   | 6         |
| 5            | <b>Linear Programming:</b> Simplex method, Two Phase Method and Duality in Linear Programming. Application of Linear Programming: Transportation and Assignment Problems.   | 14        |
| <b>TOTAL</b> |   | <b>40</b> |

Office of Dean Academic Affairs  
Rajasthan Technical University, Kota