



Sardar Patel Institute of Technology

Bhavan's Campus, Munshi Nagar, Andheri (West), Mumbai-400058-India
(Autonomous Institute Affiliated to University of Mumbai)

Course Code	Course Name	Teaching Scheme (Hrs/week)			Credits Assigned			
		L	T	P	L	T	P	Total
BS41	Applied Mathematics-II	3	1	--	3	1	--	4
		Examination Scheme						
		ISE		MSE		ESE		
		10		30		100 (60% Weightage)		

Course Objectives:

- To familiarize learners with mathematical tools and methods to solve engineering problems

Course Outcomes:

Pre-requisite course codes	BS11 (Engineering Mathematics I) BS21 (Engineering Mathematics II)	
After successful completion of the course, student will be able to		
Course Outcomes	CO1	Check if matrix is diagonalizable, derogatory & to calculate functions of a square matrix.
	CO2	Find Correlation between two variables.
	CO3	Find the measures of central tendency
	CO4	Solve a problem by identifying the appropriate distribution.
	CO5	Test the hypothesis for means and variances for single and multiple samples using 't' & chi-square distribution tests.

Module No	Module name	Unit No.	Topics	Ref.	Hrs.
1	Matrices	1.1	Eigen values and Eigen vectors and its properties.	1,3,4	04
		1.2	Cayley-Hamilton theorem and its applications.		02
		1.3	Similar matrices, diagonalizable matrices. Singular Value Decomposition.		04



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		1.4	Derogatory and non-derogatory matrices, functions of square matrix.		03
		1.5	Application to finding google page rank		01
2	Probability	3.1	Random Variables: - discrete & continuous random variables, expectation, Variance, Probability Density Function & Cumulative Density Function.	2,3,4 ,5	04
		3.2	Moments, Moment Generating Function.		02
		3.3	Probability distribution: binomial distribution, Poisson & normal distribution.		07
3	Sampling Theory	4.1	Sampling, point and interval estimations, Test a hypothesis using Large sample test	2,3,4 ,5	04
		4.2	Testing of hypothesis using 't' and chi-square distribution tests.		04
4	Correlation and Regression	2.1	Karl Pearson's coefficient of correlation, covariance, Spearman's rank correlation		03
		2.2	Regression.	1,3,4	04
Total					42hrs

References:

- [1] Kreyszig, "Advanced Engineering Mathematics", 9th edition, John Wiley
- [2] Kishor S. Trivedi, "Probability & Statistics with reliability", 2nd edition, Wiley India
- [3] C. Ray Wylie & Louis Barrett, "Advanced Engg. Mathematics", 6th Edition, New York : McGraw-Hill, c1995.
- [4] K. B. Datta, "Mathematical Methods of Science and Engineering", First edition, Cengage Learning India, 2011
- [5] Sheldon M. Ross, "Introduction to Probability and Statistics for Engineers and Scientists", 3rd, Elsevier Academic Press, 2004