

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	Т	Р	L	Т	Р	Total
BS41	Applied Mathematics-II	3	1		3	1		4
		Examination Scheme						
		ISE		MSE	ESE			
		10		30	100 (60% Weightage)			

Pre-requisite Course Codes		lodog	BS11 (Engineering Mathematics I)	
		Joues	BS21 (Engineering Mathematics II)	
After successful completion of the course, student will be able to				
CO1 To diagonalise a given matrix and calculate functions of a square				
	CO2	To reduce a given quadratic form to simpler forms		
Course	CO3	To app	bly the concept of complex analysis to evaluate integrals	
Outcomes	CO4	To eva	aluate line integrals and surface integrals.	
	CO5	To calculate expectation, variance and moments of a random variable		
	CO6	To app	bly the concepts of matrices to real life problems	

Module	Module	Unit	Topics	Ref	Hours
No	Name	ame No			
1.	Linear Algebra: Matrix Theory	1.1 1.2	Eigenvalues and Eigenvectors, properties of Eigenvalues and Eigenvectors Cayley-Hamilton theorem and its applications. Similarity of matrices Diagonalisation of		03
		1.3	matrix Application of diagonalisation of matrices to find functions of a square matrix and to solve a system of ODE	1,2,3,7	02
		1.5	Quadratic forms over real field, Singular Value Decomposition		05
		1.6	Application to find google page rank		02
2.	ComplexVariables:		Line Integral, Cauchy's Integral theorem for simply connected regions, Cauchy's Integral formula	1,2,3,4	05
	Integration	2.2	Region of Convergence, Taylor's and Laurent's series		02



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	2.3		Zeros, singularities, poles of f(z), residues, Cauchy's Residue theorem		04
		2.4	Applications of Residue theorem to evaluate real Integrals of different types		03
3.	Vector Integration: Line and Surface Integrals	3.1	Line and Surface Integrals, Circulation of a vector, Greens theorem in a plane, Gauss divergence theorem, Stokes theorem	1,2,3,4	06
4.	Probability: Random Variables	4.1	Discrete and continuous random variables (Single and Joint), probability density function, cumulative density function, expectation, variance. Moments and Moment generating function.	1,2,3,4,5,6	07
				Total	42 Hrs

NOTE: ISE component will be evaluated through assignments and quizzes conducted in the tutorial sessions (tutorials will be conducted class wise)

References:

- 1. Kreyszig, "Advanced Engineering Mathematics, 9thedition", John Wiley
- 2. H.K.Dass, "Advanced Engineering Mathematics", 28th edition, S.Chand, 2010
- 3. Grewal B.S., "Higher Engineering Mathematics", 38thedition, Khanna Publication
- 4. Thomas & Finney, "Calculus& Analytic Geometry", 9thedition, Addison Wesley.
- 5. Kishor S. Trivedi, "Probability & Statistics with reliability", 2nd edition, Wiley India
- 6. Sheldon M. Ross, "Introduction to Probability and Statistics for Engineers and Scientists"
- H Anton and C Rorres," Elementary Linear Algebra Application Version", 6th edition, John Wiley & Sons, 2010