CO-wise Syllabus			
1	CO-1	Statement	Apply the concept of matrices for solving linear simultaneous equations.
		Syllabus	***Matrices*** Elementary transformations, Inverse of a matrix, Rank of matrix, Solution of system of linear equations, Characteristic equation, Cayley-Hamilton Theorem and its application, Linear Dependence and Independence of vectors, Eigen values and Eigen vectors, Complex Matrices, Hermitian, Skew-Hermitian and Unitary Matrices, Applications to Engineering problems.
2	CO-2	Statement	Apply the concept of differentiation in successive derivatives,Lebnitz theorem, partial and total derivative.
		Syllabus	***Differential Calculus*** ISuccessive Differentiation (nth order derivatives), Leibnitz theorem, Curve tracing, Partial derivatives, Euler's Theorem for homogeneous functions, Total derivative.
3	CO-3	Statement	Apply partial differentiation for evaluating extreme values, expansion of function and Jacobian, approximation of errors.
		Syllabus	***Differential Calculus-II*** Expansion of functions by Taylor's and Maclaurin's theorems for functions of one and two variables, Maxima and Minima of functions of several variables, Lagrange's method of multipliers, Jacobians, Approximation of errors.
4	CO-4	Statement	Apply the methods of multiple integral and concept of beta and gamma functions for finding area, volume and mass.
		Syllabus	***Multiple integration*** Double integral, Triple integral, Change of order of integration, Change of variables, Beta and Gama function and their properties, Dirichlet's integral and its applications to area and volume, Liouville's extensions of Dirichlet's integral.
5	CO-5	Statement	Apply the concept of vector for evaluating directional derivatives, line, surface and volume integrals.
		Syllabus	***Vector Calculus*** ***Vector differentiation:*** Gradient, Curl and Divergence and their Physical interpretation, Directional derivatives. ***Vector Integration:*** Line integral, Surface integral, Volume integral, Gauss's Divergence theorem, Green's theorem and Stoke's theorem (without proof) and their applications.

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Subject Name	Engineering Mathematics-I (BAS-103)

Unit No.	CO No.	Unit Name	Syllabus Topics	Lecture No
1	1	Matrices	Symmetric, Skew-symmetric, Orthogonal Matrices	1
			Complex Matrices and problems	2
			Inverse of matrix using elementary transformations	3
			Rank of matrix using elementary transformations(Echelon Form)	4
			Rank of matrix using elementary transformations(Normal Form)	5
			Solution of Non-Homogeneous system of linear equations	6
			Solution of Non-Homogeneous system of linear	7
			Solution of Homogeneous system of linear equations	8
			Linear Dependence and Independence of vectors	9
			Eigen values Eigen vectors	10
			Eigen values Eigen vectors	11
			Cayley-Hamilton Theorem and its application,	12
2	2	**Differential Calculus-I**	Introduction of Successive Differentiation, nth derivative of some elementary functions	13
			Leibnitz's Theorem & nth derivative of product of functions	14+
			To find nth derivative of a function at x=0	15
			Introduction to partial differentiation and partial derivatives	16
			problems on partial derivatives	17
			Introduction to total derivatives	18
			Euler's Theorem for homogeneous functions	19
			Deductions from Euler's Theorem	20
3	3	**Differential Calculus-II**	Taylor & Maclaurin's theorems for a function of one and two variables	21+
			Maxima and Minima of functions of several variables	22
			Lagrange Method of Multipliers	23+
			Introduction to Jacobian, Properties of Jacobian	24+
			Jacobian of Implicit Functions	25
			Approximation of errors	26+

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Subject Name	Engineering Mathematics-I (BAS-103)

Unit No.	CO No.	Unit Name	Syllabus Topics	Lecture No
4	**4**	**Multivariable Calculus-I**	Introduction to Double integral	27
			Double integral in Polar coordinate	28
			Change of order of integration	29
			Area by Double integral	30
			Introduction of Triple integral,Volume by triple integral	31
			Change of variables in Double and Triple integral	32+
			Beta and Gamma Function	33
			Properties and Problems on Beta and Gamma Function	34
			Dirichlet's integral and its applications to area and volume	35
			Liouville's extensions of Dirichlet's integral.	36
5	**5**	**Vector Calculus**	Gradient, Directional Derivatives	37+
			Divergence of a vector and it's physical interpretations	38
			Curl of a vector and it's physical interpretations & Vector identities (without proof)	39
			Line, Surface and Volume Integrals	40
			Applications of Green's Theorem	41+
			Applications of Stoke's Theorem	42+
			Applications of Gauss Divergence Theorem	43+
2	2	Differential Calculus-I	Curve tracing	44