J C Bose University of Science and Technology, YMCA Faridabad
Department of Mathematics
Lesson Plan
B. Tech. (ECE, EEIOT) (3rd Semester)
Mathematics-III (BS-301) 4L

Week	**Theory**	
I	**Lecture Day**	**Topic**
	I	Orthogonal Polynomials
	II	Orthogonal Polynomials(cont.)
	III	Chebyshev Polynomials
	IV	Chebyshev Polynomials(cont.)
II	**I**	Chebyshev Polynomials(cont.)
	II	Trigonometric Polynomial
	III	Trigonometric Polynomial(cont.)
	IV	Laplace Transform definition, Formulae of some elementary functions with proof
III	**I**	Properties of Laplace Transform with proof
	II	Properties of Laplace Transform with proof(cont.)
	III	Problems based on properties of Laplace Transform
	IV	Problems based on properties of Laplace Transform(cont.)
IV	**I**	Laplace Transform of Periodic function with proof
	II	Formulae of inverse Laplace Transform
	III	Evaluation of Inverse Laplace Transform with Partial Fraction method

	IV	Convolution Theorem with proof and Evaluation of inverse Laplace Transform by using Convolution Theorem
V	**I**	Evaluation of Integrals by Laplace Transform
	II	Solution of ODE by using Laplace Transform
	III	Solution of PDE by using Laplace Transform
	IV	Fourier Transform definition, Problems based on Fourier Transform
VI	**I**	Fourier Sine Transform definition, Problems based on Fourier Sine Transform
	II	Problems based on Fourier Sine Transform(cont.)
	III	Fourier Cosine Transform definition, Problems based on Fourier Cosine Transform
	IV	Problems based on Fourier Cosine Transform(contd.)
VII	**I**	Properties of Fourier Transform with proof
	II	Problems based on properties of Fourier Transform
	III	Finite Fourier Sine and Cosine Transform
	IV	Inverse Fourier Transform, Inverse Fourier Sine Transform and Inverse Fourier Cosine Transform
VIII	**I**	Application of Fourier Transform in solving PDE
	II	Application of Fourier Transform in solving PDE(contd.)
	III	Application of Fourier Transform in solving PDE(contd.)
	IV	Z-Transform definition and Formulae
IX	**I**	Problems based on Z transform

	II	Properties of Z transform and Questions based on properties of Z transform
	III	Inverse Z transform by using partial fraction method
	IV	Inverse Z transform by using inversion integral method
X	**I**	Convolution Theorem and evaluation of Inverse Z transform by using convolution method
	II	Solution of difference equations by using Z transform
	III	Vector differentiation
	IV	Gradient, Divergence and Curl
XI	**I**	Line integral and path independence, Arc parameterization
	II	Statement of Green's theorem and problems
	III	Problems based on Green's theorem(contd.)
	IV	Surface integral and problems
XII	**I**	Statement of Stoke's theorem and problems
	II	Problems based on Stoke's theorem(contd.)
	III	Volume integral and problem
	IV	Statement of Gauss Divergence Theorem and problems
XIII	**I**	Problems based on Gauss Divergence Theorem
	II	Revision of complete syllabus
	III	Doubt clearing and remedial session
	IV	Feedback and conclusion

J C Bose University of Science and Technology, YMCA Faridabad
Department of Mathematics
Lesson Plan
B. Sc. Chemistry (H) (1st Semester)
Basic Algebra (OSU-115-V) 4L

Week	**Theory**	
I	**Lecture Day**	**Topic**
	I	Concept of Matrices
	II	Types of matrices(Definition with examples)
	III	Transpose of a matrix, Symmetric and Skew-Symmetric matrices
	IV	Addition, Multiplication and scalar multiplication of matrices
II	**I**	Addition, Multiplication and scalar multiplication of matrices(cont.)
	II	Concept of Elementary row and column operations
	III	Problems based on Elementary row and column operations
	IV	Invertible matrices and inverse of a matrix by using elementary operations
III	**I**	Invertible matrices and inverse of a matrix by using elementary operations(cont.)
	II	Determinant of a square matrix (up to 3x3 matrices)
	III	Properties of determinants with examples
	IV	Properties of determinants with examples(cont.)
IV	**I**	Problems of Determinant

	II	Concept of Minors and Cofactors
	III	Concept of Minors and Cofactors(cont.)
	IV	Applications of determinants in finding the area of a triangle
V	**I**	Adjoint of a matrix
	II	Inverse of a square matrix
	III	Rank of a matrix by determinant method
	IV	Rank of a matrix(cont.) by elementary Transformation
VI	**I**	Consistency and inconsistency and number of solutions of system of linear equations
	II	Solution of system of linear equations in two or three variables
	III	Solution of system of linear equations in two or three variables (Cont.)
	IV	Concept of sets and their representations
VII	**I**	Empty sets, Equal sets, Finite and Infinite sets with examples
	II	Subsets, Power sets, Universal sets
	III	Problems based on subsets, Power set
	IV	Union and Intersection of sets
VIII	**I**	Representation of Union and Intersection of sets by using Venn diagram
	II	Examples and properties of Union and Intersection of sets
	III	Difference and Complement of sets with examples

	IV	Properties of Complement of a set
IX	**I**	Ordered Pair, Cartesian product of sets
	II	Properties of Cartesian product of sets
	III	Concept of Relation
	IV	Pictorial representation of relation
X	**I**	Domain, Co-domain and Range of a relation
	II	Domain, Co-domain and Range of a relation(cont.)
	III	Types of Relations
	IV	Pictorial representation of function
XI	**I**	Domain, Co-domain and Range of a function
	II	Domain, Co-domain and Range of a function (cont.)
	III	Signum and Greatest Integer function with example
	IV	Types of functions
XII	**I**	Sum and Difference of two functions
	II	Product and Quotient of two functions
	III	Revision of Unit I
	IV	Revision of Unit II
XIII	**I**	Revision of Unit III
	II	Revision of Unit IV

	III	Doubt clearing and remedial session
	IV	Feedback and conclusion

J C Bose University of Science and Technology, YMCA Faridabad
Department of Mathematics
Lesson Plan
B. Tech. (Electrical Engineering) (1st Semester)
MATHEMATICS-I (BSC-103 C) 4L

Week	**Theory**	
I	**Lecture Day**	**Topic**
	I	Curvature and Radius of Curvature
	II	Evolutes and Involutes
	III	Evaluation of Definite and Improper Integrals
	IV	Evaluation of surface areas and volumes of revolution
II	**I**	Beta and Gamma Functions
	II	Rolle's Theorem and its geometrical interpretation
	III	Mean Value Theorems (Lagrange's and Cauchy's)
	IV	Taylor's and Maclaurin's Theorems with Remainders
III	**I**	Indeterminate Forms
	II	L'Hospital's Rule
	III	Maxima and Minima for single variable functions
	IV	Convergence of Infinite Series (Introduction)
IV	**I**	Tests for Convergence (Comparison Test, Ratio Test)
	II	Tests for Convergence (Root Test, Cauchy Integral Test)
	III	Tests for Convergence (Raabe’s Test, Leibnitz Test)
	IV	Power Series and Radius of Convergence

V	**I**	Taylor Series for exponential, trigonometric and logarithmic functions
	II	Fourier Series Introduction
	III	Half Range Sine and Cosine Series and Parseval's theorem
	IV	Functions of Several Variables: Limit and Continuity
VI	**I**	Partial Derivatives
	II	Total Derivative, Directional Derivatives
	III	Tangent Plane and Normal Line
	IV	Maxima, Minima, and Saddle Points (Two Variables) and Method of Lagrange Multipliers
VII	**I**	Gradient, Divergence and Curl
	II	Multiple Integration: Double and Triple integrals (Cartesian and Polar Coordinates)
	III	Change of order of integration, Change of variables (Cartesian to Polar)
	IV	Evaluation of Area and Volume by using Double Integral
VIII	**I**	Center of Mass and Gravity
	II	Green's Theorem
	III	Stoke's theorem
	IV	Divergence Theorem
IX	**I**	Orthogonal Curvilinear coordinates(intro.)
	II	Application of orthogonal curvilinear coordinates involving cubes, sphere

	III	Application of orthogonal curvilinear coordinates involving rectangular parallelopiped
	IV	First order ODE: Exact Equations
X	**I**	Linear and Bernoulli's Equations
	II	Equations not of first degree: Equations solvable for p and x
	III	Equations not of first degree: Equations solvable for y and Clairaut's equations
	IV	Second order linear differential equations with variable coefficients
XI	**I**	Method of variation of parameters and Cauchy- Euler Equ.
	II	Power Series solutions
	III	Legendre's polynomials
	IV	Bessel's functions of first kind
XII	**I**	Bessel function's properties
	II	First order PDE: Formations of PDE
	III	Solution of first order linear PDE
	IV	Solution of first order non-linear PDE
XIII	**I**	Solution of first order non-linear PDE(cont.)
	II	Revision of complete syllabus
	III	Doubt clearing and remedial session
	IV	Feedback and conclusion