Lesson Plan

Name of Assistant Professor: Ms. Vinita Raj
Class: BA/B. Sc. I (Semester 2nd)
Subject: Mathematics Paper : Number theory and Trigonometry
Lesson Plan: From (January 2022- April 2023)

Week 1 **Chapter 7 : De Moivre's Theorem and its Applications**
Preliminaries
Preliminaries
Preliminaries
Preliminaries
De Moivre's theorem
De Moivre's theorem
Roots of a complex number
Roots of a complex number
Solutions of equations
Formation of equations
Formation of equations
Problem solving session
Departmental Activity
Expansion as multiples
Chapter 8 Exponential functions
Euler's theorem

Test

Holiday

Presentation by students

Holiday

Revision

Holiday

Chapter 9
Hyperboic functions

Week 5

Hyperboic functions

Holiday

Chapter 10
Logarithm of a complex quantity

Departmental Activity

Week 6

CL

CL

CL

Chapter 11
Inverse circular functions

Holiday

Week 7

Principal values of Inverse circular functions

Holiday

General values of Inverse circular functions
Inverse hyperbolic functions in terms of logarithms

Gregory's series

Departmental Activity

Week 8

Another form of Gregory's series

Chapter 12

Summation of series

Summation of series

Summation of series

Summation of series

Departmental Activity

Week 9

Summation of series

Summation of series

Holiday

Holiday

Holiday

Holiday

Week 10
Chapter 1

Divisibility

Division algorithm

Gauss theorem

Euclid's theorems

Assignments

Departmental Activity

Week 11 **Chapter 2**
Congruences
Congruences
Congruences
Linear congruence
Linear Diophantine equations
Revision and problem solving session
Week 12 **Chapter 4**
Euler's theorem
Residue (mod m)
Reduced residue system
Presentation by students
Holiday
Departmental Activity
Week 13 **Chapter 5**
Greatest integer function
Arithmetic functions
Mobius function
Test
Departmental Activity
Week 14 **Chapter 3**
Fermat's theorem
Fermat's theorem

Wilson's theorem

Wilson's theorem

Chinese remainder theorem

Departmental Activity

Week 15

Chinese remainder theorem

Chapter 6
Quadratic congruence

Assignment

Quadratic congruence

Legendre symbol

Holiday

Week 16

Gauss reciprocity law

Gauss reciprocity law

Holiday

Presentation by students

Problem solving session

Departmental Activity

LESSON PLAN (2022- 2023)

Name of Teacher – Vinita Raj

Subject: - Mathematics

Paper – Vector Calculus

Class – BA/BSC 1st year

Session:- 2022-2023 (Even Sem.)

Weeks With Months	Contents
Jan 31 – Feb 4	Previous Question Paper and Exam Pattern was discussed
Feb 6- Feb 11	Scalar and vector product of three vectors, product of four vectors.
Feb 13 - Feb17	Reciprocal vectors. Vector differentiation.
Feb 20 – Feb 25	Scalar Valued point functions, vector valued point functions, derivative along a curve, directional derivatives
Feb 27- March 04	Gradient of a scalar point function, geometrical interpretation of grad Φ,
March 06 - March 11	Character of gradient as a point function.
March 13 – March 18	Divergence and curl of vector point function, characters of Div fp and Curl fp as point function, examples.
March 20 - March 25	Gradient, divergence and curl of sums and product and their related vector identities. Laplacian operator
March 27 - April 01	Orthogonal curvilinear coordinates Conditions for orthogonality fundamental triad of mutually orthogonal unit vectors.
April 03 – April 08	Gradient, Divergence, Curl
April 10 - April 15	Laplacian operators in terms of orthogonal curvilinear coordinates,
April 17 - April 22	Cylindrical co-ordinates and Spherical co- ordinates.
April 24 - April 29	Vector integration; Line integral.
May 01 - May 06	Surface integral, Volume integral.
May 08 - May 13	Theorems of Gauss, Green & Stokes and problems based on these theorems.
May 15 – May 19	Revision and Class test

LESSON PLAN (2022-23)

Name of Teacher – Vinita Raj Subject: - Mathematics
Paper – O.D.E
Class –B.A/B.Sc. I Semester - 2nd

Weeks With Months	Contents
Feb 13, 2023 - Feb 18, 2023	Basics, Unit-I Geometrical meaning of a D.E, Exact D.E, Integrating factors
Feb 20 – Feb 25	First order higher degree equations, Lagrange's equations, Problem discussion
Feb 27- March 04	Clairaut equations, Equations reducible to Clairaut's form
March 06 - March 11	Singular solution
March 13 – March 18	Assignment-1, Unit-2, Orthogonal Trajectories in Cartesian and polar coordinates, self orthogonal family of curves
March 20 - March 25	Linear D.E. with constant coefficients, Problem discussion
March 27 - April 01	Linear D.E. with constant coefficients
April 03 – April 08	Homogenous linear ordinary D.E, Problem Discussin
April 10 - April 15	Equations reducible to homogenous
April 17 - April 22	Assignment-2, Unit-3 Linear D.E. of second order, reduction to normal form, Transformation of the equation by changing dependent variable/independent variable
April 24 - April 29	Solution by operators of non homogenous linear differential equations, reduction of order of a D.E
May 01 - May 06	Method of variation of parameters, Method of undetermined coefficients
May 08 - May 13	Test, Unit-4 ordinary simultaneous D.E, solution of simultaneous D.E, Total D.E, Problem Discussion
May 15 – May 19	Conditions for Pdx+Qdy+Rdz=0 to be exact, General method of solving Pdx+Qdy+Rdz = 0 by taking one variable constant. Method of auxiliary equations, Revision

Lesson Plan

Name of the Assistant Professor: Ms. Vinita Raj

Class and Section: B.A./B.Sc. IVth Sem

Subject: Mathematics (SPECIAL FUNCTIONS AND INTEGRAL TRANSFORMS)

Week	Date	Topics
1		Introduction and Recapitulation of the basic Formulae
		Series solution of differential equation
		Power series method
		do
		Defination of beta fuction
		Example of beta fuction
		Sunday
2		Gamma functions
		Example of gamma functions
		Bessel function and its solution
		Do
		Do
		Bessel functions and their properties
		Sunday
3		Covergence
		Do
		Do
		Recurrence relation and generating functions
		Do
		Do
		Sunday
4		Vasant Panchami
		do
		Sir Chhotu Ram Jayanti
		Revision

		Republic Day
		Orthogonality of Bessel function
		Sunday
5		Do
		Do
		Do

Week	Date	Topic
1		Legendra and Hermit differential equation and their solution
		Do
		do
		Sunday
2		do
		do
		do
		revison
		revison
		Maharshi Dayanand Saraswati Jayanti
		Sunday
3		Test(legendra differential
		MahaShivratri
		Lgendra andHermit function and their properties
		do
		do
		do
		Sunday

4		Recurrence relation generating functions
		do
		Orthogonality of Lgendre and Hermite polynomials
		do
		Rodregues Formula for Legendra and Hermite Polynomials
		do
		Sunday
5		Laplace integral Representation of Legendra polynomial
		do
		do
Week		Topics
1		Guru Ravidas Birthday
		Holi
		Vacation
		Sunday
2		Laplace transforms
		Existence theorem for Laplace transform
		do
		do
		Linearity of the Laplace transforms
		do
		Sunday
3		Shifting theorms
		do
		Laplace trans forms of derivatives and integral
		do
		do
		Differentiation and integration of Laplace transforms
		Sunday

4		do
		do
		Convolution theorem
		do
		ShaheediDiwas of Bhagat Singh, Rajguru& Sukhdev
		Inverse Laplace transforms
		Sunday/ Ram Navami
5		do
		Inverse Laplace transforms of derivatives and integral
		do
		Mahavir Jayanti
		do
		do

Week		Topics
1		Sunday
		Solution of ordinary differential equations using Laplace transform
		do
		do
		Introduction Fourier transforms
		Linearity property
		do
		Sunday
2		Shifting
		Modulation
		Convolution theorem
		do
		do
		Dr Ambedkar Jayanti / Vaisakhi

		Sunday
3		Fourier transforms of derivatives
		do
		Parashurama Jayanti
		Relation between Fourier trans and Laplace transforms
		do
		do
		Sunday
4		Parsevals identity for Fourier transforms
		do
		Solution of diff erential equation using Fourier transforms
		do
		do
		do

LESSON PLAN (2022-23)

Name of Teacher –

Subject: - Mathematics

Paper – Programming in C & Numerical Methods

Class – BA/BSC 2nd

Session:- 2022-2023 (Even Sem.)

Weeks With Months	Contents
Jan 31 – Feb 4	Previous Question Paper and Exam Pattern was discussed
Feb 6- Feb 11	Programmer's model of a computer, Algorithms, Flow charts
Feb 13 - Feb17	Data types, Operators and expressions
Feb 20 – Feb 25	Input / outputs functions. Practice of making Basic programs of C language
Feb 27- March 04	Decisions control structure: Decision statements
March 06 - March 11	Logical and conditional statements, Implementation of Loop
March 13 – March 18	Switch Statement & Case control structures.
March 20 - March 25	Functions, Preprocessors and Arrays
March 27 - April 01	Strings: Character Data Type, Standard String handling Functions, Arithmetic Operations on Characters.
April 03 – April 08	Structures: Definition, using Structures, use of Structures in Arrays and Arrays in Structures.
April 10 - April 15	Pointers: Pointers Data type, Pointers and Arrays, Pointers and Functions
April 17 - April 22	Solution of Algebraic and Transcendental equations: Bisection method, Regula-Falsi method, Secant method, Newton-Raphson's method
April 24 - April 29	Newton's iterative method for finding pth root of a number, Order of convergence of above methods.
May 01 - May 06	Simultaneous linear algebraic equations: Gauss-elimination method, Gauss-Jordan method, Triangularization method (LU decomposition method). Crout's method
May 08 - May 13	Cholesky Decomposition method. Iterative method, Jacobi's method, Gauss-Seidal's method, Relaxation method.
May 15 – May 19	Revision and Test

Lesson Plan

Name of the Assistant Professor: Ms. Vinita Raj

Class and Section: B.A./B.Sc. IVth Sem

Subject: Mathematics (Linear Programming in C and Numerical Methods)

Week	Date	Topics
1		Recapitulation of the basic Formulae
		Discussion on computer basics and flow charts
		do
		do
		do
		do
		Sunday
2		Ch- Introduction to C
		do
		do
		do
		do
		do
		Sunday
3		Ch- Data- Types
		do
		do
		do
		do
		do
		Sunday
4		Vasant Panchami
		Ch- Operators and Expressions
		Sir Chhotu Ram Jayanti
		do

		Republic Day
		do
		Sunday
5		do
		Queries
		Ch- Decision Control Structures
Week		Topics
1		do
		do
		do
		Sunday
2		Ch- Loops
		do
		do
		do
		Ch- Functions
		Maharshi Dayanand Saraswati Jayanti
		Sunday
3		do
		MahaShivratri
		do
		do
		Ch- The C Processor
		do
		Sunday
4		do
		Ch- Arrays
		do

		do
		do
		Ch-Puppetting of Strings
		Sunday
5		do
		do
		Vacation
Week		Topics
1		Guru Ravidas Birthday
		Holi
		Vacation
		Sunday
2		Question and queries
		Test
		CH- Solution of Algebraic and Transcendental Equations
		do
		do
		do
		Sunday
3		do
		do
		do
		do
		do
		do
		Sunday
4		do
		Ch- Simultaneous Linear Algebraic Equations
		do

		do
		ShaheediDiwas of Bhagat Singh, Rajguru& Sukhdev
		do
		Sunday/ Ram Navami
5		do
		do
		do
		Mahavir Jayanti
		do
		do
Week		Topics
1		Sunday
		do
		Ch- Structures and Unions
		do
		do
		do
		do
		Sunday
2		Ch- Pointers
		do
		do
		do
		Ch- Files in C & Miscellaneous Features and Advanced Topics
		Dr Ambedkar Jayanti / Vaisakhi
		Sunday
3		do
		do

Lesson Plan

Name of the Assistant Professor: Ms Vinita Raj

Class and Section: B.A./B.Sc. VI th Sem

Subject: Mathematics (LINEAR ALGEBRA)

Week	Date	Topics
1		Introduction of VECTORS
		Vectors space
		do
		Subspace
		do
		do
		Sunday
2		Sum and direct sum of subspace
		do
		do
		Linear spane
		do
		do
		Sunday
3		Linearly independent dependent subsets of a vector spaces
		do
		do
		do
		Finitely generated vector space
		do
		Sunday
4		Vasant Panchami
		ExistenceTHEOREM FOR BASIC OF A FINITELY GENERATED VECTOR SPACE
		Sir Chhotu Ram Jayanti
		do

		Republic Day
		Finite dimensional vector spaces
		Sunday
5		Invriance of the number of elements of basic sets
		do
		do

Week	Date	Topic
1		Dimensions
		Quotient space and its dimension
		do
		Sunday
2		Homomorphism and isomorphism of vector spaces
		do
		do
		Linear transformations and linear forms on vector spaces
		do
		Maharshi Dayanand Saraswati Jayanti
		Sunday
3		do
		MahaShivratri
		Vector spaces of all the linear transformations
		do
		do
		do
		Sunday

4		Duel spaces
		do
		Bidual spaces
		do
		Annihilator of subspaces of finite dimensional vector spaces
		do
		Sunday
5		Null spaces
		Range spaces of a linear transformations
		do
Week		Topics
1		Guru Ravidas Birthday
		Holi
		Vacation
		Sunday
2		Rank and Nullity Theorem
		do
		Algebra of linear transformations
		do
		Minimal polynomial of a linear transformations
		do
		Sunday
3		Singular and non singular linear transformations
		do
		do
		do
		Matrix of alinear transformations
		do
		Sunday

4		Change of a basics
		do
		Eigen values
		Eigen vectors of linear transformatons
		ShaheediDiwas of Bhagat Singh, Rajguru& Sukhdev
		do
		Sunday/ Ram Navami
5		do
		do
		Inner product spaces
		Mahavir Jayanti
		do
		do

Week		Topics
1		Sunday
		Cauchy-Schwarz inequality
		do
		do
		Orthogonal complements
		do
		do
		Sunday
2		Orthogonal sets and basics
		do
		do
		Bessels inequality for finite dimensional vector spaces
		do
		Dr Ambedkar Jayanti / Vaisakhi

		Sunday
3		do
		do
		Parashurama Jayanti
		Gram-Schmidt orthogonalization process
		do
		do
		Sunday
4		Adjoint of a linear transformations and its properties
		do
		Unitary linear transformations
		do
		do
		do