

Session - 2023-24

Lesson Plan

Govt. College, Nagina.

Class - B.Sc. (N.M.) II<sup>nd</sup> Year IV<sup>th</sup> Sem

Sub: - Mathematics (Sequences and Series)

Name of Teacher - Manish Aggar

Jan., 2024

I Week: - Boundedness of the set of real numbers, least upper bound, greatest lower bound of a set neighbourhoods.

II Week: - Interior points, isolated points, limit points, open sets, closed sets, interior of set

III week: - closure of a set in real numbers and their properties, Bolzano-Weierstrass theorem

IV week: - open covers, Compact sets and Heine-Borel theorem

Feb., 2024

I Week: - Sequence: Real sequences and their convergence, theorems on limits of sequence, bounded and monotonic sequences.

II Week: - Cauchy's sequence, Cauchy general principle of convergence, subsequences, Subsequential limits

III week: - Infinite Series: Convergence and divergence of infinite series, Comparison tests of positive terms infinite series.

IV week:- Cauchy's general principle of convergence of series, convergence and divergence of geometric series, Hyper Harmonic series, Revision

March, 2024

I Week:- Infinite Series: D'Alembert's Ratio Test, Raabe's test

II Week:- Logarithmic test, de Morgan and Bertrand's test, Cauchy's nth root test.

III Week:- Gauss Test, Cauchy's integral test, Cauchy's condensation test

IV Week:- Revision

April, 2024

I week:- Alternating series: Leibnitz's test, absolute and conditional convergence Arbitrary series: Abel's lemma, Abel's test, Dirichlet's test.

II Week:- re-arrangement of terms in a series, Dirichlet's theorem, Riemann's re-arrangement theorem, Pringsheim's theorem, multiplication of series

III Week:- Cauchy product of series, convergence and absolute convergence of infinite products.

IV week:- Revision

Navish Agbi

Navish Agbi

(Ext. Lecturer in  
Mathematics)

Session-2023-24 Lesson Plan

Govt. College, Nagina

Subject - Mathematics (Special functions and  
Integral Transforms)

class - B.Sc. (N.M.) III<sup>rd</sup> Year IV<sup>th</sup> Sem.

Name of Teacher - Manish Aghir

January, 2024

I Week - Series solution of differential equations: Power series method, Definitions of beta and gamma functions.

II Week - Bessel equation and its solution: Bessel functions and their properties -

III. Week - Convergence, recurrence relations and generating functions

IV Week - Orthogonality of Bessel functions.

Feb, 2024

I week - Legendre and Hermite diff. equations and their solutions: Legendre and Hermite's functions and their properties.

II Week - Recurrence relations and generating functions, orthogonality of Legendre and Hermite's poly.

III Week - Rodrigues' formula for Legendre and Hermite polynomials.

IV Week - Laplace Integral Representation of Legendre polynomial, Revision.

March, 2024

I Week - Laplace Transforms: existence theorem for Laplace Transform, Linearity of the Laplace transform, shifting theorems, Laplace transforms of derivatives and integrals.

II Week: - Differentiation and integration of Laplace transforms, convolution theorem.

III Week: - Inverse Laplace transforms, convolution theorem, Inverse Laplace transforms of derivatives and integrals, sol. of ordinary diff. equations.

IV Week: - Revision

April, 2024

I Week: - Fourier transforms: Linearity property, Shifting, Modulation, Convolution theorem, Fourier transform of derivatives.

II Week: - Relations b/w Fourier transform and Laplace transform, Parseval's identity for Fourier transforms.

III Week: - Sol. of diff. equations using Fourier transforms.

IV Week: - Revision

Manish Aggarwal  
Manish Aggarwal  
(Ext. Lecturer in Mathematics)

Session 2023-24

Lesson Plan

Govt. College, Nagpur

Class - B.Sc. (N.M.) Third Year IV<sup>th</sup> Sem.

Subject - Mathematics (Prog. in C and Numerical Methods)

Name of Teacher - Manish Aghi

January, 2024

I Week: - Programmer's model of a computer, Algorithms.

II Week: - flow charts, Data Types

III Week: - operators and expressions.

IV Week: - Input/output functions.

Feb, 2024

I Week: - Decisions control structure: Decision statements

II Week: - Logical and conditional statements, Implementation of Loops.

III week: Switch statement and Case Control Structures.

IV week: - functions, preprocessors and Arrays, Revision

March, 2024

I week: - Strings: Character data type, standard string handling functions, Arithmetic operations on characters. Structures.

II week: - Def, using structures, use of structures in arrays and arrays in structures. Pointers: Pointers data type, Pointers and arrays, Pointers and functions.

III week: - Sol. of algebraic and Transcendental equations: Bisection method, Reguli-falsi Method, Secant Method, Newton-Raphson's method;

IV week: - Order of convergence of above methods, Revision.

April, 2024

I week: - Simultaneous linear algebraic equations: Gauss-elimination method, Gauss-Jordan Method.

II week: - Triangulization method, Crout's method, Cholesky decomposition method.

III week: - Iterative method, Jacobi's method, Gauss-Seidel's method, Relaxation method.

IV week: - Revision.

Manish Aggar

Manish Aggar

(Ext-Lecturer in Mathematics)

# Lesson Plan

Session 2023-24

Govt College, Nagina

Class - B.Sc (N.M.) 2nd Year 4th Sem.

Sub: - Math Practical (Prog in C and Num Methods)

Name of Teacher - Navish Agni

Jan, 2024

Week 1: - Simple programs in 'C'

Week 2: - Programs related to 'If-Else

~~Week 2~~ programs related to (while and do-while loops?

Week 3: - Programs related to 'for loop',  
programs related to (switch statement?

Week 4: - Programs related to (functions?

Feb, 2024

Week 1: - Programs related to (Arrays),

Programs related to (structures and Unions?

Week 2: - Programs related to Series.

Week 3: - Programs related to (Pointers).

Week 4: - Programs related to (strings)

Revision

March, 2024

Week 1: - Program to demonstrate Bisection method  
and draw the flowchart and Regular-falsi  
method

Week 2: Write a program to demonstrate  
Newton-Raphson method and Gauss  
elimination method and draw flowchart

Week 3: Write a program to demonstrate  
Gauss-Seidel method and draw  
flowchart

Week 4: Revision

April, 2024

Week 1: Write a program to demonstrate  
Gauss-Jordan method and draw  
flowchart

Week 2: Write a program to demonstrate  
Cramer's method and draw flowchart

Week 3: Write a program to demonstrate  
Regula-falsi Method.

Week 4: Revision

Navish Ashi

Navish Ashi

(Ext. Lecturer in  
Mathematics)