

# GOVERNMENT COLLEGE BIROHAR (JHAJJAR)

Summary of Lesson Plans of College Faculty for Academic Session 2024-25

Name of Assistant/Associate Professor: Dr. Narendra Singh

Class: B.Sc. III<sup>rd</sup> yr. Subject: Real Analysis

Semester: V

| Months            | Topics/Chapters to be Covered  |
|-------------------|--|
| July<br>2024      | Riemann Integral, Integrability of continuous and monotonic functions  |
| August<br>2024    | The fundamental theorem of Integral Calculus, Mean value theorems of integral Calculus, Improper integral and their convergence, Comparison tests, Abel's and Dirichlet's tests, Fubini's integral, Integral as a function of a parameter.   |
| September<br>2024 | Continuity, Differentiability and integrability of an integral of a function of a parameter. Definition and Examples of metric spaces, $\mathbb{R}^n$ , limit points, interior points, open and closed sets, closure and interior, boundary points, subspace of a metric space, equivalent metrics, Cauchy sequences, Completeness, 'Cantor's' intersection theorem, |

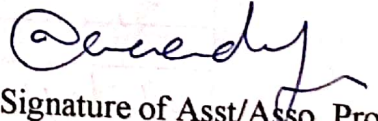
October  
2024

Baire's category theorem, contraction principle,

Continuous functions, uniform continuity, compactness of metric spaces, sequential compactness, Bolzano-Weierstrass property, total boundedness, finite intersection property, continuity in relation with compactness, connectedness, components, continuity in relation with connectedness

November  
2024

Assignment, unit test  
Revision etc.

  
Signature of Asst/Asso. Professor



# GOVERNMENT COLLEGE BIROHAR (JHAJJAR)

Summary of Lesson Plans of College Faculty for Academic Session 2024-25

Name of Assistant/Associate Professor: Dr Navendu Singh

Class: B.Sc. IIIrd Subject: Numerical Analysis

Semester: V

| Months            | Topics/Chapters to be Covered  |
|-------------------|--|
| July<br>2024      | Finite difference operators and their relations.   |
| August<br>2024    | Finding the missing terms and effect of error in a difference tabular values,<br>Interpolation with equal intervals:<br>Newton's forward and Newton's backward interpolation formulae. Interpolation with unequal intervals: Newton's divided difference Lagrange's Interpolation formulae, Hermite formulae |
| September<br>2024 | Central Differences: Gauss forward and Gauss' backward interpolation formulae?<br>Stirling, Bessel formulae<br>Probability distribution of random variables, binomial distribution, Poisson's distribution, Normal distribution: Mean, Variance and fitting.   |

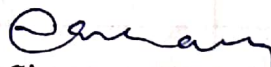
October  
2024

Numerical Differentiation: derivative of a function,  
using interpolation formulae as given in  
Section I & II.

Eigen value Problems: power method,  
Jacobi's method, Givens's method, Householder's  
method, QR-method, Lanczos method.

November  
2024

Numerical Integrations: Newton-Cotes's Quadrature,  
formulas, Trapezoidal rule, Simpson's  $\frac{1}{3}$  and  $\frac{3}{8}$   
rule, Chebyshev formulae, Gauss Quadrature  
formulas. Numerical solution of ordinary differential  
equations: Single step method - Picard's method, Taylor's  
Series method, Euler's method, Runge-Kutta  
methods.

  
Signature of Asst/Asso. Professor



Name of Assistant/Associate Professor: Dr. Navendu SinghClass: B.Sc. ITSubject: Programming in C andSemester: 1stNumerical methods

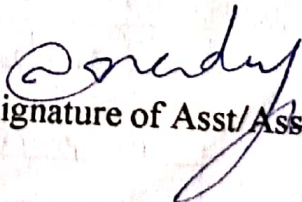
| Months            | Topics/Chapters to be Covered   |
|-------------------|---|
| July<br>2024      | <p>Programming model of a computer,<br/>Algorithms, flow charts, data types,<br/>oper.</p>  |
| August<br>2024    | <p>operator and expressions, Input/output<br/>functions, Decisions Control structure: Decision<br/>statement and case Control structure: functions,<br/>Processes and Arrays. String!<br/>Character data type, Standard string<br/>handling functions, Arithmetic operations on<br/>characters.</p>                 |
| September<br>2024 | <p>Structures: Definition, using structures, use of<br/>structures in array and arrays in<br/>structures. Pointers: Pointers data types,<br/>Pointers and arrays, Pointers and functions.<br/>Solutions of algebraic and<br/>Transcendental equations: Bisection method,<br/>Regula-falsi method, secant method</p> |

October  
2024

Newton-Raphson's method. Newton's  
iterative method for finding the root of  
a number, order of convergence of  
above methods.

November  
2024

Simultaneous linear algebraic equations:  
Gauss-elimination method, Gauss-Jordan  
method, Triangularization Method,  
LU decomposition method, Crout's  
method, Cholesky decomposition method,  
Iterative method, Jacobi's method, Gauss-  
Seidel's method, Relaxation method.

  
Signature of Asst/Asso. Professor