B.A. / B.Sc. 3rd Semester
Lesson plan (Mathematics)
Paper -Statics
Session 2024-25

July 2024

Evaluation of previous knowledge of students via quiz and group discussion. Bridge course as per requirement on the basis of evaluation. Introduction and basics for Statics.

August 2024

Composition and resolution of forces. Parallel forces. Moments and Couples.

September 2024

Analytical conditions of equilibrium of coplanar forces. Friction. Centre of Gravity.

October 2024

Forces in three dimensions. Poinsots central axis. Virtual work.

November 2024

Null lines and planes. Wrenches. Stable and unstable equilibrium.

Revision

Pedagogy of teaching:

Lecture with Chalk and talk
Quiz (online and offline)
Group discussion
Power point presentations
Open book exam
Assignments
Self study
Peer teaching
Learning through problem solving

Dr. Kavita Rani

(Assistant Prof. Maths)

B.A. / B.Sc. 5th Semester

Lesson plan (Mathematics)

Numerical Analysis

Session 2024-25

July 2024

Evaluation of previous knowledge of students via quiz and group discussion. Bridge course as per requirement on the basis of evaluation. Introduction and basics for Numerical Analysis.

August 2024

SECTION-I

Finite Differences operators and their relations. Finding the missing terms and effect of error in a difference tabular values, Interpolation with equal intervals: Newton's forward and Newton's backward interpolation formulae. Interpolation with unequal intervals: Newton's divided difference, Lagrange's Interpolation formulae, Hermite Formula.

September 2024

SECTION-II

Central Differences: Gauss forward and Gauss's backward interpolation formulae, Sterling, Bessel Formula.

Probability distribution of random variables, Binomial distribution, Poisson's distribution, Normal distribution: Mean, Variance and Fitting.

October 2024

SECTION-III

Numerical Differentiation: Derivative of a function using interpolation formulae as studied in Sections –I & II.

Eigen Value Problems: Power method, Jacobi's method, Given's method, House-Holder's method, QR method, Lanczos method.

November 2024

SECTION-IV

Numerical Integration: Newton-Cote's Quadrature formula, Trapezoidal rule, Simpson's one- third and three-eighth rule, Chebychev formula, Gauss Quadrature formula.

Numerical solution of ordinary differential equations: Single step methods-Picard's method. Taylor's series method, Euler's method, Runge-Kutta Methods. Multiple step methods; Predictor-corrector method, Modified Euler's method, Milne-Simpson's method.

Practical: Practical of Numerical methods will be conducted simultaneously.

Dr. Kavita Rani

(Assistant Prof. Maths)

B.A. / B.Sc. 5th Semester
Lesson plan (Mathematics)
Real Analysis
Session 2024-25

July 2024

Evaluation of previous knowledge of students via quiz and group discussion. Bridge course as per requirement on the basis of evaluation. Introduction and basics for Real Analysis.

August 2024

Riemann integral, Integrabililty of continuous and monotonic functions, The Fundamental theorem of integral calculus. Mean value theorems of integral calculus.

September 2024

Improper integrals and their convergence, Comparison tests, Abel's and Dirichlet's tests, Frullani's integral, Integral as a function of a parameter. Continuity, Differentiability and integrability of an integral of a function of a parameter.

October 2024

Definition and examples of metric spaces, neighborhoods, 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, Baire's category theorem, contraction Principle

November 2024

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

Revision and class test

Pedagogy of teaching:

Lecture with Chalk and talk
Quiz (online and offline)
Group discussion
Power point presentations
Open book exam
Assignments
Self study
Peer teaching
Learning through problem solving

Dr. Kavita Rani
(Assistant Prof. Maths)

B.A. / B.Sc. 1st Semester
Lesson plan (Mathematics)
Paper - Calculus
Session 2024-25

July 2024

Evaluation of previous knowledge of students via quiz and group discussion. Bridge course as per requirement on the basis of evaluation. Introduction and basics for Calculus.

August 2024

ε-δ definition of limit and continuity of a real valued function, Basic properties of limits, Types of discontinuities, Differentiability of functions, Application of L'Hospital rule to indeterminate forms, Successive differentiation, Leibnitz theorem, Taylor's and Maclaurin's series expansion with different forms of remainder.

September 2024

Asymptotes: Horizontal, vertical and oblique asymptotes for algebraic curves, Asymptotes for polar curves, Intersection of a curve and its asymptotes, Curvature and radius of curvature of curves (cartesian, parametric, polar & intrinsic forms), Newton's method, Centre of curvature and circle of curvature.

October 2024

Multiple points, Node, Cusp, Conjugate point, Tests for concavity and convexity, Points of inflexion, Tracing of curves, Reduction formulae.

November 2024

Rectification, intrinsic equation of a curve, Quadrature, Area bounded by closed curves, Volumes and surfaces of solids of revolution.

Revision and class test

Pedagogy of teaching:

Lecture with Chalk and talk
Quiz (online and offline)
Group discussion
Power point presentations
Open book exam
Assignments
Self study
Peer teaching
Learning through problem solving

Dr. Kavita Rani
(Assistant Prof. Maths)

B.A. / B.Sc. 1st Semester (VAC)
Paper - CALCULATION SKILLS WITH VEDIC MATHEMATICS-I
Session 2024-25

July 2024

Evaluation of previous knowledge of students via quiz and group discussion. Bridge course as per requirement on the basis of evaluation. Introduction and basics for Vedic Mathematics.

August 2024

History of Vedic Mathematics and introduction to its Sutras and Upsutras. Addition in Vedic Mathematics: Without Carrying, Dot Meth method subtraction in Vedic Mathematics: Nikhilam Navatashcaramam Dashatah (All from 9 last 10). Fraction: Addition and Subtraction.

September 2024

Multiplication of two numbers of two digits (Ekadhikena Purvena method), Multiplication of two numbers of three digits, (Ekanyunena Purvena method, Urdhva Tiryagbhyam method, Nikhilam Navatashcaramam Dashatah Method Unit I

October 2024

Division: Nikhilam Navatashcaramam Dashatah (two digits divisor), ParavartyaYojyet Method (three digits divisor). Divisibility: Ekadhikena Purvena Method (two digits divisor), Eknunen Purvena Method (two digits divisor) LCM, HCF.

November 2024

Squares of any two digits numbers: Base method, Squares of numbers ending in 5: Ekadhikena Purvena Method. 34(1044) Square Roots: Dwandwa Yoga (Duplex) Method, Square root (four digit number). Revision

Pedagogy of teaching:

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Quiz (online and offline)
Group discussion
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Assignments
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Peer teaching
Learning through problem solving

Dr. Kavita Rani
(Assistant Prof. Maths)

C.M.G. Govt. College for Women, Bhodia Khera (Fatehabad)

Lesson Plan, Session: 2024-25

Name of the Teacher: Dr. Sonu Ram Designation: Assistant Professor of Maths

Class and Section: B.A./B.Sc.-1st Sem Subject: MDC Maths

W.E.F. 22-07-2024 to 22-11-2024

Week	Topics
1	Induction Number system
2	Sets and their representations, Empty set, Finite and infinite sets, Subsets, Equal sets
3	Universal set, Union and intersection of sets, Difference of two sets, Complement of a set,
4	Venn diagram, De-Morgan's laws and their applications. An introduction to matrices
5	Operations on matrices, Symmetric and skew-symmetric matrices, Minors, Co-factors.
6	Determinant of a square matrix, Adjoint and inverse of a square matrix
7	Complex numbers, Operations on complex numbers, Modulus and argument of a complex number. Take assignment
8	Limit & Continuity of Functions of Two Variables. Assignments of Chapter 3rd & 5th.
9	Differentiability of Functions of Two Variables.
10	Linear inequalities, Algebraic solutions of linear inequalities in two variables and their graphical representation
11	Arithmetic progression, Geometric progression, Harmonic progression, Arithmetic mean (A.M.), Geometric mean (G.M.),
12	Harmonic mean (H.M.), Relation between A.M., G.M. and H.M.
13	Straight lines: Slope of a line and angle between two lines, Different forms of equation of a line take class test
14	Parallel to co-ordinate axes, Point-slope form, Slope-intercept form, Two-point form, General form; Distance of a point from a straight line
15	Take doubts & Revision.

C.M.G. Govt. College for Women, Bhodia Khera (Fatehabad)

Lesson Plan, Session: 2024-25 W.E.F. 22-07-2024 to 22-11-2024

Name of the Teacher: Dr. Sonu Ram Designation: Assistant Professor of Maths

Class and Section: B.A./B.Sc.-1st Sem Subject: SEC Maths

Week	Topics
1	Induction Computer
2	Windows: Installation of Windows, Windows Desktop, my computer, my documents, Network neighborhood, Recycle Bin, Quick launch tool bar, System tray, Start menu
3	Power sets, Task bar System, Tray Quick launch tool bar Start button - Parts of Windows, Keyboard Accelerators: Key board short keys or hotkeys, Working with Notepad & WordPad
4	Creating & Editing Images with Microsoft paint, using the Calculator, Personalizing Windows.
5	MS-Word: Working with Documents, formatting page & setting Margins, converting files to different formats, Importing & Exporting documents, Formatting Documents Setting Font styles
6	Font selection- style, Setting Paragraph style, Alignments, Indents, Line Space, Margins, Bullets& Numbering. Setting Page style Formatting Page, Page tab, Margins, Layout settings
7	, Border & Shading, Columns, Header & footer, Setting Footnotes & end notes, page break, Setting Document styles, Table of Contents, Index, Page Numbering, date & Time, Creating
8	Tables Table settings, Borders, Alignments, Insertion, deletion, Merging, Splitting, Sorting, Drawing Inserting Clip Arts, Pictures/Files, Tools-Spell Checks, Mail merge
9	Templates, Printing Documents, MS-Excel: Spread Sheet & its applications
10	Opening Spreadsheet, Menus, working with Spreadsheets- opening, saving files, setting Margins, spread sheet addressing Rows
11	Columns & Cells, Referring Cells & Selecting Cells Shortcut Keys. Entering & Deleting Data, Inserting Data, Insert Cells, Column, rows & sheets, Inserting
12	Functions, Formula finding total in a column or row, Formatting Spreadsheets Labelling columns & rows, Formatting- Cell, row, column & Sheet
13	Category Alignment, Font, Border & Shading, Hiding Locking Cells
14	working with sheets Sorting, Filtering, Creating Charts, Tools - Error checking, Spell Checks
15	Take doubts & Revision

C.M.G. Govt. College for Women, Bhodia Khera (Fatehabad)

Lesson Plan, Session: 2024-25

Name of the Teacher: Dr. Sonu Ram Designation: Assistant Professor of Maths

Class and Section: B.A./ B.Sc.-II, 3rd sem. Subject: Partial Differential Equations (Maths)

W.E.F. 22-07-2024 to 22-11-2024

Week	Topics
1	Chapter 1: Formation of partial differential equation, Differentiation of P.D.E, Order and degree of P.D.E, Formation of equation by the elimination of Arbitrary constants, Examples and Exercises
2	Chapter 2: First order linear partial differential equation, Classification of the solution or integral of P.D.E, Solution of linear P.D.E by direct integration, Exercise and Examples
3	Chapter 2: Standard form of linear P.D.E. of first order, Solution of Lagrange's linear equation, Examples and Exercise.
4	Chapter 3: First order non-linear P.D.E, Compatible system of P.D.E. of order one, General methods of solution, Charpit's method, Examples and Exercise
5	Chapter 3: Some standard forms, Jacobi's method, Examples and Exercise.
6	Test and Assignment- I
7	Chapter 4: Linear P.D.E. of second and higher orders, Solution of Non-Homogeneous L.P.D. equations with constant coefficients, Rule for writing C.F. of Non Homogeneous linear equation.
8	Chapter 4: Rule for finding P.I. in case of non-Homogeneous linear equation with constant coefficients.
9	Chapter 5: P.D.E. with variable coefficients reducible to equation with constant coefficients
10	Chapter 6: Classification and Canonical form of second order Linear P.D.E, Reduction of Hyperbolic equation to its Canonical form
11	Chapter 6: Reduction of Parabolic equation to the Canonical form, Reduction of Elliptic equation of the Canonical form
12	Test and Assignment-II
13	Chapter 7: Monge's method for P.D.E. of second order
14	Chapter 8: Characteristics of second order P.D.E. and Cauchy's problems
15	Chapter 9: Methods of separation of variables, One dimensional Wave equation, Solution of two dimensional Wave equation Taking doubts of exercises chapter 1, chapter 2, chapter 3, chapter 4, chapter 5, chapter 6 etc. and class take test, revision.