GOVT. COLLEGE FOR WOMEN, BASTARA
LESSON-PLAN (Session 2023-24) EVEN SEMESTER

Name of Teacher :- Anuradha
Designation: ASSISTANT PROFESSOR
Subject: MATHEMATICS (LINEAR ALGEBRA)
Class: B.sc and B.A.6th Semester

Subject/ Paper: Sr. No.	Months	Topics to be covered	Remarks if any,
1	Jan	Vector spaces, subspaces, Sum and Direct sum of subspaces, Linear span, Linearly Independent and dependent subsets of a vector space. Finitely generated vector space, Existence theorem for basis of a finitely generated vector space, Finite dimensional vector spaces, Invariance of the number of elements of basis sets, Dimensions, Quotient space and its dimension.	Assignment will be taken on topic vector space and subspaces.
2	Feb	Homomorphism and isomorphism of vector spaces, Linear transformations and linear forms on vector spaces, Vector space of all the linear transformations. Dual Spaces, Bidual spaces, annihilator of subspaces of finite dimensional vector spaces. Null space, Range space of a linear transformation, Rank and Nullity Theorem.	Class test will be taken
3	March	Algebra of Linear Transformation, Minimal Polynomial of a linear transformation, Singular and non-singular linear transformations, Matrix of a linear transformation, Change of basis, Eigen values and Eigen vectors of linear transformations.	Assignment will be taken on topic Linear Transformation.
4	April	Inner product spaces, Cauchy-Schwarz inequality, Orthogonal vectors, Orthogonal complements, Orthogonal sets and Basis, Bessel's inequality for finite dimensional vector spaces, Gram-Schmidt Orthogonalization process, Adjoint of a linear transformation and its properties, Unitary linear transformations.	Group discussion will be done.

*Vacation as per university calendar

2 assignments and 01 unit test will be taken as per schedule.

Kawlesh
Principal
GCW (Bastara) Gharaunda

GOVT.COLLEGE FOR WOMEN, BASTARA
LESSON-PLAN (Session 2023-24) EVEN SEMESTER

Name of Teacher: Anuradha / Apoorva Sharma
Designation: Assistant Professor
Subject: Dynamics
Class: B.Sc and B.A. 6th sem

Subject/Paper: Sr. No.	Months	Topics to be covered	Remarks if any,
1	Jan	Velocity and acceleration along radial, transverse, tangential and normal directions. Relative velocity and acceleration. Simple harmonic motion. Elastic strings.	Group discussion
2	FEB	Mass, Momentum and Force. Newton's laws of motion. Work, Power and Energy. Definitions of Conservative forces and Impulsive forces.	ASSIGNMENT
3	March	Motion on smooth and rough plane curves. Projectile motion of a particle in a plane. Vector angular velocity.	UNIT TEST
4	April	General motion of a rigid body Central Orbits, Kepler's laws of motion. Motion of a particle in three dimensions. Acceleration in terms of different co-ordinate systems.	REVISION

*Vacation as per university calendar
2 assignments and 01 unit test will be taken as per schedule.

Apoorva
Anu

Kamlesh
Principal
GCW (Bastara) Gharaunda

GOVT. COLLEGE FOR WOMEN, BASTARA
LESSON-PLAN (Session 2023-24) EVEN SEMESTER

Name of Teacher: Anuradha
Designation: Assistant Professor
Subject: Sequences and Series
Class: B.A and B.Sc 4th sem

Subject/Paper : Sr. No.	Months	Topics to be covered	Remarks if any,
1	Jan	Boundedness of the set of real numbers, least upper bound, greatest lower bound of a set neighbourhood, interior points, isolated points, limit points ,open sets, closed set, interior of a set, closure of a set in real numbers and their properties. Bolzano-weirstrass theorem . open covers. compact sets and Heine-Borel theorem.	Group discussion
2	FEB	Real sequences and their convergence, theorems on limits of sequence, bounded and monotonic sequences, Cauchy's sequence, Cauchy's general principle of convergence, subsequences, subsequential limits. convergence and divergence of infinite series, comparison test of positive terms in finite series, Cauchy's general principle of convergence of series, convergence and divergence of geometric series. Hyper harmonic series and p series.	Assignment
3	March	DAlembert's ratio test, Raabes test, Logarithmic test ,de Morgan and Bertrand's test, Cauchy's nth root test, Gauss test, Cauchy's integral test. Cauchy's condensation test. Leibnitz's test, absolute and conditional convergence.	Unit Test
4	April	Arbitrary series: Abel's lemma, Abel's test, Dirichlet's test, insertion and removal of Parantheses , rearrangement of terms in a series, Dirichlets theorem, Riemaan's rearrangement theorem. Multiplication of series, Cauchy product of series, convergence and absolute convergence of infinite products.	Revision

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- 2 assignments and 01 unit test will be taken as per schedule.

Kaulesh
Principal
GCW (Bastara) Gharaunda

GOVT. COLLEGE FOR WOMEN, BASTARA
LESSON-PLAN (Session 2023-24) EVEN SEMESTER

Name of Teacher: Anuradha
Designation: ASSISTANT PROFESSOR
Subject : BM-243 Programming in C and Numerical Methods
Class: B.Sc N.M and B.A.(SEM-4th)

Subject/Paper: Sr. No.	Months	Topics to be covered	Remarks if any,
1	Jan	Programmer's model of a computer, Algorithms, Flow charts, Data types, Operators and expressions, Input / outputs functions	CLASS TEST FORTNIGHTLY
2	Feb	Decisions control structure: Decision statements, Logical and conditional statements, Implementation of Loops, Switch Statement & Case control structures. Functions, Preprocessors and Arrays. Strings: Character Data Type, Standard String handling Functions, Arithmetic Operations on Characters.	CLASS TEST FORTNIGHTLY
3	March	Structures: Definition, using Structures, use of Structures in Arrays and Arrays in Structures. Pointers: Pointers Data type, Pointers and Arrays, Pointers and Functions. Solution of Algebraic and Transcendental equations: Bisection method, Regula-Falsi method, Secant method, Newton-Raphson's method. Newton's iterative method for finding pth root of a number, Order of convergence of above methods.	CLASS TEST FORTNIGHTLY
4	April	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-Seidal's method, Relaxation method.	CLASS TEST FORTNIGHTLY

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No unit test and assignment for this paper. A practical file will be maintained by the students.

Principal
GCW (Bastara) Gharaunda

GOVT. COLLEGE FOR WOMEN, BASTARA
LESSON-PLAN (Session 2023-24) EVEN SEMESTER

Name of Teacher : Apoorva Sharma
Designation : Assistant Professor
Subject : Business Mathematics
Class : Bcom 1st

Subject/Paper : Sr. No.	Months	Topics to be covered	Remarks if any,
1	Feb	Differentiation; derivative of simple functions and other functions (excluding trigonometric functions) having applications in business studies; Maxima and minima of Revenue, Cost, Demand, Production, Profit functions and other functions related to business and commerce.	Group discussion
2	March	Integration: Definite and indefinite (simple functions excluding trigonometric functions), basic rules of integration, application of integration in commercial and business problems.	Assignment
3	April	Binomial Theorem; Permutations and Combinations.	Unit Test
4	May	Linear programming: Formulation of linear programming problems (LPP) and their solution by graphical and simplex methods, Applications of linear programming in solving problems related to business and commerce.	Revision

*Vacation as per university calendar
2 assignments and 01 unit test will be taken as per schedule.

Apoorva

Kaulesh
Principal
GCW (Bastara) Gharaunda

GOVT. COLLEGE FOR WOMEN, BASTARA

LESSON-PLAN (Session 2023-24) EVEN SEMESTER

Name of Teacher :- APOORVA SHARMA

Designation: ASSISTANT PROFESSOR

Subject: MATHEMATICS(SPECIAL FUNCTION & INTEGRAL TRANSFORM)

Class: B.sc And B.A. 4th Semester

Subject/Paper: Sr. No.	Months	Topics to be covered	Remarks if any,
1	Jan	Series solution of differential equations: Power series method, Definitions of Beta and Gamma functions, Bessel equation and its solution: Bessel functions and their properties - Convergence, Recurrence relations and generating functions, Orthogonality of Bessel functions.	Assignment will be taken on topic Frobenius Method.
2	Feb	Legendre and Hermite differential equations and their solutions: Legendre and Hermite's functions andtheir properties, Recurrence relations and generating functions. Orthogonality of Legendre and Hermite's polynomials, Rodrigues' Formula for Legendre and Hermite Polynomials, Laplace Integral Representation of Legendre polynomial.	Class test will be taken.
3	March	Laplace Transforms: Existence theorem for Laplace transform, Linearity of the Laplace transforms, Shifting theorems, Laplace transforms of derivatives and integrals, Differentiation and integration of Laplace transforms, Convolution theorem, Inverse Laplace transforms, convolution theorem, Inverse Laplace transforms of derivatives and integrals, Solution of ordinary differential equations using Laplace transform.	Assignment will be taken on topic Laplace transform.
4	April	Fourier transforms: Linearity property, Shifting. Modulation, Convolution theorem, Fourier transformof derivatives, Relations between Fourier transform and Laplace transform, Parseval's identity for Fourier transforms, Solution of differential equations using Fourier transforms.	Group discussion will be done.

*Vacation as per university calendar

- 2 assignments and 01 unit test will be taken as per schedule.

Apoorva

Kamlesh

Principal

GCW (Bastara) Gharaunda

GOVT.COLLEGE FOR WOMEN, BASTARA
LESSON-PLAN (Session 2023-24) EVEN SEMESTER

Name of Teacher: APOORVA SHARMA
Designation: ASSISTANT PROFESSOR
Subject: REAL & COMPLEX ANALYSIS
Class: B.A. and B.Sc 6th Sem

Subject/Paper: Sr. No.	Months	Topics to be covered	Remarks if any,
1	Jan	Jacobians, Beta and Gama functions, Double and Triple integrals, Dirichlets integrals, change of order of integration in double integrals.	Group discussion
2	Feb	Fourier's series: Fourier expansion of piecewise monotonic functions, Properties of Fourier Co-efficients, Dirichlet's conditions, Parseval's identity for Fourier series, Fourier series for even and odd functions, Half range series, Change of Intervals . Extended Complex Plane, Stereographic projection of complex numbers.	ASSIGNMENT
3	Mar	Continuity and differentiability of complex functions, Analytic functions, Cauchy-Riemann equations. Harmonic functions. Mappings by elementary functions: Translation, rotation, Magnification and Inversion.	UNIT TEST
4	April	Conformal Mappings, Mobius transformations. Fixed points, Cross ratio, Inverse Points and critical mappings.	REVISION

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2 assignments and 01 unit test will be taken as per schedule.

Apoorva

Kanlesh
Principal
GCW (Bastara) Gharaunda