



V.V.Sangha's
Smt. Allum Sumangamma Memorial College for Women, Ballari.
DEPARTMENT OF MATHEMATICS

Academic Year: 2022-23

Semester: I

Course: **BSc Mathematics**

Name of the Faculty: **Gowri M**

Unit No.	Title of the Chapter & Description	Period/ Month	No. Of Hours Alloted	No. Of Hours Taken	Teaching Pedagogy/Methodology adopted
III	Differential Calculus-I: Limits, Continuity, Differentiability and properties. Properties of continuous functions. Intermediate value theorem, Rolle's Theorem , Lagrange's Mean Value theorem.	October	08	06	Interactive Board Activity.
III	Cauchy's Mean value theorem and examples. Limits, Continuity, Differentiability and properties. Properties of continuous functions. Taylor's theorem.	November	08	08	Interactive Board Activity.
III IV	Maclaurin's series, Indeterminate forms and evaluation of limits using L'Hospital rule. Successive Differentiation: nth Derivatives of Standard functions $e^{(ax+b)}$.	December	08	07	Interactive Board Activity.
IV	$(ax+b)^n$, $\log(ax+b)$, $\sin(ax+b)$, $\cos(ax+b)$, $e^{ax} \sin(bx+c)$, $e^{ax} \cos(bx+c)$, Leibnitz theorem and its applications. Tracing of curves (standard curves) Revision	January	08	06	Interactive Board Activity.

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DEPARTMENT OF MATHEMATICS

Academic Year: 2022-23

Semester: III

Course: **BSc Mathematics**

Name of the Faculty: **Gowri M**

Unit No.	Title of the Chapter & Description	Period/ Month	No. Of Hours Alloted	No. Of Hours Taken	Teaching Pedagogy/Methodology adopted
I	Ordinary Differential Equations: Recapitulation of Differential Equations of first order and first degree, Exact Differential equations, Necessary and sufficient condition for the equations to be exact.	October	08	07	Interactive Board Activity.
I	Reducible to the exact differential equations. Differential equations of the first order and higher degree: Equations solvable for p, x, y. Clairaut's equation and singular solution.	November	08	06	Interactive Board Activity.
II	Real Analysis-I: Linear differential equations of the nth order with constant coefficients. Particular Integrals when the RHS is of the form e^{ax} , $\sin(ax+b)$, $\cos(ax+b)$, x^n , $e^{ax} V$ and $x V$ (with proofs), where V is a function of x	December	08	08	Interactive Board Activity.
II	Cauchy – Euler equations, Legendre differential equations, Method of variation of parameters. Simultaneous differential equations with two and more than two variables. Condition for integrability of total differential equations $P dx + Q dy + R dz = 0$. Revision	January	08	05	Interactive Board Activity.

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DEPARTMENT OF MATHEMATICS

Academic Year: 2022-23

Semester: V (5.2)

Course: **BSc Mathematics**

Name of the Faculty: **Gowri M**

Unit No.	Title of the Chapter & Description	Period/ Month	No. Of Hours Alloted	No. Of Hours Taken	Teaching Pedagogy/Methodology adopted
I	Linear Differential equations: Linear Differential equation of second order with variable co-efficient and solutions by following methods: 1. Complete solution in terms of known integral belonging to complementary function. 2. Method of changing the independent variable 3. Method of changing the dependent variable (Reduction to normal form).	October	16	13	Interactive Board Activity.
I II	4. Method of variation of parameters. 5. Method of finding the first integral. Total Differential Equations Integrability, Necessary condition for integrability of the equation $Pdx+Qdy+Rdz = 0$ and condition for exactness, Solutions by inspection method-problems.	November	16	15	Interactive Board Activity.
II III	Simultaneous differential equations of the form. Partial Differential Equations Formation of partial differential equations. Lagrange's Linear equations $Pp+Qq = R$. Standard types of first order linear partial differential equations and finding their complete integral.	December	16	12	Interactive Board Activity.
III	Equations reducible to standard form. Non-Linear equations of first order, Standard types of the following forms. a) $f(p,q) = 0$ b) $f(p,q,z) = 0$ c) $f(x,p) = g(y,q)$ d) Clairaut's form e) Charpit's method (without proof) – problems thereon. Revision	January	16	16	Interactive Board Activity.

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DEPARTMENT OF MATHEMATICS

Academic Year: 2022-23

Semester: V (5.3)

Course: **BSc Mathematics**

Name of the Faculty: **Gowri M**

Unit No.	Title of the Chapter & Description	Period/ Month	No. Of Hours Alloted	No. Of Hours Taken	Teaching Pedagogy/Methodology adopted
I	Series Solution: Legendre differential equation. Legendre polynomials $P_n(x)$ as a solution, Rodrigue's formula, generating polynomials theorem, orthogonal property and basic recurrence relations.	October	12	10	Interactive Board Activity.
I	Bessel differential equation. Bessel function $J_n(x)$ as a solution – generation formula – integral formula for $J_n(x)$: orthogonal property. Basic recurrence relations – problems there on.	November	12	07	Interactive Board Activity.
II	Improper Integrals: Improper integrals (definition only) Gamma and Beta Functions and results following the definition	December	12	06	Interactive Board Activity.
II	Relation between Beta and Gamma functions – applications of evaluation of integrals and Duplication formula (Statement). Revision	January	12	05	Interactive Board Activity.

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DEPARTMENT OF MATHEMATICS


Academic Year: 2022-23

Semester: II

Course: **BSc Mathematics**

Name of the Faculty: **Gowri M**

Unit No.	Title of the Chapter & Description	Period/ Month	No. Of Hours Alloted	No. Of Hours Taken	Teaching Pedagogy/Methodology adopted
III	Partial Derivatives: Functions of two or more variables-explicit and implicit functions, partial derivatives. Homogeneous functions- Euler's theorem, total derivatives, differentiation of implicit and composite functions.	May	08	06	Interactive Board Activity.
III	Jacobians and standard properties and illustrative examples. Taylor's and Maclaurin's series for functions of two variables, Maxima-Minima of functions of two variables.	June	08	08	Interactive Board Activity.
IV	Integral Calculus: Recapitulation of definite integrals and its properties. Line integral: Definition of line integral and basic properties, examples on evaluation of line integrals. Double integral: Definition of Double integrals and its conversion to iterated integrals.	July	08	07	Interactive Board Activity.
IV	Evaluation of double integrals by changing the order of integration and change of variables. Computation of plane surface areas, volume underneath a surface of revolution using double integral. Triple integral: Definition of triple integrals and evaluation change of variables, volume as triple integral. Differentiation under the integral sign by Leibnitz rule.	August	08	07	Interactive Board Activity.


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DEPARTMENT OF MATHEMATICS

Academic Year: 2022-23

Semester: IV

Course: **BSc Mathematics**

Name of the Faculty: **Gowri M**



Unit No.	Title of the Chapter & Description	Period/ Month	No. Of Hours Alloted	No. Of Hours Taken	Teaching Pedagogy/Methodology adopted
I	Partial Differential Equations: Basic concepts– Formation of a partial differential equations by elimination of arbitrary constants and functions, Solution of partial differential equations – Solution by Direct integration	May	08	07	Interactive Board Activity.
I	Lagrange's linear equations of the form $Pp + Qq = R$, Standard types of first order non-linear partial differential equations, The integrals of the non –linear equation by Charpit's method.	June	08	05	Interactive Board Activity.
II	Homogeneous linear partial differential equations with constant coefficients. Partial differential equations of the second order. Classification of second-order partial differential equations, canonical forms.	July	08	08	Interactive Board Activity.
II	Classification of second order linear equations as hyperbolic, parabolic, and elliptic. Solutions of the Heat equation, Laplace equation and Wave equation (using separation of variables).	August	08	06	Interactive Board Activity.

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Academic Year: 2022-23

Semester: VI (6.2)

Course: BSc Mathematics

Name of the Faculty: Gowri M

Unit No.	Title of the Chapter & Description	Period/ Month	No. Of Hours Alloted	No. Of Hours Taken	Teaching Pedagogy/Methodology adopted
I	Trigonometry: Expansion of $\sin\theta$ and $\cos\theta$ in terms of powers of $\sin\theta$ or $\cos\theta$ and expansion of $\sin 2\theta$ & $\cos 2\theta$ in terms of sines and cosines of multiples of using De-Moiver's theorem. Relation between Hyperbolic and circular functions, derivation of standard formulae of hyperbolic functions. Logarithm of a complex number, finding real and imaginary parts and simple examples.	May	16	13	Interactive Board Activity.
II	Analytic Functions and Complex Integration: Functions of complex variables: Limit, continuity and differentiability. Analytic functions, Cauchy-Reimann equations in Cartesian and polar forms. Sufficient conditions for analyticity (in Cartesian form). Real and imaginary parts of analytic function which are harmonic. Construction of analytic function, given real and imaginary parts.	June	16	14	Interactive Board Activity.
II	The complex line integral: Examples and properties (definitions of the concepts like neighbourhood of a point, closed contour, etc. at appropriate places should be mentioned). Cauchy integral theorem (statement) and its consequences.	July	16	15	Interactive Board Activity.
II III	The Cauchy's integral formulae for the function and derivatives. Applications to the evaluation of simple line integrals. Cauchy's inequality theorem. Residue Theorem: Residues and Residue theorem, valuation of real definite integrals around the unit circle and evaluation of	August	16	14	Interactive Board Activity.

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DEPARTMENT OF MATHEMATICS

Academic Year: 2022-23

Semester: VI (6.3)

Course: **BSc Mathematics**

Name of the Faculty: **Gowri M**

Unit No.	Title of the Chapter & Description	Period/ Month	No. Of Hours Alloted	No. Of Hours Taken	Teaching Pedagogy/Methodology adopted
II	Bases and Sub-bases: Base for the neighbourhood system of a point or local base, first countable space.	May	08	06	Interactive Board Activity.
II	Properties of a topological space in terms of a local base. Base for a topology: Second countable space, theorems on base for a topology.	June	08	07	Interactive Board Activity.
II	Properties of base for a topology, characterization of a topological space in terms of base.	July	08	06	Interactive Board Activity.
II	Sub-base: Adherent points, limit points and derived sets in a topological space and theorem on derived sets.	August	08	05	Interactive Board Activity.

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Lesson plan 2022-2023 Odd sem

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DEPARTMENT OF MATHEMATICS
TEACHING PLAN
ACADAMIC YEAR-2022-2023



FACULTY NAME : CHAITRA H S

B.Sc I SEMESTER

Unit no	Title of the chapter	Month	No of Hours Allotted- For MONTH	Hours taken	Teaching method
1 & 2	<p>Unit-I: Matrix: Recapitulation of Symmetric and Skew Symmetric matrices, Cayley-Hamilton theorem, inverse of matrices by Cayley-Hamilton theorem (Without Proof). Algebra of Matrices; Row and column reduction to Echelon form. Rank of a matrix; Inverse of a matrix by elementary operations; Solution of system of linear equations; Criteria for existence of non-trivial solutions of homogeneous system of linear equations. Solution of non-homogeneous system of linear equations. Eigen values and Eigen vectors of square matrices, real symmetric matrices and their properties, reduction of such matrices to diagonal form,</p> <p>Unit-II: Polar Co-ordinates: Polar coordinates, angle between the radius vector and tangent. Angle of intersection of two curves (polar forms), length of perpendicular from pole to the tangent, pedal equations. Derivative of an arc in Cartesian, parametric and polar forms, curvature of plane curve- radius of curvature formula in Cartesian, parametric and polar and pedal forms- center of curvature, envelops</p>	4/09/2022 to 14/11/2022	16HOURS	20 Hours	Chalk and talk

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B.Sc III SEMESTER

Unit no	Title of the chapter	Month	No of Hours Allotted- For MONTH	Hours taken	Teaching method
3& 4	<p>Real Analysis – I :</p> <p>Unit III: Sequences: Sequences of real numbers, Bounded sequences. Limit of a sequence. convergent, divergent, and oscillatory sequences. Monotonic sequences. Algebra of convergent sequences. Limit points of a sequence. Bolzano Weierstrass theorem for sequence. Limit superior and limit inferior of sequences. Cauchy's first and second theorem on limits of a sequence. Cauchy's general principle for convergence of a sequence.</p> <p>Unit IV: Infinite Series: Definition of convergent, divergent and oscillatory series. Series of non-negative terms, Cauchy's general principle of convergence. Geometric series, Pseries (Harmonic series). Comparison tests for positive term series. D'Alembert's ratio test, Raabe's test. Cauchy's Root test and Cauchy's integral test. Alternating series. Leibnitz's theorem. Absolute convergence and conditional convergence of a series. Summation of series: Binomial, exponential and logarithmic</p>	4/09/2022 to 14/11/2022	16HOURS	22 Hours	Chalk and talk

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B.Sc V SEMESTER

Unit no	Title of the chapter	Month	No of Hours Allotted- For MONTH	Hours taken	Teaching method
1	Fourier series Basic definition, Fourier series of functions with period 2π and period $2L$, Half – Range cosine and sine expansion.	4/9/2022 to 30/10/2022	24HOURS	24 Hours	Chalk and talk
2	Laplace Transforms Definition and basic properties, Laplace transforms of $\cos kt$, $\sin kt$, t^n , $\cosh kt$, $\sinh kt$ -L.T of problems thereon. Laplace Transforms of derivatives of function, Laplace Transforms of integrals of functions, Laplace transforms of periodic function, Inverse Laplace transform Problems and Convolution theorem	31/09/2022 to 28/10/2022	16 HOURS	22HOURS	Chalk and talk
3	Linear Transformation Linear Transformations: Definition, Properties and Examples, Matrix of a linear transformation- Definition, properties and examples. Change of basis- Range space, Null Space (Kernel), rank and Nullity of a linear transformation, Rank-Nullity theorem, Verification of Rank-Nullity theorem, examples and properties.	29/10/2022 to 7/11/2022	4 HOURS	6 HOURS	
Paper 5.3	Vector Analysis Scalar field, gradient of a scalar field, geometrical meaning, directional derivatives. Vector field, divergence and curl of a vector field. Solenoidal and irrotational fields. Laplacian of a scalar field. Vector identities. Greens, Gauss and Stokes theorems (Statements only) simple examples	31/9/2022 to 1/11/2022	16HOURS	17HOURS	


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Lesson plan 2022-2023 Even sem

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DEPARTMENT OF MATHEMATICS
TEACHING PLAN
ACADAMIC YEAR-2022-2023



FACULTY NAME : CHAITRA H S

B.Sc II SEMESTER

Unit no	Title of the chapter	Month	No of Hours Allotted- For MONTH	Hours taken	Teaching method
1 & 2	<p>Real Number System: Recapitulation of number system. Countable and uncountable sets, standard theorems. Real line, bounded sets, suprimum and infimum of a set, completeness properties of R, Archimedean property of R. Intervals, neighborhood of a point, open sets, closed sets, limit points and Bolzano-Weierstrass theorem (Without proof)</p> <p>Groups: Definition of a group with examples and properties, congruence, problems. Subgroups, center of groups, order of an element of a group and its related theorems, cyclic groups, Coset decomposition, Factor groups, Lagrange's theorem and its consequences. Fermat's theorem and Euler's ϕ function</p>	4/12/2022 to 21/02/2023	16HOURS	18Hours	Chalk and talk

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B.Sc IV SEMESTER

Unit no	Title of the chapter	Month	No of Hours Allotted- For MONTH	Hours taken	Teaching method
3 & 4	Integral Transforms: Laplace Transforms: Definition, Basic Properties. Laplace transforms of some standard functions. Laplace transform of Periodic functions. Laplace transform of derivative and integral of a function. Heaviside function. Dirac-delta function. Convolution theorem. Inverse Laplace transforms and its properties. Solution of differential equations by using Laplace transforms. Fourier Series and Transforms: Periodic functions. Fourier Coefficients. Fourier series of functions with period 2π and period $2L$. Fourier series of even and odd functions. Half range Cosine and Sine series. Fourier Transforms - Finite Fourier Cosine and Sine transform. Transforms of derivatives. Applications of Fourier Transforms.	4/12/2022 to 21/02/2023	16HOURS	20 Hours	Chalk and talk

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B.Sc VI SEMESTER



Unit no	Title of the chapter	Month	No of Hours Allotted- For MONTH	Hours taken	Teaching method
1	Solution of Algebraic Equations Solution of non-linear algebraic equations by the following methods. 1. Method of successive bisection (Interval bisection method). 2. Method of false position (Regula-Falsiethod). 3. Newton-Raphson's iterative method . Solution of system of algebraic equations by the following methods 1. Gauss elimination method. 2. Jacobi iteration method. 3. Gauss-Seidel method	4/12/2022 to 21/12/2022	12HOURS	012 Hours	Chalk and talk
2	Finite Differences: Definition and properties of D , \tilde{N} and E. Relations between them. The nth differences of a polynomial. Interpolation: Newton-Gregory forward and backward interpolation formulae, Lagrange's and Newton's interpolation formula for unequal intervals, inverse interpolation. Numerical differentiation using forward and backward difference formulae. Computation of first and second derivatives.	22/12/2022 to 28/02/2023	36HOURS	36HOURS	Chalk and talk
3	Numerical integration: General Quadrature formula. Trapezoidal rule, Simpsons 1/3rd and 3/8th rules, Weddles rule, Problems thereon. Solution of initial value problem of ordinary linear first order differential equations by the following methods. 1. Picard's method 2. Euler's and Euler's modified method 3. Fourth order Runge- Kutta Methods Difference Equations Finite difference equations, homogeneous and non-homogenous difference equations of first order with constant coefficients. Solution of 1. Homogenous first order(linear) difference equations with constant coefficients and 2. Second order difference equations with constant coefficients.	1/3/2023 to 30/3/2023	16HOURS	16HOURS	Chalk and talk

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<p>21/12/2022 to 28/02/2023</p> <p>Topology Definition of topology, topological spaces and examples there on. Discrete and indiscrete topological spaces, types of topologies-cofinite topology, countable topology, weaker and stronger topologies, comparable and non-comparable topologies and examples. Intersection and union of topologies. Closed, open sets and neighbourhoods. Characterisation of open sets. Definition of Limit points, derived sets and closure of sets. Results on derived sets and properties of closure of sets. Definition of Interior, exterior and boundary of sets and results on interior of a set.</p>				
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Lesson plan 2019-2020 Odd sem

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DEPARTMENT OF MATHEMATICS
TEACHING PLAN
ACADAMIC YEAR-2019-2020

FACULTY NAME : CHAITRA HS

B.Sc III SEMESTER

Unit no	Title of the chapter	Month	No of Hours Allotted- For MONTH	Hours taken	Teaching method
	I. Algebra-II II Differential Calculus Polar Co-ordinates: System of Polar co-ordinates. Angle between the radius vector and the tangent to the curve. Angle of intersection of two curves (Polar form) Polar sub-tangent and polar subnormal, length of the perpendicular from the pole to the tangent, pedal equation of the curves whose equation is given in polar and Cartesian form	4/7/2019 to 30/8/2019	16 Hours	20Hours	Chalk and talk

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TEACHING PLAN
ACADAMIC YEAR-2019-2020



FACULTY NAME : CHAITRA H S

B.Sc V SEMESTER

Unit no	Title of the chapter	Month	No of Hours Allotted- For MONTH	Hours taken	Teaching method
1	Fourier series Basic definition, Fourier series of functions with period 2π and period $2L$, Half – Range cosine and sine expansion.	4/7/2019 to 30/7/2019	20Hours	19 Hours	Chalk and Talk
2	Laplace Transforms Definition and basic properties, Laplace transforms of $\cos kt$, $\sin kt$, t^n , $\cosh kt$, $\sinh kt$ -L.T of problems thereon. Laplace Transforms of derivatives of function, Laplace Transforms of integrals of functions, Laplace transforms of periodic function, Inverse Laplace transform Problems and Convolution theorem.	31/07/2019 to 1/09/2019	16 Hours	22Hours	Chalk and Talk
3	Linear Transformation Linear Transformations: Definition, Properties and Examples, Matrix of a linear transformation- Definition, properties and examples. Change of basis- Range space, Null Space (Kernel), rank and Nullity of a linear transformation, Rank-Nullity theorem, Verification of Rank-Nullity theorem, examples and properties.	2/09/2019 to 30/09/2019	16 Hours	17Hours	Chalk and Talk
1	Paper 5.3 Vector Analysis Scalar field, gradient of a scalar field, geometrical meaning, directional derivatives. Vector field, divergence and curl of a vector field. Solenoidal and irrotational fields.	31/07/2019 to 1/09/2019	16 Hours	20Hours	Chalk and Talk

	Laplacian of a scalar field. Vector identities. Greens, Gauss and Stokes theorems (Statements only) simple examples.				
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DEPARTMENT OF MATHEMATICS
TEACHING PLAN
ACADAMIC YEAR-2019-2020

FACULTY NAME : CHAITRA H S

B.Sc IV SEMESTER

Unit no	Title of the chapter	Month	No of Hours Allotted- For MONTH	Hours taken	Teaching method
3	Algebra-III Abstract Algebra: Recapitulation of Groups and subgroups. Cyclic groups, Lagrange's theorem and its consequences. Cosets, Decomposition of a group, Normal subgroups, Quotient groups, Homomorphism and Kernel of homomorphism, Isomorphism. Fundamental theorem of homomorphism and Permutation groups	21/12/2019 to 28/02/2020	16	20	Chalk and talk

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TEACHING PLAN
ACADAMIC YEAR-2019-2020

FACULTY NAME : CHAITRA H S

B.Sc VI SEMESTER

Unit no	Title of the chapter	Month	No of Hours Allotted- For MONTH	Hours taken	Teaching method
1	<p>Solution of Algebraic Equations Solution of non-linear algebraic equations by the following methods. 1. Method of successive bisection (Interval bisection method). 2. Method of false position (Regula-Falsiethod). 3. Newton-Raphson's iterative method . Solution of system of algebraic equations by the following methods 1. Gauss elimination method. 2. Jacobi iteration method. 3. Gauss-Seidel method.</p>	21/12/2019 to 1 /01/2020	16	18	Chalk and talk
	<p>Finite Differences: Definition and properties of D , \tilde{N} and E. Relations between them. The nth differences of a polynomial. Interpolation: Newton-Gregory forward and backward interpolation formulae, Lagrange's and Newton's interpolation formula for unequal intervals, inverse interpolation. Numerical differentiation using forward and backward difference formulae. Computation of first and second derivatives.</p>	2/1/2020 to 28/02/2020	45	43	Chalk and talk
	<p>Numerical integration: General Quadrature formula. Trapezoidal rule, Simpsons 1/3rd and 3/8th rules, Weddles rule, Problems thereon. Solution of initial value problem of ordinary linear first order differential equations by the following methods.</p>	1/3/2020 to 30/3/2020			

	<p>1. Picard's method 2. Euler's and Euler's modified method 3. Fourth order Runge- Kutta Methods.</p> <p>Difference Equations Finite difference equations, homogeneous and non-homogenous difference equations of first order with constant coefficients. Solution of</p> <p>1. Homogenous first order(linear) difference equations with constant coefficients and 2. Second order difference equations with constant coefficient</p>				
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Lesson plan 2020-2021 Odd sem



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DEPARTMENT OF MATHEMATICS
TEACHING PLAN
ACADAMIC YEAR-2020-2021
FACULTY NAME : CHAITRA H S

B.Sc III SEMESTER

Unit no	Title of the chapter	Month	No of Hours Allotted- For MONTH	Hours taken	Teaching method
03	Algebra-III Abstract Algebra: Recapitulation of Groups and subgroups. Cyclic groups, Lagrange's theorem and its consequences. Cosets, Decomposition of a group, Normal subgroups, Quotient groups, Homomorphism and Kernel of homomorphism, Isomorphism. Fundamental theorem of homomorphism and Permutation groups	4/7/2020 to 30/8/2020	08 Hours	12 Hours	Chalk and talk

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Lesson plan 2020-2021 Odd sem

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ACADAMIC YEAR-2020-2021
FACULTY NAME : CHAITRA H S

B.Sc V SEMESTER

Unit no	Title of the chapter	Month	No of Hours Allotted- For MONTH	Hours taken	Teaching method
1	Fourier series Basic definition, Fourier series of functions with period 2π and period $2L$, Half – Range cosine and sine expansion.	4/7/2020 to 30/7/2020	24 Hours	24 Hours	Chalk and talk
2	Laplace Transforms Definition and basic properties, Laplace transforms of $\cos kt$, $\sin kt$, t^n , $\cosh kt$, $\sinh kt$ -L.T of problems thereon. Laplace Transforms of derivatives of function, Laplace Transforms of integrals of functions, Laplace transforms of periodic function, Inverse Laplace transform Problems and Convolution theorem.	31/07/2020 to 1/09/2020	20 Hours	21 Hours	Chalk and talk
3	Linear Transformation Linear Transformations: Definition, Properties and Examples, Matrix of a linear transformation- Definition, properties and examples. Change of basis- Range space, Null Space (Kernel), rank and Nullity of a linear transformation, Rank-Nullity theorem, Verification of Rank-Nullity theorem, examples and properties.	2/09/2020 to 30/09/2020	16 Hours	18 Hours	Chalk and talk

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1	<p>Paper 5.3 Vector Analysis Scalar field, gradient of a scalar field, geometrical meaning, directional derivatives. Vector field, divergence and curl of a vector field. Solenoidal and irrotational fields. Laplacian of a scalar field. Vector identities. Greens, Gauss and Stokes theorems (Statements only) simple examples</p>	<p>31/07/2020 to 1/09/2020</p>	<p>16 Hours</p>	<p>20 Hours</p>	<p>Chalk and Talk</p>
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Lesson plan 2020-2021 Even sem

V.V.SANGHA'S
SMT A.S.M. COLLEGE FOR WOMEN, BALLARI
DEPARTMENT OF MATHEMATICS
TEACHING PLAN
ACADAMIC YEAR-2020-2021
FACULTY NAME : CHAITRA H S

B.Sc IV SEMESTER

Unit no	Title of the chapter	Month	No of Hours Allotted- For MONTH	Hours taken	Teaching method
3	Algebra-III Abstract Algebra: Recapitulation of Groups and subgroups. Cyclic groups, Lagrange's theorem and its consequences. Cosets, Decomposition of a group, Normal subgroups, Quotient groups, Homomorphism and Kernel of homomorphism, Isomorphism. Fundamental theorem of homomorphism and Permutation groups	21/12/2020 to 28/02/2021	10 Hours	11 Hours	Chalk and talk

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Lesson plan 2020-2021 Even sem

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TEACHING PLAN
ACADAMIC YEAR-2020-2021
FACULTY NAME : CHAITRA H S

B.Sc VI SEMESTER

Unit no	Title of the chapter	Month	No of Hours Allotted- For MONTH	Hours taken	Teaching method
1	<p>Solution of Algebraic Equations Solution of non-linear algebraic equations by the following methods.</p> <ol style="list-style-type: none"> 1. Method of successive bisection 2. (Interval bisection method). 2. Method of false position (Regula-Falsiethod). 3. Newton-Raphson's iterative method . <p>Solution of system of algebraic equations by the following methods</p> <ol style="list-style-type: none"> 1. Gauss elimination method. 2. Jacobi iteration method. 3. Gauss-Seidel method. 	21/12/2020 to 1 /01/2021	8 Hours	10Hours	Chalk and talk
2	<p>Finite Differences: Definition and properties of D, \tilde{N} and E. Relations between them. The nth differences of a polynomial. Interpolation: Newton-Gregory forward and backward interpolation formulae, Lagrange's and Newton's interpolation formula for unequal intervals, inverse interpolation. Numerical differentiation using forward and backward difference formulae. Computation of first and second derivatives.</p> <p>Numerical integration: General Quadrature formula. Trapezoidal rule, Simpsons 1/3rd and 3/8th rules, Weddles rule, Problems thereon. Solution of initial value problem of ordinary linear first order differential equations by the following methods.</p> <ol style="list-style-type: none"> 1. Picard's method 	2/1/2021 to 28/02/2021	32Hours	32Hours	Chalk and talk
	<p>Numerical integration: General Quadrature formula. Trapezoidal rule, Simpsons 1/3rd and 3/8th rules, Weddles rule, Problems thereon. Solution of initial value problem of ordinary linear first order differential equations by the following methods.</p> <ol style="list-style-type: none"> 1. Picard's method 	1/3/2021 to 30/3/2021	16Hours	16Hours	Chalk and talk


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<p>3</p> <p>1</p>	<p>2. Euler's and Euler's modified method 3. Fourth order Runge- Kutta Methods.</p> <p>Difference Equations Finite difference equations, homogeneous and non-homogenous difference equations of first order with constant coefficients. Solution of</p> <ol style="list-style-type: none"> 1. Homogenous first order(linear) difference equations with constant coefficients and 2. Second order difference equations with constant coefficients. <p>Paper 6.3 Topology, Topology Definition of topology, topological spaces and examples there on. Discrete and indiscrete topological spaces, types of topologies- cofinite topology, countable topology, weaker and stronger topologies, comparable and non-comparable topologies and examples. Intersection and union of topologies. Closed, open sets and neighbourhoods. Characterisation of open sets. Definition of Limit points, derived sets and closure of sets. Results on derived sets and properties of closure of sets. Definition of Interior, exterior and boundary of sets and results on interior of a set.</p>	<p>21/12/2020 to 28/02/2021</p>	<p>20Hours</p>	<p>23 Hours</p>	<p>Chalk and talk</p>
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Lesson plan 2021-2022 Odd sem

V.V.SANGHA'S
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DEPARTMENT OF MATHEMATICS
TEACHING PLAN
ACADAMIC YEAR-2021-2022



FACULTY NAME : CHAITRA H S

B.Sc I SEMESTER

Unit no	Title of the chapter	Month	No of Hours Allotted- For MONTH	Hours taken	Teaching method
1 & 2	<p>Unit-I: Matrix: Recapitulation of Symmetric and Skew Symmetric matrices, Cayley-Hamilton theorem, inverse of matrices by Cayley-Hamilton theorem (Without Proof). Algebra of Matrices; Row and column reduction to Echelon form. Rank of a matrix; Inverse of a matrix by elementary operations; Solution of system of linear equations; Criteria for existence of non-trivial solutions of homogeneous system of linear equations. Solution of non-homogeneous system of linear equations. Eigen values and Eigen vectors of square matrices, real symmetric matrices and their properties, reduction of such matrices to diagonal form,</p> <p>Unit-II: Polar Co-ordinates: Polar coordinates, angle between the radius vector and tangent. Angle of intersection of two curves (polar forms), length of perpendicular from pole to the tangent, pedal equations. Derivative of an arc in Cartesian, parametric and polar forms, curvature of plane curve- radius of curvature formula in Cartesian, parametric and polar and pedal forms- center of curvature, envelopes</p>	4/09/2021 to 15/11/2021	16HOURS	20 Hours	Chalk and talk

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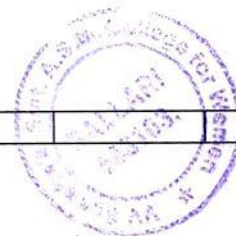
B.Sc III SEMESTER

Unit no	Title of the chapter	Month	No of Hours Allotted- For MONTH	Hours taken	Teaching method
3& 4	<p>Real Analysis – I :</p> <p>Unit III: Sequences: Sequences of real numbers, Bounded sequences. Limit of a sequence. convergent, divergent, and oscillatory sequences. Monotonic sequences. Algebra of convergent sequences. Limit points of a sequence. Bolzano Weierstrass theorem for sequence. Limit superior and limit inferior of sequences. Cauchy's first and second theorem on limits of a sequence. Cauchy's general principle for convergence of a sequence.</p> <p>Unit IV: Infinite Series: Definition of convergent, divergent and oscillatory series. Series of non-negative terms, Cauchy's general principle of convergence. Geometric series, Pseries (Harmonic series). Comparison tests for positive term series. D'Alembert's ratio test, Raabe's test. Cauchy's Root test and Cauchy's integral test. Alternating series. Leibnitz's theorem. Absolute convergence and conditional convergence of a series. Summation of series: Binomial, exponential and logarithmic</p>	4/09/2021 to 14/11/2021	16HOURS	22 Hours	Chalk and talk

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B.Sc V SEMESTER



Unit no	Title of the chapter	Month	No of Hours Allotted- For MONTH	Hours taken	Teaching method
1	Fourier series Basic definition, Fourier series of functions with period 2π and period $2L$, Half – Range cosine and sine expansion.	4/9/2021 to 30/10/2021	24HOURS	24 Hours	Chalk and talk
2	Laplace Transforms Definition and basic properties, Laplace transforms of $\cos kt$, $\sin kt$, t^n , $\cosh kt$, $\sinh kt$ -L.T of problems thereon. Laplace Transforms of derivatives of function, Laplace Transforms of integrals of functions, Laplace transforms of periodic function, Inverse Laplace transform Problems and Convolution theorem	31/09/2021 to 28/10/2021	16 HOURS	22HOURS	Chalk and talk
3	Linear Transformation Linear Transformations: Definition, Properties and Examples, Matrix of a linear transformation- Definition, properties and examples. Change of basis- Range space, Null Space (Kernel), rank and Nullity of a linear transformation, Rank-Nullity theorem, Verification of Rank-Nullity theorem, examples and properties.	29/10/2021 to 7/11/2021	4 HOURS	6 HOURS	Chalk and talk
Paper 5.3	Vector Analysis Scalar field, gradient of a scalar field, geometrical meaning, directional derivatives. Vector field, divergence and curl of a vector field. Solenoidal and irrotational fields. Laplacian of a scalar field. Vector identities. Greens, Gauss and Stokes theorems (Statements only) simple examples	31/9/2021 to 1/11/2021	16HOURS	17HOURS	Chalk and talk

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SMT A.S.M. COLLEGE FOR WOMEN, BALLARI
DEPARTMENT OF MATHEMATICS
TEACHING PLAN
ACADAMIC YEAR-2021-2022



FACULTY NAME : CHAITRA H S

B.Sc II SEMESTER

Unit no	Title of the chapter	Month	No of Hours Allotted- For MONTH	Hours taken	Teaching method
1 & 2	<p>Real Number System: Recapitulation of number system. Countable and uncountable sets, standard theorems. Real line, bounded sets, suprimum and infimum of a set, completeness properties of R, Archimedean property of R. Intervals, neighborhood of a point, open sets, closed sets, limit points and Bolzano-Weierstrass theorem (Without proof)</p> <p>Groups: Definition of a group with examples and properties, congruence, problems. Subgroups, center of groups, order of an element of a group and its related theorems, cyclic groups, Coset decomposition, Factor groups, Lagrange's theorem and its consequences. Fermat's theorem and Euler's ϕ function</p>	4/12/2021 to 21/02/2022	16HOURS	18Hours	Chalk and talk

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B.Sc IV SEMESTER



Unit no	Title of the chapter	Month	No of Hours Allotted- For MONTH	Hours taken	Teaching method
3 & 4	<p>Integral Transforms: Laplace Transforms: Definition, Basic Properties. Laplace transforms of some standard functions. Laplace transform of Periodic functions. Laplace transform of derivative and integral of a function. Heaviside function. Dirac-delta function. Convolution theorem. Inverse Laplace transforms and its properties. Solution of differential equations by using Laplace transforms.</p> <p>Fourier Series and Transforms: Periodic functions. Fourier Coefficients. Fourier series of functions with period 2π and period $2L$. Fourier series of even and odd functions. Half range Cosine and Sine series. Fourier Transforms - Finite Fourier Cosine and Sine transform. Transforms of derivatives. Applications of Fourier Transforms.</p>	4/12/2021 to 21/02/2022	16HOURS	20 Hours	Chalk and talk

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B.Sc VI SEMESTER

Unit no	Title of the chapter	Month	No of Hours Allotted- For MONTH	Hours taken	Teaching method
1	Solution of Algebraic Equations Solution of non-linear algebraic equations by the following methods. 1. Method of successive bisection (Interval bisection method). 2. Method of false position (Regula-Falsiethod). 3. Newton-Raphson's iterative method . Solution of system of algebraic equations by the following methods 1. Gauss elimination method. 2. Jacobi iteration method. 3. Gauss-Seidel method	4/12/2021 to 21/12/2021	12HOURS	012 Hours	Chalk and talk
2	Finite Differences: Definition and properties of D , Δ and E . Relations between them. The n th differences of a polynomial. Interpolation: Newton-Gregory forward and backward interpolation formulae, Lagrange's and Newton's interpolation formula for unequal intervals, inverse interpolation. Numerical differentiation using forward and backward difference formulae. Computation of first and second derivatives.	22/12/2021 to 28/02/2022	36HOURS	36HOURS	Chalk and talk
3	Numerical integration: General Quadrature formula. Trapezoidal rule, Simpsons 1/3rd and 3/8th rules, Weddles rule, Problems thereon. Solution of initial value problem of ordinary linear first order differential equations by the following methods. 1. Picard's method 2. Euler's and Euler's modified method 3. Fourth order Runge- Kutta Methods Difference Equations Finite difference equations, homogeneous and non-homogenous difference equations of first order with constant coefficients. Solution of 1. Homogenous first order(linear) difference equations with constant coefficients and 2. Second order difference equations with constant coefficients.	1/3/2021 to 30/3/2022	16HOURS	16HOURS	Chalk and talk

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	<p>Topology Definition of topology, topological spaces and examples there on. Discrete and indiscrete topological spaces, types of topologies-cofinite topology, countable topology, weaker and stronger topologies, comparable and non-comparable topologies and examples. Intersection and union of topologies. Closed, open sets and neighbourhoods. Characterisation of open sets. Definition of Limit points, derived sets and closure of sets. Results on derived sets and properties of closure of sets. Definition of Interior, exterior and boundary of sets and results on interior of a set.</p>	<p>21/12/2022 to 28/02/2023</p>	<p>16</p>	<p>22</p>	<p>Chalk and talk</p>
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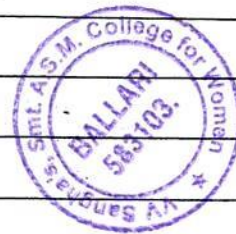
2021-22

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Teaching Plan

BSc V Sem

Paper - 5.2
Differential Equations



Unit :- 3

Weekly Hours :- 5

18/10/2021 to 18/11/2021 (20hrs)

Total Hours :- 80

Linear differential equations of second order with variable coefficient and solutions of methods, Complete solution in terms of known integral belonging to complementary function. Method of changing the independent variable, Method of changing the dependent variable and solving problems based on the respective topic after the completion of one topic.

19/11/2021 to 19/12/2021 (20hrs)

Method of variation of Parameters, Method of finding the first integral.

Total Differential Equations - Integrability, Necessary condition for integrability of the equation $Pdx + Qdy + Rdz = 0$ and condition for exactness, and solving problems based on the respective topic after the completion of one topic.

2021-22

BSc V Sem

Paper - 5.3

Series Solutions, Improper Integrals and
Vector Analysis

Unit :- 2

Weekly Hours:- 3

18/10/2021 to 18/11/2021 (12 hrs)

Total Hours:- 48

Series Solutions - Bessel function $J_n(x)$ as a solution - generation formula - integral formula for $J_n(x)$: Orthogonal property. Basic recurrence relations - problems based on all the topics and problems

19/11/2021 to 19/12/2021 (12 hrs)

Legendre differential equation, Legendre polynomials $P_n(x)$ as a solution, Rodrigue's formula, generating polynomials theorem, orthogonal property and basic recurrence relations - problems based on all the topics

20/12/2021 to 20/01/2022 (12 hrs)

Improper integrals (definition only), Gamma and Beta functions and results following the definition, relation between Beta and Gamma functions and problems based on all the topics.

2021-22

BSc I Sem

MatDSET 1.1

Algebra - I and Calculus - I



Unit - 2

Weekly Hours - 2

Total Hours - 32

18/10/2021 to 18/11/2021 (8 hrs)

Differential Calculus - I : Limits, Continuity, Differentiability and properties. Properties of continuous functions, Intermediate value theorem, Rolle's theorem and problems based on all the topic.

19/11/2021 to 19/12/2021 (8 hrs)

Lagrange's Mean Value theorem, Cauchy's Mean Value theorem and examples. Taylor's theorem, Maclaurin's series, Indeterminate forms and evaluation of limits using L'Hospital rule and solving examples on all the topics

20/12/2021 to 20/01/2022 (8 hrs)

Successive differentiation : n^{th} derivatives of Standard functions
 e^{ax+b} ,
 $(ax+b)^n$,
 $\log(ax+b)$,

2021 - 22

B.Sc. III Sem

Paper - III

Algebra II, Differential Calculus and
Integral Calculus

Unit: - 2

Weekly Hours: - 4

18/10/2021 to 18/11/2021 (16 hrs) Total Hours: - 64

Algebra - II - Sequences: Definition of sequence, Bounded and Unbounded Sequence, Convergence and Divergence of sequence, monotonic sequences, algebra of convergent sequences

Infinite series: Partial sums of a series, convergence, divergence and oscillation of series, Series of non-negative terms, Elementary operations on series.

19/11/2021 to 19/12/2021 (16 hrs)

Geometric series, p -series test, tests of convergence of series - Comparison tests, De'Alembert's ratio test, Raabe's test, Cauchy's Root test, Alternating series, Leibnitz test, Absolute and Conditional convergence.

20/12/2021 to 20/01/2022 (16 hrs)

De'Alembert's test for Absolute convergence (without proof)



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DEPARTMENT OF MATHEMATICS

Academic Year: 2021-22

Semester: II

Course: **BSc Mathematics**

Name of the Faculty: **Gowri M**

Unit No.	Title of the Chapter & Description	Period/ Month	No. Of Hours Alloted	No. Of Hours Taken	Teaching Pedagogy/Methodology adopted
III	Partial Derivatives: Functions of two or more variables-explicit and implicit functions, partial derivatives. Homogeneous functions- Euler's theorem, total derivatives, differentiation of implicit and composite functions.	May-22	08	06	Interactive Board Activity.
III	Jacobians and standard properties and illustrative examples. Taylor's and Maclaurin's series for functions of two variables, Maxima-Minima of functions of two variables.	June-22	08	07	Interactive Board Activity.
IV	Integral Calculus: Recapitulation of definite integrals and its properties. Line integral: Definition of line integral and basic properties, examples on evaluation of line integrals. Double integral: Definition of Double integrals and its conversion to iterated integrals.	July-22	08	08	Interactive Board Activity.
IV	Evaluation of double integrals by changing the order of integration and change of variables. Computation of plane surface areas, volume underneath a surface of revolution using double integral. Triple integral: Definition of triple integrals and evaluation change of variables, volume as triple integral. Differentiation under the integral sign by Leibnitz rule.	August-22	08	05	Interactive Board Activity.

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DEPARTMENT OF MATHEMATICS

Academic Year: 2021-222

Semester: IV

Course: **BSc Mathematics**

Name of the Faculty: **Gowri M**

Unit No.	Title of the Chapter & Description	Period/ Month	No. Of Hours Alloted	No. Of Hours Taken	Teaching Pedagogy/Methodology adopted
II	Differential Equations Recapitulation of differential equations of first order and first degree. Bernoulli's Equations, Exact Equations, of first order and higher degree equations, solvable for p, x, y. Clairaut's equations and equations reducible to Clairaut's equations	May-22	12	09	Interactive Board Activity.
II	Linear equation with nth order and constant co-efficients. Particular integral when RHS is of the form e^{ax} , x^n , $\sin ax$, $\cos ax$, $e^{ax} V$, XV where V is a function of x . Cauchy-Euler differential equations of order two.	June-22	12	11	Interactive Board Activity.
III	Line and Multiple Integrals: Definitions of line integral, basic properties. Examples on evaluation of line integrals. Definitions of double integral: its conversion to iterated integrals.	July-22	12	10	Interactive Board Activity.
III	Evaluation of double integrals (i) under the given limits (ii) in regions bounded by given curve, change of order of integration. Definition of a triple integral and evaluation. Change of order of integration. Revision	August-22	12	08	Interactive Board Activity.

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DEPARTMENT OF MATHEMATICS

Academic Year: **2021-22**

Semester: **VI (6.2)**

Course: **BSc Mathematics**

Name of the Faculty: **Gowri M**

Unit No.	Title of the Chapter & Description	Period/ Month	No. Of Hours Alloted	No. Of Hours Taken	Teaching Pedagogy/Methodology adopted
I	Trigonometry: Expansion of $\sin\theta$ and $\cos\theta$ in terms of powers of $\sin\theta$ or $\cos\theta$ and expansion of $\sin^2\theta$ & $\cos^2\theta$ in terms of sines and cosines of multiples of using De-Moiver's theorem. Relation between Hyperbolic and circular functions, derivation of standard formulae of hyperbolic functions. Logarithm of a complex number, finding real and imaginary parts and simple examples.	May-22	16	13	Interactive Board Activity.
II	Analytic Functions and Complex Integration: Functions of complex variables: Limit, continuity and differentiability. Analytic functions, Cauchy-Reimann equations in Cartesian and polar forms. Sufficient conditions for analyticity (in Cartesian form). Real and imaginary parts of analytic function which are harmonic. Construction of analytic function, given real and imaginary parts.	June-22	16	14	Interactive Board Activity.
II	The complex line integral: Examples and properties (definitions of the concepts like neighbourhood of a point, closed contour, etc. at appropriate places should be mentioned). Cauchy integral theorem (statement) and its consequences.	July-22	16	15	Interactive Board Activity.
II III	The Cauchy's integral formulae for the function and derivatives. Applications to the evaluation of simple line integrals. Cauchy's inequality theorem. Residue Theorem: Residues and Residue theorem, valuation of real definite integrals around the unit circle and evaluation of	August-22	16	14	Interactive Board Activity.

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DEPARTMENT OF MATHEMATICS

Academic Year: 2021-22

Semester: VI (6.3)

Course: **BSc Mathematics**

Name of the Faculty: **Gowri M**

Unit No.	Title of the Chapter & Description	Period/ Month	No. Of Hours Alloted	No. Of Hours Taken	Teaching Pedagogy/Methodology adopted
II	Bases and Sub-bases: Base for the neighbourhood system of a point or local base, first countable space.	May-22	08	06	Interactive Board Activity.
II	Properties of a topological space in terms of a local base. Base for a topology: Second countable space, theorems on base for a topology.	June-22	08	07	Interactive Board Activity.
II	Properties of base for a topology, characterization of a topological space in terms of base.	July-22	08	06	Interactive Board Activity.
II	Sub-base: Adherent points, limit points and derived sets in a topological space and theorem on derived sets.	August-22	08	05	Interactive Board Activity.

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Lesson plan 2018-2019 Odd sem




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DEPARTMENT OF MATHEMATICS
TEACHING PLAN
ACADAMIC YEAR-2018-2019

FACULTY NAME : CHAITRA H S

B.Sc III SEMESTER

Unit no	Title of the chapter	Month	No of Hours Allotted- For MONTH	Hours taken	Teaching method
1	3.1: VECTOR ALGEBRA AND ANALYTICAL SOLID GEOMETRY Vector Algebra: Recapitulation of vector algebra. Vector triple product. Product of four vectors. Reciprocal vectors.	4/7/2018 to 30/7/2018	16	16	Chalk and talk
2	Analytical Solid Geometry: Cartesian coordinates in three-dimensional space. Relation between Cartesian coordinates and position vectors. Distance and division formulae (in vector and Cartesian form). Direction cosines of a line (as components of a unit vector). Direction ratios of the join of two points. Projection on a straight line (vector and Cartesian form), angle between two lines (dot product and Cartesian forms). Area of a triangle and volume of a tetrahedron with given vertices (vector and Cartesian forms). Equation of a plane in the form: (iii) and their Cartesian equivalence. Plane through three points. Angle between planes. Equation of plane in the form (i) ; (ii) and their equivalent Cartesian forms. Angle between line and plane (vector and Cartesian forms). Condition for a line to lie in a plane (vector and Cartesian forms). Planes coaxial with given planes. Equation of the line of intersection of two planes. Perpendicular distance of a point from a line and plane. Planes bisecting the angle between two given planes co-	31/07/2018 to 1/09/2018 2/09/2018 to 30/09/2018	45	47	Chalk and talk

	planarity of two lines. Shortest distance between two lines (all these results are to be obtained in both vector and Cartesian forms).			
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DEPARTMENT OF MATHEMATICS
TEACHING PLAN
ACADAMIC YEAR-2018-2019



FACULTY NAME : CHAITRA H S

B.Sc V SEMESTER

Unit no	Title of the chapter	Month	No of Hours Allotted- For MONTH	Hours taken	Teaching method
1	<p>PAPER 5.1: VECTOR ANALYSIS AND LAPLACE TRANSFORMS</p> <p>Vector Analysis: Scalar field, gradient of a scalar field, geometrical meaning, directional derivatives. Vector field, divergence and curl of a vector field. Solenoidal and irrotational fields. Laplacian of a scalar field. Vector identities. Expressions for $\nabla \cdot \mathbf{f}$, $\nabla \times \mathbf{f}$ and curl $\mathbf{f} \times \mathbf{a}$ in orthogonal, curvilinear coordinates and specialization to Cartesian, cylindrical and spherical coordinates. Greens, Gauss and Stokes theorems (Statements only) simple examples.</p>	4/9/2018 to 30/9/2018	14	22	Chalk and talk
2	<p>Fourier Series: Periodic functions. Fourier series of functions with period $2L$ and period L. Half range cosine and sine series.</p>	31/9/2018 to 21/10/2018	14	14	Chalk and talk
3	<p>Laplace Transform: Definition and basic properties. Laplace transform of some common functions. Laplace transforms of the derivatives and the integral of a function. Laplace transform of the Heaviside and Dirac delta function – Convolution theorem. Inverse Laplace transforms: Application to ordinary linear differential equation of first and second order with constant coefficients.</p>	22/10/2018 to 24/11/2018	16	24	Chalk and talk

1	<p>2.PAPER 5.3(b): THEORY OF GRAPHS-I Introduction, graphs, finite and null graphs. Connectedness and component, degree of vertex, minimum and maximum degree. The number of vertices of odd degree is even. Isomorphism, complete graph, line graph, total graph. 20 hrs Sub-graph, spanning and induced sub-graphs, walk, trail, path, cycle.</p>	<p>4/9/2018 to 30/9/2018</p>	15	<p>15</p>  <p>Chalk and talk</p>
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Lesson plan 2018-2019 Even sem

V.V.SANGHA'S
SMT A.S.M. COLLEGE FOR WOMEN, BALLARI
DEPARTMENT OF MATHEMATICS
TEACHING PLAN
ACADAMIC YEAR-2018-2019

FACULTY NAME : CHAITRA H S

B.Sc IV SEMESTER

Unit no	Title of the chapter	Month	No of Hours Allotted- For MONTH	Hours taken	Teaching method
1	PAPER 4.1: ALGEBRA-III Abstract Algebra: Cyclic groups, cosets, Lagrange's, Fermat's and Euler's theorems. Normal sub-groups, Homomorphism, Kernel of Homomorphism, fundamental theorem of Homomorphism, Isomorphism. Permutation groups, rings, sub-rings, Integral domains, fields and their simple properties with examples.	21/12/2018 to 28/01/2019	16	22	Chalk and talk
2	Linear Algebra: Vector space examples Including R_n and C_n . Properties of vector space: Sub-spaces. Criteria for a subset to be a subspace. Linear combination concepts of linearly independent and dependent subsets. Basis and dimension of a vector space and standard results related to a basis. Examples illustrating concept and results (with emphasis on R_3). Linear transformations: Properties of linear transformations, matrix of a linear transformation, change of basis, range and Kernel of a linear transformation, rank nullity theorem.	29/1/2019 to 30/03/2019	35	10	Chalk and talk

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Hours	Topic to be covered	Remarks
22 hrs	<p><u>Continuity and Differentiability</u> Types of discontinuity Algebra of continuous functions (Statement only). Differentiability of functions including hyperbolic functions. Rolle's theorem, Lagrange's & Cauchy mean value theorem and indeterminate forms.</p>	<p>Decision</p>
16 hrs	<p><u>Successive Differentiation</u> Standard formulae for n^{th} derivative of the function $(a+bx)^n$ $\log(a+bx)$ e^{ax} $\sin(ax+b)$ $\cos(ax+b)$ $e^{ax} \sin(bx+c)$ $e^{ax} \cos(bx+c)$ Leibnitz's theorem and applications.</p>	<p>Feb</p>
22 hrs	<p><u>Functions of more than one independent variable</u> Limit and continuity, partial derivatives, partial derivatives of higher order, homogeneous functions, Euler's theorem on H-fn of second order, Differentiation of implicit functions, Jacobians.</p>	<p>Feb, March & April</p>

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Hours	Topic to be covered	Remarks
	<u>Abstract Algebra :-</u>	
15	Cyclic group, Cosets, Lagrange's Fermat's & Euler's theorems, normal Subgroups, Homomorphism, Kernel of Homomorphism fundamental theorem of Homomorphism, Isomorphism permutation groups, Rings, Subrings Integral domains, fields & their simple properties with examples LINEAR ALGEBRA	Jan to Feb
30	Vector space examples including \mathbb{R}^n & \mathbb{C}^n , properties of vector space. Subspace. Criteria for a subset to be a subspace. linear combination. Concepts of linearly independent & dependent subsets. Basis & dimension of a vector space & Standard Results Related to a basis. Examples illustrating concept & result (with emphasis on \mathbb{R}^3). linear transformations: Properties of linear transformations, matrix of a linear transformation, change of Basis, range & Kernel of a linear transformation, Rank nullity theorem	Feb to April

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TEACHING PLAN

Class : IV 4th 2



Hours	Topic to be covered	Remarks
45	<u>Differential Equations</u>	
	formation of diff eqns equations of first order and first degree Equations of first order and high degree equations solvable for p, x, y and Clairaut eqns Singular solutions, linear equations with n th order and constant coefficients	Dec & Jan :
	particular integral when RHS is of the form e^{ax} , x^n , $\sin ax$, $\cos ax$, $e^{ax} x$, x^2 , etc. using formulae.	Feb & Mar
	Solutions of ordinary second order linear diff eqns by the following methods.	
	① when a part of complementary function is given	March
	2. changing the independent variable	(April)
	3. changing the dependent variable	
	4. when a first integral is given	
	5. variation of parameters.	

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TEACHING PLAN

Class : B.Sc. I Sem (G.1)

Hours	Topic to be covered	Remarks
5	Chapter - I - Errors	Jan
5	Chapter - II - Solution of non linear	Jan
	Equation	
7	Chapter - III - Solution of system	Feb
	of Eq ⁿ	
8	Chapter IV - Finite difference	Feb
5	Chapter V - Interpolation	Mar
5	Chapter VI - numerical differen	Mar
	entiation.	
15	Chapter VII - numerical	April
	Integrations	

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6.2

TEACHING PLAN

Class : 6th Sem. Bk

6.2



Hours	Topic to be covered	Remarks
10 hrs	<p><u>Complex Analysis and Improper Integrals</u> Trigonometry = Expression of sine and cosine using De-Moivre's theorem. Logarithm of a complex number. Summation of trigonometric series.</p>	<p>De Moivre</p>
20 hrs	<p><u>Complex Analysis.</u> Functions of complex variables. Limit, continuity, and differentiability. Analytic functions. Cauchy's Riemann is a special equation is criterion of analyticity. Cauchy integral theorem. The Cauchy integral formula for the function & its derivatives.</p>	<p>Jan & Feb Mar & Apr</p>
15	<p><u>Improper Integrals</u> Improper integrals of the first & second kind. Gamma, Beta functions. Duplication formulae & Stirling's formulae.</p>	


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TEACHING PLAN

Class : B.Sc IV (6.3)

Hours	Topic to be covered	Remarks
10.	<p>GRAPH THEORY</p> <p>Chapter 1 - Cut vertex, Bridge, Block, tree, spanning tree rooted & Binary tree forest Some properties of trees & Examples.</p>	<p>Jan</p> 
15	<p>Chapter 2 - Connectivity - Vertex and edge connectivity, & Separability, Whitney's inequality $K(G) \leq \lambda(G) \leq \delta(G)$ Menger's theorem statement.</p>	<p>Feb</p>
20.	<p>Eulerian & Hamiltonian Graphs Introduction. The Königsberg Bridge problem & travelling salesman problem Characterization of Eulerian graphs & properties of Hamiltonian graph. Some application of graphs in electronic network.</p>	<p>March</p>
		<p>April.</p>

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