ANNUAL CURRICULAR PLAN

Class: II year Year: 2022-2023 Semester: III Paper: Lebesgue Theory

Month week	Hours available	Syllabus topic	Additional input/value addition	Curricular Activities				Co-Curricular Activities				Remarks
				Activity	Hours allotted	Whether conducted	If not alternate date	Activity	Hours allotted	Whether conducted	If not alternate date	
Nov 2nd	7	UNIT-I Algebra of sets										
Nov 3rd	7	Lebesgue measure										
Nov 3rd	7	Outer measure										
Nov 4th	7	Measurable set and Lebesgue measure										
Dec 1st	7	A non-measurable set										
Dec 2nd	7	Measurable function										
Dec 3rd	7	Little wood's three principles.										
		UNIT-II										
Dec 4th	7	The Riemann Integral										
Jan 2nd	7	The Lebesgue integral of a bounded function over a set of finite measures.										

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ANNUAL CURRICULAR PLAN

Class: II year Year: 2022 - 2023 Semester: III Paper: Lebesgue theory

Month week	Hours available	Syllabus topic	Additional input/value addition	Curricular Activities				Co-Curricular Activities				Rem
				Activity	Hours allotted	Whether conducted	if not alternate date	Activity	Hours allotted	Whether conducted	if not alternate date	
Jan 3rd	7	The integral of a non-negative function.										
Jan 4th	7	The general Lebesgue integral convergence in measure.										
		UNIT-III										
Feb 1st	7	Differentiation of monotonic functions.										
Feb 2nd	7	Functions of bounded variation										
Feb 3rd	7	Differentiation of an integral.										
Feb 3rd	7	Absolute continuity.										
		UNIT-IV										
Feb 4th	7	L_p-Spaces the Holder's & Minkowski inequalities.										
Feb 4th	7	Convergence and completeness.										

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ANNUAL CURRICULAR PLAN

Class: II year Year: 2022-23 Semester: III Paper: Commutative Algebra

Month week	Hours available	Syllabus topic	Additional input/value addition	Curricular Activities				Co-Curricular Activities				Remarks
				Activity	Hours allotted	Whether conducted	If not alternate date	Activity	Hours allotted	Whether conducted	If not alternate date	
NOV 2nd	4	UNIT-I Rings and ring homomorphism, ideals, quotient rings, Zero divisors										
NOV 3rd	4	Nilpotent elements, units, principle & Maximal ideals.										
NOV 4th	4	Nil & Jacobson radical, oper-ations on Ideals, Extensions and contractions.										
		UNIT-II										
DEC 1st	4	Module homomorphisms, Sub & quotient modules, Operations on Submodules, direct Sum & product										
Dec 2nd	4	Finitely generated modules, exact Sequences, Tensor Product of modules										
Dec 3rd	4	Exactness properties of tensor product,										
Dec 4th	4	algebras, tensor Product of algebras.										

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ANNUAL CURRICULAR PLAN

Class: I year Year: 2022 - 2023 Semester: I Paper: Differential Equations.

Month week	Hours available	Syllabus topic	Additional input/value addition	Curricular Activities				Co-Curricular Activities				Rem
				Activity	Hours allotted	Whether conducted	if not alternate date	Activity	Hours allotted	Whether conducted	if not alternate date	
		UNIT-I										
		Second order linear differential equations:										
Dec 4th	4	Introduction - general solution										
		of the homogeneous equation,										
Jan 1st	7	use of a known solution to										
		find another.										
Jan 2nd	7	Homogeneous equation with										
		constant co-efficients,										
		method of undetermined										
		coefficients.										
Jan 3rd	7	Method of variation of parameters										
		UNIT-II										
		Oscillation theory and										
		boundary value problems:										
Jan 3rd	7	Qualitative properties of										
		solutions.										

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ANNUAL CURRICULAR PLAN

Class: I year Year: 2022-2023 Semester: I Paper: Differential Equations.

Remarks	Month week	Hours available	Syllabus topic	Additional input/value addition	Curricular Activities				Co-Curricular Activities				Remarks
					Activity	Hours allotted	Whether conducted	if not alternate date	Activity	Hours allotted	Whether conducted	if not alternate date	
	Jan 4th	7	The Sturm comparision theorem - Eigen values Eigen functions and vibrating string.										
			UNIT-III										
			Power series solutions:										
	Feb 1st	7	A review of power series - series solutions of first order equations.										
	Feb 3rd	7	Second order linear equations Ordinary points - regular Singular points Gauss's hypergeometric equation.										

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ANNUAL CURRICULAR PLAN

Class: I year Year: 2022-2023 Semester: I Paper: Differential Equations

Month week	Hours available	Syllabus topic	Additional input/value addition	Curricular Activities				Co-Curricular Activities				Re
				Activity	Hours allotted	Whether conducted	if not alternate date	Activity	Hours allotted	Whether conducted	if not alternate date	
		UNIT-IV										
		Systems of first order equations										
		Linear Systems-										
Feb 4th	7	Homogeneous linear Systems with constant coefficients.										
Mar 1st	7	Existence and Uniqueness of Solutions.										
Mar 2nd	7	Successive approximations, Picard's theorem, Some examples.										

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ANNUAL CURRICULAR PLAN

ass: I year Year: 2022-2023 Semester: I Paper: Discrete Mathematics

onth eek	Hours available	Syllabus topic	Additional input/value addition	Curricular Activities				Co-Curricular Activities				Remarks
				Activity	Hours allotted	Whether conducted	if not alternate date	Activity	Hours allotted	Whether conducted	if not alternate date	
Dec 4th	7	UNIT-I Relations - properties of binary relations in a set Relation matrix and the graph of a relation, partition and covering of a set										
Jan 1st	7	Equivalence relations,										
Jan 2nd	7	compatability relation										
Jan 3rd	7	composition of binary relations, partially ordering sets, represe -ntation & associated terminology										
		UNIT-II										
Jan 4th	7	Lattices as partially ordered sets, some properties of lattices										
Feb 1st	7	Lattices as algebraic systems, sub lattices										
Feb 3rd	7	Direct product and homomorphism										

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ANNUAL CURRICULAR PLAN

Class: I year Year: 2022 - 2023 Semester: I Paper: Discrete Mathematics.

Month week	Hours available	Syllabus topic	Additional input/value addition	Curricular Activities				Co-Curricular Activities			
				Activity	Hours allotted	Whether conducted	if not alternate date	Activity	Hours allotted	Whether conducted	if not alternate date
		Some special lattices.									
		UNIT-III									
Feb 4th	7	Sub algebra, Boolean forms and free Boolean algebras values of Boolean expressions and Boolean function.									
		UNIT-IV									
Feb 4th	7	Representation and minimization of Boolean functions									
Mar 1st	7	Finite state Machines-Induc -tory Sequential Circuits,									
Mar 2nd	7	Equivalence of finite state Machines Connectives- Negation, conjunction disjunction, statement formulas and Truth tables.									

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ANNUAL CURRICULAR PLAN

Class: II year Year: 2022-2023 Semester: III Paper: Functional Analysis

Month / Week	Hours available	Syllabus topic	Additional input/value addition	Curricular Activities				Co-Curricular Activities				Remarks
				Activity	Hours allotted	Whether conducted	if not alternate date	Activity	Hours allotted	Whether conducted	if not alternate date	
Nov 2nd	7	Unit-I Banach spaces: the definition and some examples										
Nov 3rd	7	Continuous linear transformation, the Hahn-Banach theorem										
Nov 4th	7	The natural imbedding of N in N**										
Dec 1st	7	The open mapping theorem Unit-II										
		The Conjugate of an operator										
Dec 2nd	7	Hilbert spaces: the definition and some simple properties										
Dec 3rd	7	Orthogonal Complements										
Dec 4th	7	Orthonormal sets Unit-III										
Jan 2nd	7	The Conjugate space H*										

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ANNUAL CURRICULAR PLAN

Class: II year Year: 2022-23 Semester: III Paper: Functional Analysis

Month week	Hours available	Syllabus topic	Additional input/value addition	Curricular Activities				Co-Curricular Activities			
				Activity	Hours allotted	Whether conducted	if not alternate date	Activity	Hours allotted	Whether conducted	if not alternate date
Jan 3rd	7	The adjoint of an operator,									
		Self-adjoint operators									
Jan 4th	7	Normal and Unitary									
		operators									
Feb 1st	7	Projections									
		Unit-IV									
Feb 2nd	7	Finite-dimensional Spectral									
		theory: Matrices, determinants									
Feb 3rd	7	The spectrum of an operator,									
		the spectral theorem									
Feb 4th	7	A survey of the situation									

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ANNUAL CURRICULAR PLAN

ss: II year Year: 2022-23 Semester: III Paper: Analytical Number Theory

nth eek	Hours available	Syllabus topic	Additional input/value addition	Curricular Activities				Co-Curricular Activities				Remarks
				Activity	Hours allotted	Whether conducted	if not alternate date	Activity	Hours allotted	Whether conducted	if not alternate date	
Nov 2nd	7	Introduction, the Mobius function $\mu(n)$, the Euler totient function $\varphi(n)$, A relation connecting φ and μ, A product formula for $\varphi(n)$										
Nov 3rd	7	The Dirichlet product of arithmetical functions, Dirichlet inverses and the Mobius inversion formula, The Mangoldt function, Multiplicative functions										
Nov 4th	7	Multiplicative function and Dirichlet multiplication, the inverse of a completely multiplicative function, Liouville function $\lambda(n)$										

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ANNUAL CURRICULAR PLAN

Class: II year Year: 2022-23 Semester: III Paper: Analytical Number Theory

Month week	Hours available	Syllabus topic	Additional input/value addition	Curricular Activities				Co-Curricular Activities			
				Activity	Hours allotted	Whether conducted	if not alternate date	Activity	Hours allotted	Whether conducted	if not alternate date
		The divisor functions									
		Generalized convolutions									
		Unit-II									
Dec 1st	7	Introduction, the big oh notation, Asymptotic equality of functions, Euler's summation formula.									
Dec 2nd	7	Some elementary asymptotic formulas, the average order of $d(n)$, the average order of the divisor functions $\sigma_\alpha(n)$									
Dec 3rd	7	The average order of $\varphi(n)$, An application to the distribution of lattice points visible from the origin,									

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ANNUAL CURRICULAR PLAN

ss: II year Year: 2022-23 Semester: III Paper: Analytical Number Theory

nth ek	Hours available	Syllabus topic	Additional input/value addition	Curricular Activities				Co-Curricular Activities				Remarks
				Activity	Hours allotted	Whether conducted	If not alternate date	Activity	Hours allotted	Whether conducted	If not alternate date	
		the average order of $\mu(n)$ and $\Lambda(n)$										
Dec 4th	4	The partial sums of a Dirichlet product, Applications to $\mu(n)$ and $\Lambda(n)$, Another identity for the partial sums of a Dirichlet product.										
		Unit-III										
Jan 3rd	4	Introduction, Chebyshev's function $\psi(x)$ and $\vartheta(x)$,										
Jan 3rd	4	Relations connecting $\vartheta(x)$ and $\pi(x)$, Some equivalent forms of the prime number theorem.										
		Inequalities for $\pi(n)$ and p_n, Shapiro's Tauberian theorem										

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ANNUAL CURRICULAR PLAN

Class: II year Year: 2022-23 Semester: III Paper: Analytical Number Theory

Month week	Hours available	Syllabus topic	Additional input/value addition	Curricular Activities				Co-Curricular Activities				Re
				Activity	Hours allotted	Whether conducted	if not alternate date	Activity	Hours allotted	Whether conducted	if not alternate date	
Jan 4th	7	Applications of Shapiro's theorem. An asymptotic formula for the partial sums $\sum_{p \le x} (1/p)$, The partial sums of the mobius function.										
Feb 1st	7	Selberg's asymptotic formula Unit-IV Definition and basic properties of congruences, Residue classes										
Feb 2nd	7	Complete residue systems, linear congruences, Reduced residue systems, and the Euler-Fermet theorem										
Feb 3rd	7	Polynomial congruences modulo p, Lagrange's theorem										

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ANNUAL CURRICULAR PLAN

s: II year Year: 2022 – 23 Semester: III Paper: Analytical Number Theory

th k	Hours available	Syllabus topic	Additional input/value addition	Curricular Activities				Co-Curricular Activities				Remarks
				Activity	Hours allotted	Whether conducted	if not alternate date	Activity	Hours allotted	Whether conducted	if not alternate date	
		Applications of Lagrange's Theorem, Simultaneous linear Congruences.										
eb 4th	7	The Chinese remainder theorem, Applications of the Chinese remainder theorem, Polynomial Congruences with prime power moduli										

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ANNUAL CURRICULAR PLAN

Class: I year Year: 2022-23 Semester: I Paper: Algebra - I

Month week	Hours available	Syllabus topic	Additional input/value addition	Curricular Activities				Co-Curricular Activities			
				Activity	Hours allotted	Whether conducted	if not alternate date	Activity	Hours allotted	Whether conducted	if not alternate date
Dec 4th	8	Unit-I Normal subgroups and Quotient groups									
Jan 1st	8	Isomorphism theorem, Automorphisms									
Jan 2nd	8	Conjugacy and G-Sets,									
Jan 3rd	8	Normal series, Solvable groups									
		Nilpotent groups									
		Unit-II									
		Structure theorems of groups: Direct product									
Jan 4th	8	Finitely generated abelian groups.									
		Invariants of a finite abelian group									
Feb 1st	8	Sylow's theorems, Groups									

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ANNUAL CURRICULAR PLAN

ss: I year Year: 2022-23 Semester: I Paper: Algebra - I

nth ek	Hours available	Syllabus topic	Additional input/value addition	Curricular Activities				Co-Curricular Activities				Remarks
				Activity	Hours allotted	Whether conducted	if not alternate date	Activity	Hours allotted	Whether conducted	if not alternate date	
		of ideals p^r, pq										
		Unit-III										
cb 3rd	8	Ideals and homomorphism,										
		Sum and direct sum of										
		Ideals										
eb 4th	8	Maximal and prime Ideals										
		Nilpotent and Nil Ideals,										
		Zorn's lemma										
		Unit-IV										
arch 1st	8	Unique factorization domains										
		Principal ideal domains										
arch 2nd	8	Euclidean domains										
		Polynomial ring over UFD										

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ANNUAL CURRICULAR PLAN

Class: IV Sem Year: 2022-23 Semester: IV Paper: Graph theory.

Month week	Hours available	Syllabus topic	Additional input/value addition	Curricular Activities				Co-Curricular Activities				Remarks
				Activity	Hours allotted	Whether conducted	if not alternate date	Activity	Hours allotted	Whether conducted	if not alternate date	
April I		UNIT-I Basic Concepts: Graph,										
		Application of graph, finite										
		& infinite graphs, Incidence										
		& degree, isolated vertex.										
		Pendant vertex & Null graph										
April II		Paths & circuits: Isomorphism,										
		Subgraphs, walks, paths & circuits,										
		Connected graphs, Euler graphs										
April III		operations on graphs,										
		Hamiltonian paths & Circuits										
		Trees & Fundamental										
		Circuits: Trees some										
		properties of trees pendant										
		Vertias in a tree.										
April IV		Distance & centres in a										
		tree, Rooted & binary										

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ANNUAL CURRICULAR PLAN

Class: II year Year: 2022-23 Semester: IV Paper: Graph theory

Month week	Hours available	Syllabus topic	Additional input/value addition	Curricular Activities				Co-Curricular Activities			
				Activity	Hours allotted	Whether conducted	if not alternate date	Activity	Hours allotted	Whether conducted	if not alternate date
		trees, Spanning trees, Fundamental circuits.									
		UNIT- II									
May I		Cut sets: Some property of a cutset, All cut sets in a graph.									
		Fundamental circuits & Cut sets									
May II		Connectivity & separability Network flows.									
		1 & 2 - Isomorphism									
May III		Combinatorial & Geometric graphs, planar graphs, Kuratowski's two graphs									
		Different representation of planar graphs									

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ANNUAL CURRICULAR PLAN

Class: II year Year: 2022 – 23 Semester: IV Paper: Graph theory

Month Week	Hours available	Syllabus topic	Additional input/value addition	Curricular Activities				Co-Curricular Activities				Remarks
				Activity	Hours allotted	Whether conducted	if not alternate date	Activity	Hours allotted	Whether conducted	if not alternate date	
June I, II		Detection of planarity Geometric Dual Combinatorial Dual UNIT – III										
June III		Matrix representation of a graph: Incidence Matrix of a graph, Sub Matrices of A(G), Circuit Matrix,										
June IV		Fundamental Circuit Matrix & Rank of B. An application to a Switching network. Relationship among Af, Bf, & Cf.										

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ANNUAL CURRICULAR PLAN

Class: II year Year: 2022-23 Semester: IV Paper: Graph theory.

Month week	Hours available	Syllabus topic	Additional input/value addition	Curricular Activities				Co-Curricular Activities			
				Activity	Hours allotted	Whether conducted	if not alternate date	Activity	Hours allotted	Whether conducted	If not alternate date
		UNIT- IV									
July I		Colouring, Covering & Partitioning:-									
		Chromatic number									
July II		Chromatic partitioning,									
		Chromatic polynomial,									
		Matchings									
July III		Coverings,									
		The four colour problem									
		Transport Networks									
July IV		Extensions of Max-flow									
		Min cut theorem									
		Minimal-cost flows.									

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ANNUAL CURRICULAR PLAN

Class: I year Year: 2022-23 Semester: II Paper: Real Analysis - II

Month week	Hours available	Syllabus topic	Additional input/value addition	Curricular Activities				Co-Curricular Activities				Remarks
				Activity	Hours allotted	Whether conducted	If not alternate date	Activity	Hours allotted	Whether conducted	If not alternate date	
April III		UNIT-I Definition & existence of the Riemann Stieltjes integral.										
April IV		Properties of the integral Integration & Differentiation the fundamental theorem of calculus										
May I		Integration of vector valued function, Rectifiable curves.										
		UNIT-II										
May II		Discussion on the Main problem, uniform Convergence.										
May III		Weierstrass M-test uniform Convergence & Integration.										

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ANNUAL CURRICULAR PLAN

Class: I year Year: 2022-23 Semester: II Paper: Real Analysis - II

Month week	Hours available	Syllabus topic	Additional input/value addition	Curricular Activities				Co-Curricular Activities			
				Activity	Hours allotted	Whether conducted	if not alternate date	Activity	Hours allotted	Whether conducted	if not alternate date
June I, II		Uniform Convergence & Integration, uniform Convergence & differentiation									
June III		The real line theorem equi continuous functions of families									
June IV		The stone Weierstrass thm UNIT - III Power series Taylor's thm									
		linear transformations Differentiation The contraction principle									
July I		The inverse function thm UNIT - IV									
July II		The implicit function thm									

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ANNUAL CURRICULAR PLAN

ass: I year Year: 2022-23 Semester: II Paper: Real Analysis - II

onth eek	Hours available	Syllabus topic	Additional input/value addition	Curricular Activities				Co-Curricular Activities				Remarks
				Activity	Hours allotted	Whether conducted	if not alternate date	Activity	Hours allotted	Whether conducted	if not alternate date	
July III		The Rank of a Matrix										
		Determinantes										
July IV		Derivatives of higher orders										
		Differentiation of Integrals										

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