



# গড়গাঁও মহাবিদ্যালয় GARGAON COLLEGE

**TEACHING PLAN  
DEPARTMENT OF MATHEMATICS  
JULY 2023- JUNE 2024**



# গড়গাঁও মহাবিদ্যালয়

## GARGAON COLLEGE

**GARGAON COLLEGE**

**TEACHING PLAN**

Course: B.A./B. SC.

Session: Odd semester 2023 (July-December)

**Subject:** MATHEMATICS

**Name of the Teacher:** Dr. Kabita Phukon

**Methods to be applied:** Lecture, analytical and activity method, interaction and discussion.

**Teaching Materials:** White Board, Marker Pen, Duster, Books, Journals, Laptop, Projector

Paper Code/ Title	Allotted Unit	No. of Classes Required	Details of the topics to be taught	No. of Tutorials
MTHC1: Calculus and Classical Algebra	Unit-1	9	De Moivre's Theorem with rational indices and its application to various problems, Expansion of $\sin x$ , $\cos x$ , $\sinh x$ and $\cosh x$ and related problems.	3
MINMTH1: Differential Calculus	Unit-2	10	Leibnitz's theorem, Partial differentiation, Euler's theorem on homogeneous functions.	2
SEC115: Computer Laboratory-I	Unit-1	25	Basic commands of Matlab or Mathematica, Evaluation of different mathematical Expressions, Solutions of algebraic equation.  <b>List of Practicals</b> 1. Basic commands of Matlab or Mathematica: clc, help, clear, format, exit, line space, zeros, ones, meshgrid, eye, rand, real, imag, angle, conj, commands for trigonometric and inverse trigonometric function, abs, exp, sqrt, log, log2, log10, mod, plot, title, legend, hold on, axis, grid on, figure, clf, close all. 2. Evaluation of arithmetic expression, exponential and logarithms, trigonometric functions, computation of complex numbers. 3. Solution of algebraic equation, simultaneous linear equations.	5
C6(C3.2): Group Theory I	Unit-1	15	Symmetries of a square, Dihedral groups, definition and examples of groups including permutation groups and quaternion groups (illustration through matrices), elementary properties of groups.	5
	Unit-2	12	Subgroups and examples of subgroups, centralizer, normalizer, center of a group, product of two subgroups.	3

	<b>Unit-3</b>	<b>16</b>	Properties of cyclic groups, classification of subgroups of cyclic groups. Cycle notation for permutations, properties of permutations, even and odd permutations, alternating group, properties of cosets, Lagrange's theorem and consequences including Fermat's Little theorem.	<b>4</b>
	<b>Unit-4</b>	<b>15</b>	External direct product of a finite number of groups, normal subgroups, factor groups, Cauchy's theorem for finite abelian groups.	<b>5</b>
	<b>Unit-5</b>	<b>12</b>	Group homomorphisms, properties of homomorphisms, Cayley's theorem, properties of isomorphisms, First, Second and Third isomorphism theorems.	<b>3</b>
<b>C12(C5.2): Group Theory II</b>	<b>Unit-1</b>	<b>30</b>	Automorphism, inner automorphism, automorphism groups, automorphism groups of finite and infinite cyclic groups, applications of factor groups to automorphism groups, Characteristic subgroups, Commutator subgroup and its properties.	<b>5</b>
	<b>Unit-2</b>	<b>20</b>	Properties of external direct products, the group of units modulo $n$ as an external direct product, internal direct products, Fundamental Theorem of finite abelian groups.	<b>5</b>

  
 Head  
 Dept. of Mathematics  
 Gargaon College

**GARGAON COLLEGE**  
**TEACHING PLAN**

Course: B.A./ BSc.

Session: Even semester 2024 (January-June)

**Subject:** MATHEMATICS

**Name of the Teacher:** Dr. Kabita Phukon

**Methods to be applied:** Lecture, activity method, interaction, and discussion.

**Teaching Materials:** White Board, Marker Pen, Duster, Books, Journals, Laptop, Projector

Paper Code/ Title	Allotted Unit	No. of Class Required	Details of the topics to be taught	No. of Tutorials
MTHC2: Real Analysis and Differential Equations	Unit-3	10	Concepts and definition of General, particular, explicit, implicit and singular solutions of a differential equation. Exact differential equations and integrating factors, separable equations and equations reducible to this form, linear equation and Bernoulli equations, special integrating factors and transformations.	2
	Unit-4	13	General solution of homogeneous equation of second order, principle of super position for homogeneous equation, Wronskian: its properties and applications, Linear homogeneous and non-homogeneous equations of higher order with constant coefficients, Euler's equation, method of undetermined coefficients, method of variation of parameters.	3
MINMTH2: Real Analysis	Unit-3	10	Infinite series. Cauchy convergence criterion for series, positive term series, geometric series, convergence of p series, alternating series	2
SEC214: Computer Laboratory I	Unit-1	25	Introduction to compartmental model, exponential growth of population, exponential decay model, lake pollution model (case study of Lake Burley Griffin).  <b>List of Practicals</b> 1. Plotting of second order solution family of differential equation. 2. Plotting of third order solution family of differential equation. 3. Growth model (exponential case only). 4. Decay model (exponential case only). 5. Lake pollution model (with constant/seasonal flow and pollution concentration).	5
C8(C4.1): Numerical Methods	Unit-1	4	Algorithms, Convergence, Errors: Relative, Absolute, Round off, Truncation.	1
	Unit-2	8	Transcendental and Polynomial equations: Bisection method, Newton's method, Secant method. Rate of convergence of these methods.	2
	Unit-3	8	System of linear algebraic equations: Gaussian Elimination and Gauss Jordan methods. Gauss Jacobi method, Gauss Seidel method and their convergence analysis.	2

	<b>Unit-4</b>	<b>8</b>	Interpolation: Lagrange and Newton's methods. Error bounds. Finite difference operators. Gregory forward and backward difference interpolation.	<b>2</b>
	<b>Unit-5</b>	<b>12</b>	Numerical Integration: Trapezoidal rule, Simpson's 1/3rd rule, Simpson's 3/8th rule, Boole's Rule. Midpoint rule, Composite Trapezoidal rule, Composite Simpson's rule.	<b>3</b>
	<b>Unit-6</b>	<b>8</b>	Ordinary Differential Equations: Euler's method. Runge-Kutta methods of orders two and four.	<b>2</b>
<b>GE 4.1: Algebra</b>	<b>Unit-1</b>	<b>22</b>	Definition and examples of groups, examples of abelian and non-abelian groups, the group $Z_n$ of integers under addition modulo $n$ and the group $U(n)$ of units under multiplication modulo $n$ . Cyclic groups from number systems, complex roots of unity, circle group, the general linear group $GL_n(n, R)$ , groups of symmetries of (i) an isosceles triangle, (ii) an equilateral triangle, (iii) a rectangle, and (iv) a square, the permutation group $Sym(n)$ , Group of quaternions.	<b>8</b>
<b>C13(C6.1): Metric Spaces &amp; Complex Analysis</b>	<b>Unit-3</b>	<b>16</b>	Limits, Limits involving the point at infinity, continuity. Properties of complex numbers, regions in the complex plane, functions of complex variable, mappings. Derivatives, differentiation formulas, Cauchy-Riemann equations, sufficient conditions for differentiability.	<b>4</b>
	<b>Unit-4</b>	<b>10</b>	Analytic functions, examples of analytic functions, exponential function, Logarithmic function, trigonometric function, derivatives of functions, definite integrals of functions. Contours, Contour integrals and its examples, upper bounds for moduli of contour integrals. Cauchy- Goursat theorem, Cauchy integral formula.	<b>5</b>
	<b>Unit-5</b>	<b>7</b>	Liouville's theorem and the fundamental theorem of algebra. Convergence of sequences and series, Taylor series and its examples.	<b>3</b>
	<b>Unit-6</b>	<b>8</b>	Laurent series and its examples, absolute and uniform convergence of power series.	<b>2</b>

  
 Head  
 Dept. of Mathematics  
 Gargaon College



# গড়গাঁও মহাবিদ্যালয়

## GARGAON COLLEGE

**GARGAON COLLEGE**

**TEACHING PLAN**

Course: B.A./B. SC.

Session: Odd semester 2023 (July-December)

**Subject:** MATHEMATICS

**Name of the Teacher:** Mr. Harekrishna Mili

**Methods to be applied:** Lecture, analytical and activity method, interaction and discussion.

**Teaching Materials:** White Board, Marker Pen, Duster, Books, Journals, Laptop, Projector, Smart Tv

Paper Code/ Title	Allotted Unit	No. of Classes Required	Details of the topics to be taught	No. of Tutorials
MTHC1: Calculus and Classical Algebra	Unit-3	8	Reduction Formulae of the types $\int \sin^n x dx$ , $\int \cos^n x dx$ , $\int \tan^n x dx$ , $\int (\log x)^n dx$ and $\int \sin^n x \cos^n x dx$ and their derivations. Rectification, volume and surface area of revolution of a curve.	4
MINMTH1: Differential Calculus	Unit-3	10	Tangents and normals, Curvature, Asymptotes, Singular points, Tracing of curves. Parametric representation of curves and tracing of parametric curves, Polar coordinates and tracing of curves in polar coordinates.	6
SEC115: Computer Laboratory-I	Unit-2	10	Parameterizing a curve, arc length, arc length of parametric curves, area of surface of revolution.  <b>List of Practicals</b> 1. Plotting of graphs of function $e^{ax+b}$ , $\log(ax+b)$ , $1/(ax+b)$ , $\sin(ax+b)$ , $\cos(ax+b)$ , $ ax+b $ and to illustrate the effect of a and b on the graph. 2. Plotting the graphs of polynomials of degree 4 and 5, the derivative graph, the second derivative graph and comparing them	4
C5(C3.1): Theory of Real Functions	Unit-1	20	Limits of functions (approach), sequential criterion for limits, divergence criteria. Limit theorems, one sided limits. Infinite limits and limits at infinity. Continuous functions, sequential criterion for continuity and discontinuity. Algebra of continuous functions. Continuous functions on an interval, intermediate value theorem, location of roots theorem, preservation of intervals theorem. Uniform continuity, non-uniform continuity criteria, uniform continuity theorem.	10

GE 3.1: Real Analysis	Unit-1	24	Finite and infinite sets, examples of countable and uncountable sets. Real line, bounded sets, suprema and infima, completeness property of $\mathbb{R}$ , Archimedean property of $\mathbb{R}$ , intervals. Concept of cluster points and statement of Bolzano-Weierstrass theorem.	6
	Unit-2	15	Real Sequence, Bounded sequence, Cauchy convergence criterion for sequences. Cauchy's theorem on limits, order preservation and squeeze theorem, monotone sequences and their convergence (monotone convergence theorem without proof).	5
DSE 1: Analytical Geometry	Unit-1	35	Techniques for sketching parabola, ellipse and hyperbola. Reflection properties of parabola, ellipse and hyperbola. Classification of quadratic equations representing lines, parabola, ellipse and hyperbola.	10
	Unit-2	32	Spheres, Cylindrical surfaces Illustrations of graphing standard quadric surfaces like cone, ellipsoid.	13

  
 Head  
 Dept. of Mathematics  
 Gargaon College



**GARGAON COLLEGE****TEACHING PLAN**

Course: B.A./ BSc.

Session: Even semester 2024 (January-June)

**Subject:** MATHEMATICS**Name of the Teacher:** Mr. Harekrishna Mili**Methods to be applied:** Lecture, activity method, interaction, and discussion.**Teaching Materials:** White Board, Marker Pen, Duster, Books, Journals, Laptop, Projector, Smart Tv

Paper Code/ Title	Allotted Unit	No. of Class Required	Details of the topics to be taught	No. of Tutorials
MTHC2 Real Analysis and Differential Equations	Unit-2	11	Sequences, Bounded sequence, Convergent sequence, Limit of a sequence. Limit Theorems, Monotone Sequences, Monotone Convergence Theorem. Subsequences, Divergence Criteria, Monotone Subsequence Theorem (statement only), Bolzano Weierstrass Theorem for Sequences. Cauchy sequence, Cauchy's Convergence Criterion. Statements of Infinite series, convergence and divergence of infinite series, Cauchy Criterion.	5
MINMTH2 Real Analysis	Unit-2	15	Real Sequence, Bounded sequence, Cauchy convergence criterion for sequences, Cauchy's theorem on limits, order preservation and squeeze theorem, monotone sequences and their convergence (monotone convergence theorem without proof).	5
SEC214 Computer Laboratory-II	Unit-2	6	<b>Unit-2:</b> Drug assimilation into the blood (case of a single cold pill, case of a course of cold pills), limited growth of population, limited growth with harvesting.  <b>List of Practicals</b> 1. Case of single cold pill and a course of coldpills. 2. Limited growth of population (with and without harvesting).	4



	<b>Unit-4</b>	<b>22</b>	<p><b>Unit-4:</b> Plotting recursive sequences, convergence sequences, convergent sub sequences, divergent sequences and infinite series</p> <p><b>List of Practicals</b></p> <ol style="list-style-type: none"> <li>1. Plotting of recursive sequences.</li> <li>2. Study the convergence of sequences through plotting.</li> <li>3. Verify Bolzano-Weierstrass theorem through plotting of sequences and hence identify convergent sub sequences from the plot.</li> <li>4. Study the convergence/divergence of infinite series by plotting their sequences of partial sum.</li> </ol>	<b>8</b>
C10(C4.3) <b>Ring Theory and Linear Algebra I</b>	<b>Unit-1</b>	<b>15</b>	<p><b>Unit-1:</b> Definition and examples of rings, properties of rings, subrings, integral domains and fields, characteristic of a ring. Ideal, ideal generated by a subset of a ring, factor rings, operations on ideals, prime and maximal ideals.</p>	<b>5</b>
	<b>Unit-2</b>	<b>15</b>	<p><b>Unit-2:</b> Ring homomorphisms, properties of ring homomorphisms, Isomorphism theorems I, II and III, field of quotients.</p>	<b>5</b>
GE4.1 <b>Algebra</b>	<b>Unit-3</b>	<b>25</b>	<p>Definition and examples of rings, examples of commutative and non-commutative rings: rings from number systems, <math>Z_n</math> the ring of integers modulo <math>n</math>, ring of real quaternions, rings of matrices, polynomial rings, and rings of continuous functions. Subrings and ideals, Integral domains and fields, examples of fields: <math>Z_p</math>, <math>Q</math>, <math>R</math>, and <math>C</math>. Field of rational functions.</p>	<b>5</b>
DSE3 <b>Discrete Mathematics</b>	<b>Unit-1</b>	<b>25</b>	<p><b>Unit-1:</b> Definition, examples and basic properties of ordered sets, maps between ordered sets, duality principle, lattices as ordered sets, lattices as algebraic structures, sublattices, products and homomorphisms.</p>	<b>5</b>
	<b>Unit-2</b>	<b>22</b>	<p><b>Unit-2:</b> Definition, examples and properties of modular and distributive lattices, Boolean algebras, Boolean polynomials, minimal forms of Boolean polynomials, Quinn- McCluskey method, Karnaugh diagrams, switching circuits and applications of switching circuits.</p>	<b>8</b>

	<b>Unit-3</b>	<b>23</b>	<b>Unit-3:</b> Definitions, examples and basic properties of graph, pseudographs, complete graphs, bipartite graphs, isomorphism of graphs, paths and circuits, Eulerian circuits, Hamiltonian cycles, the adjacency matrix, weighted graph, travelling salesman's problem, shortest path, Dijkstra's algorithm, Floyd-Warshall algorithm	<b>7</b>
--	---------------	-----------	--	----------

*Shreekan*  
Head  
Dept. of Mathematics  
Gargaon College



# গড়গাঁও মহাবিদ্যালয়

## GARGAON COLLEGE

### GARGAON COLLEGE

#### TEACHING PLAN

Course: B.A./B. SC.

Session: Odd semester 2023 (July-December)

**Subject:** MATHEMATICS

**Name of the Teacher:** Ms. Sujata Goala

**Methods to be applied:** Lecture, activity method, interaction, and discussion.

**Teaching Materials:** White Board, Marker Pen, Duster, Books, Journals, Laptop, Projector

Paper Code/ Title	Allotted Unit	No. of Class Required	Detail of the topics to be taught	No. of tutorials
MTHC1 Calculus and Classical Algebra	Unit-4	26	Composite and invertible functions, well ordering property of positive integers, Division algorithm, Divisibility & Euclidean algorithm, Congruence relation between integers, Statement of the Fundamental Theorem of Arithmetic.	4
SEC115 Computer Laboratory-I	Unit-3	10	Techniques of sketching conics, polar equation of conics 1. Sketching parametric curves (E.g., Trochoid, cycloid, epicycloids, hypocycloid). 2. Sketching ellipsoid, hyperboloid of one and two sheets, elliptic cone, elliptic paraboloid, hyperbolic paraboloid using cartesian coordinates.	6
C7(C3.3): PDE and Systems of ODE	Unit-2	8	Classifications of second order linear equations as hyperbolic, parabolic or elliptic. Derivations of Heat equation, Wave equation and Laplace equation and their solutions Reduction of second order Linear Equations to canonical forms.	2
	Unit-3	8	Method of separation of variables, Solving the Vibrating String Problem, Solving the Heat Conduction problem	2
	Practical	24	(i) Solution of Cauchy problem for first order PDE. (ii) Finding the characteristics for the first order PDE	6

			<p>(iii) Plot the integral surfaces of a given first order PDE with initial data.</p> <p>(iv) Solution of the wave equation 678  <math>697 - c &lt; 678</math>  <math>6=7 = 0</math> for the following associated conditions.</p> <p>(a) <math>u(x, 0) = \varphi(x)</math>, <math>u_x(x, 0) = \psi(x)</math>, <math>x \in R</math>, <math>t &gt; 0</math>;  (b) <math>u(x, 0) = \varphi(x)</math>, <math>u_x(x, 0) = \psi(x)</math>, <math>u(0, t) = 0</math>, <math>x \in (0, \infty)</math>, <math>t &gt; 0</math>;  (c) <math>u(x, 0) = \varphi(x)</math>, <math>u_x(x, 0) = \psi(x)</math>, <math>u(0, t) = 0</math>, <math>x \in (0, \infty)</math>, <math>t &gt; 0</math>;  (d) <math>u(x, 0) = \varphi(x)</math>, <math>u_x(x, 0) = \psi(x)</math>, <math>u(0, t) = 0</math>, <math>u(l, t) = 0</math>, <math>0 &lt; x &lt; l</math>, <math>l &gt; 0</math>.</p> <p>(v) Solution of wave equation 68  <math>69 - k &lt; 678</math>  <math>6=7 = 0</math> for the following associate conditions</p> <p>(a) <math>u(x, 0) = \varphi(x)</math>, <math>u(0, t) = a</math>, <math>u(l, t) = b</math>, <math>0 &lt; x &lt; l</math>, <math>t &gt; 0</math>;  (b) <math>u(x, 0) = \varphi(x)</math>, <math>x \in R</math>, <math>T &gt; t &gt; 0</math>;  (c) <math>u(x, 0) = \varphi(x)</math>, <math>u(0, t) = a</math>, <math>x \in (0, \infty)</math>, <math>t \geq 0</math>;</p>	
<b>C12(C5.2): Group Theory II</b>	Unit-3	25	Groups acting on themselves by conjugation, class equation and consequences, conjugacy in $S_n$ , $p$ -groups, Sylow's theorems and consequences, Cauchy's theorem, Simplicity of $A_n$ for $n \geq 5$ , non-simplicity tests.	5
<b>DSE 2 (DSE2.1): Mathematical Modeling</b>	Unit-1	25	Power series solution of a differential equation about an ordinary point, solution about a regular singular point, Bessel's equation and Legendre's equation, Laplace transform and inverse transform, application to initial value problem up to second order.	5
	Unit-2	25	Monte Carlo Simulation Modeling: simulating deterministic behavior (area under a curve, volume under a surface), Generating Random Numbers: middle square method, linear congruence, Queuing Models: harbor system, morning rush hour, Overview of optimization modeling, Linear Programming Model: geometric solution algebraic solution, simplex method, sensitivity analysis	5
	Practical	24	<p>(i) Plotting of Legendre polynomial for <math>n = 1</math> to <math>5</math> in the interval <math>[0,1]</math>. Verifying graphically that all the roots of <math>P_n(x)</math> lie in the interval <math>[0,1]</math>.</p> <p>(ii) Automatic computation of coefficients in the series solution near ordinary points.</p> <p>(iii) Plotting of the Bessel's function of first kind of order <math>0</math> to <math>3</math>.</p> <p>(iv) Automating the Frobenius Series Method.</p> <p>(v) Random number generation and then use it for one of the following (a) Simulate area under a curve (b) Simulate volume under a surface.</p> <p>(vi) Programming of either one of the queuing model (a) Single server queue (e.g. Harbor system) (b) Multiple server queue (e.g. Rushhour).</p> <p>(vii) Programming of the Simplex method for <math>2/3</math> variables.</p>	65
<b>GE 1(1.1): Differential Calculus</b>	Unit 3	26	Rolle's theorem, Mean Value theorems, Taylor's theorem with Lagrange's and Cauchy's forms of remainder,	4

			Taylor's series, Maclaurin's series of $\sin x$ , $\cos x$ , $e^x$ , $\log(1+x)$ , $(1+x)^m$ , Maxima and Minima, Indeterminate forms.	
--	--	--	--	--

*Shreekan*  
Head  
Dept. of Mathematics  
Gargaon College

**GARGAON COLLEGE**  
**TEACHING PLAN**

Course: B.A./ BSc.

Session: Even semester 2024 (January-June)

**Subject:** MATHEMATICS

**Name of the Teacher:** Ms. Sujata Goala

**Methods to be applied:** Lecture, activity method, interaction, and discussion.

**Teaching Materials:** White Board, Marker Pen, Duster, Books, Journals, Laptop, Projector

Paper Code/Title	Allotted Unit/ Topic	No. of Class Required	Detail of the topics to be taught	No. of tutorials
Real Analysis and Differential Equations Course Code: MTHC2	Unit-1	12	Review of Algebraic and Order Properties of $\mathbb{R}$ , - neighborhood of a point in $\mathbb{R}$ , Idea of countable sets, uncountable sets and uncountability of $\mathbb{R}$ . Bounded above sets, Bounded below sets, Bounded Sets, Unbounded sets, Suprema and Infima, The Completeness Property of $\mathbb{R}$ , The Archimedean Property, Density of Rational (and Irrational) numbers in $\mathbb{R}$ , Intervals. Limit points of a set, Isolated points, Illustrations of Bolzano-Weierstrass theorem for sets.	4
Real Analysis Course Code: MINMTH2	Unit-1	10	Finite and infinite sets, examples of countable and uncountable sets, Real line, bounded sets, suprema and infima, completeness property of $\mathbb{R}$ , Archimedean property of $\mathbb{R}$ , intervals. Concept of cluster points and statement of Bolzano-Weierstrass theorem.	2
C4(C2.2): <b>Differential Equations</b>	Unit-4	8	Equilibrium points, Interpretation of the phase plane, predatory-prey model and its analysis, epidemic model of influenza and its analysis, battle model and its analysis.	2
C8(C4.1): <b>Numerical Methods</b>	Practical	26	(i) Calculate the sum $1/1 + 1/2 + 1/3 + 1/4 + \dots + 1/N$ . (ii) To find the absolute value of an integer. (iii) Enter 100 integers into an array and sort them in an ascending order. (iv) Bisection Method. (v) Newton Raphson Method.	4
C9(C4.2): <b>Riemann Integration and Series of Functions</b>	Unit-4	22	Pointwise and uniform convergence of a sequence of functions. Theorems on continuity, derivability, and integrability of the limit function of a sequence of functions. Series of functions; Theorems on the continuity and derivability of the sum function of a series of functions; Cauchy criterion for uniform convergence and Weierstrass M-Test.	3
C13(C6.1): <b>Metric Spaces and Complex Analysis</b>	Unit-2	12	Continuous mappings, sequential criteria, and other characterizations of continuity. Uniform continuity. Homeomorphism, Contraction mappings, compactness Banach Fixed point Theorem. Connectedness, connected subsets of $\mathbb{R}$ .	3

C14(C6.2): <b>Ring Theory and Linear Algebra II</b>	Unit-2	25	Dual spaces, dual basis, double dual, transpose of a linear transformation and its matrix in the dual basis, annihilators, Eigen spaces of a linear operator, diagonalizability, invariant subspaces and Cayley-Hamilton theorem, the minimal polynomial for a linear operator.	5
	Unit-3	25	Inner product spaces and norms, Gram-Schmidt orthogonalisation process, orthogonal complements, Bessel's inequality, the adjoint of a linear operator, Least Squares Approximation, minimal solutions to systems of linear equations, Normal and self-adjoint operators, Orthogonal projections and Spectral theorem.	5
<b>DSE 4.1: Mathematical Methods</b>	Unit-2	16	<b>Laplace Transform:</b> Definition of Laplace transform, Existence theorem for Laplace transform. Linearity property of Laplace transform, Laplace transform of some elementary functions. (algebraic functions, trigonometric functions, exponential functions, hyperbolic functions). First Shifting theorem, Second shifting theorem, Change of scale property, Laplace transform of derivatives, Laplace transform of Integrals.	4
	Unit-3	8	<b>Inverse Laplace Transform:</b> Definition of Inverse Laplace Transform, Linearity property, first and second shifting theorems, change of scale, Convolution theorem.	2
	Unit-5	12	<b>Applications of Fourier and Laplace transform:</b> Solution of Boundary value problems and initial value problems in 1-D and 2-D cases. Solution of Laplace and Poisson equations in 2-D cases.	3

  
 Head  
 Dept. of Mathematics  
 Gargaon College