Department of Mathematics
Maulana Azad College
8, Rafi Ahmed Kidwai Road, Kolkata - 700013

Programme Outcomes (POs) for Mathematics
[Four-Year Honours & Honours with Research] [CCF, 2022]

- **PO-1: Develop disciplinary knowledge and observation skill.**
  This emphasizes building a solid foundation in the subject matter and honing the ability to observe and analyze details within that field.

- **PO-2: Grow analytical and logical thinking ability.**
  This aims to enhance students' critical thinking skills, enabling them to break down complex problems into smaller, manageable parts, and reason logically to arrive at solutions.

- **PO-3: Learn to formulate model from observation of specific real-world problems.**
  This encourages students to apply their knowledge to real-world scenarios, observe and analyze specific problems, and develop models or frameworks to understand and address them.

- **PO-4: Acquired problem-solving skills / Numerical skill.**
  This focuses on equipping students with practical problem-solving strategies and a strong foundation in numerical skills, which are essential in many fields.

- **PO-5: Cultivate computer programming skill and its applications.**
  This emphasizes the importance of developing programming skills and the ability to apply them in various contexts, given the increasing role of technology in today's world.

- **PO-6: Develop innovative thinking and interdisciplinary knowledge.**
  This encourages students to think creatively and come up with novel solutions, while also fostering an understanding of how different disciplines connect and interact.

- **PO-7: Motivate towards higher studies & research.**
  This aims to inspire students to pursue further education and engage in research, contributing to the advancement of knowledge in their field.

- **PO-8: Empower to appear for various competitive examinations.**
  This focuses on preparing students for competitive examinations, such as those for higher education or professional careers, by equipping them with the necessary knowledge and skills.

Programme Specific Outcome (PSO) for Mathematics
[Four-Year Honours & Honours with Research]

- **PSO-1. Foundation of core mathematical concept.**
  The program will provide students with a strong understanding of fundamental mathematical concepts, which include areas like Real Analysis, Complex Analysis, Calculus, Linear algebra, Abstract algebra, Differential equations, Number theory, Probability and statistics, Discrete mathematics.

- **PSO-2. Application of Mathematical tools to solve real-world problems.**
  The students should be able to use mathematical models to analyze and solve problems in various fields like engineering, finance, economics, and data science. They can apply mathematical techniques to real-world data to extract meaningful insights and make informed decisions. They develop and implement algorithms for solving complex problems.

- **PSO-3. Research communication and lifelong learning.**
  The student will develop essential skills for a successful career in mathematics or related fields:
  Research communication: Students should be able to effectively communicate their research findings through presentations, reports, and publications.
  Lifelong learning: Mathematics is a constantly evolving field. Students should be equipped with the skills and motivation to continue learning and adapting to new developments throughout their careers.

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Course Outcomes (COs) of Mathematics Honours under CCF, 2022

Corse Code	Course Name	Course Outcome
MATM-H-CC1-1-TH	**Calculus, Geometry& Vector Analysis**	**On completion of this course, the student will be able to** • **CO-1. Understand Fundamental Concepts** Develop a solid foundation in the principles of calculus, analytical geometry, and vector analysis, including differentiation, integration, and vector operations. • **CO-2. Apply Calculus for solving several problems** Solve real-world problems involving rates of change, optimization, and areas/volumes using techniques of single-variable and multivariable calculus. • **CO-3. Acquired knowledge on Analytical Geometry** Analyze and interpret the properties of lines, planes, and conic sections in two and three dimensions and solve geometric problems in 3D space. • **CO-4. Apply Vector Calculus in various field** Apply concepts of gradient, divergence, and curl to physical and engineering problems, using integral theorems such as Green's, Stokes', and Gauss' theorems. • **CO-5. Solve Interdisciplinary Problems** Utilize mathematical tools from calculus, geometry, and vector analysis to model and solve problems in physics, engineering, and other sciences.
MATH-H-SEC1-1-Th	**C Language with Mathematical Applications**	On completion of this course, the students will acquire knowledge on • **CO-1. Understand the fundamentals of C programming.** Students will comprehend the syntax, semantics, and structure of C programs, including data types, operators, control structures, and basic input/output operations. • **CO-2. Develop algorithms and implement them using functions in C.** Students will design modular programs using user-defined functions, including parameter passing, recursion, and scope of variables. • **CO-3. Implement and manipulate arrays, strings, and pointers.** Students will gain proficiency in working with one-dimensional and multi-dimensional arrays, strings, and pointers, including their applications in memory management and dynamic data structures. • **CO-4. Write programs using control structures and loops in C.** Students will construct programs that utilize if, switch, while, for, and do-while loops to implement decision-making and iterative processes. • **CO-5. Implement programs using arrays and pointers for efficient data handling.** Students will manipulate data using single and multi-dimensional arrays, and apply pointers for dynamic memory allocation and advanced data access techniques. They will design reusable and efficient C programs by defining and invoking functions, including recursive functions for solving problems like factorial calculation or Fibonacci series.
MATH-H-IDC-1-Th	**Mathematics in Daily Life**	On completion of this course, the students will acquire knowledge on • **Understanding and Applying Set Theory**: Students will comprehend fundamental concepts of set theory, including operations on sets, Venn diagrams, and their applications in problem-solving. • **Mastery of Integer Properties and Number Theory**: Students will demonstrate a clear understanding of integers, their properties, divisibility rules, and their role in advanced mathematical computations. • **Logical Reasoning and Mathematical Logic**: Students will develop proficiency in constructing and analyzing logical arguments using propositional and predicate logic, as well as applying these concepts in mathematical proofs. • **Foundations of Operations Research**: Students will acquire basic knowledge of operations research techniques, such as linear programming and optimization, and their applications in decision-making processes. • **Applying Financial Mathematics**: Students will gain the ability to solve problems in financial mathematics, including interest calculations, annuities, and investment analysis.

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Corse Code	Course Name	Course Outcome
MATH-H-MC 1-1-Th (Minor-1)	Calculus, Geometry& Vector Analysis	**On completion of this course, the student will be able to** • **CO-1. Understand Fundamental Concepts** Develop a solid foundation in the principles of calculus, analytical geometry, and vector analysis, including differentiation, integration, and vector operations. • **CO-2. Apply Calculus for solving several problems** Solve real-world problems involving rates of change, optimization, and areas/volumes using techniques of single-variable and multivariable calculus. • **CO-3. Acquired knowledge on Analytical Geometry** Analyze and interpret the properties of lines, planes, and conic sections in two and three dimensions and solve geometric problems in 3D space. • **CO-4. Apply Vector Calculus in various field** Apply concepts of gradient, divergence, and curl to physical and engineering problems, using integral theorems such as Green's, Stokes', and Gauss' theorems. • **CO-5. Solve Interdisciplinary Problems** Utilize mathematical tools from calculus, geometry, and vector analysis to model and solve problems in physics, engineering, and other sciences.
MATM-H-CC2-2-TH	Algebra	**On completion of this course, the student will be able to** • **CO-1. Complex Numbers** Develop proficiency in handling complex numbers and their applications, including De Moivre's theorem and roots of complex equations. This will be foundation of complex analysis. • **CO-2. Theory of Equations** Analyze and solve polynomial equations using techniques like factorization, synthetic division, and fundamental theorems of algebra. • **CO-3. Inequalities** Develop a solid understanding of classical inequalities such as the Cauchy-Schwarz inequality, AM-GM inequality and their applications. • **CO-4. Set theory and Number theory** Develop proficiency in handling relation, mapping, basic concepts of number theory which will foundation of Discrete Mathematics. • **CO-5. Matrix Theory and Applications** Acquired concepts of matrix theory and its application to linear system of equations which will be anintroduction of linear algebra.
MATH-H-SEC2-2-Th	SEC 2.1 : Python Programming and Introduction to Latex	**On completion of this course, the student will be able to** • **Understanding Python Basics**: Students will be able to understand fundamental concepts of Python programming, including syntax, data types, control structures, and functions. • **Problem-Solving with Python**: Students will develop the ability to design and implement Python programs to solve real-world problems using modular and structured approaches. • **Data Handling and Visualization**: Students will acquire skills in handling data using Python libraries such as NumPy and Pandas and creating visualizations using Matplotlib or Seaborn. • **Mastery of LaTeX for Document Preparation**: Students will learn to create professional documents, including technical reports, research papers, and presentations, using LaTeX. • **Integration of Python and LaTeX for Automation**: Students will demonstrate the ability to integrate Python scripts with LaTeX to automate tasks like data visualization in technical documents and reports.

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MATH-H-IDC-2-Th	**Mathematics in Daily Life**	On completion of this course, the students will acquire knowledge on • **Understanding and Applying Set Theory**: Students will comprehend fundamental concepts of set theory, including operations on sets, Venn diagrams, and their applications in problem-solving. • **Mastery of Integer Properties and Number Theory**: Students will demonstrate a clear understanding of integers, their properties, divisibility rules, and their role in advanced mathematical computations. • **Logical Reasoning and Mathematical Logic**: Students will develop proficiency in constructing and analyzing logical arguments using propositional and predicate logic, as well as applying these concepts in mathematical proofs. • **Foundations of Operations Research**: Students will acquire basic knowledge of operations research techniques, such as linear programming and optimization, and their applications in decision-making processes. • **Applying Financial Mathematics**: Students will gain the ability to solve problems in financial mathematics, including interest calculations, annuities, and investment analysis.
MATH-H-MC 2 -2-Th (Minor-2)	**Algebra**	**On completion of this course, the student will be able to** • **CO-1. Complex Numbers** Develop proficiency in handling complex numbers and their applications, including De Moivre's theorem and roots of complex equations. This will be foundation of complex analysis. • **CO-2. Theory of Equations** Analyze and solve polynomial equations using techniques like factorization, synthetic division, and fundamental theorems of algebra. • **CO-3. Inequalities** Develop a solid understanding of classical inequalities such as the Cauchy-Schwarz inequality, AM-GM inequality and their applications. • **CO-4. Set theory and Number theory** Develop proficiency in handling relation, mapping, basic concepts of number theory which will foundation of DiscreteMathematics. • **CO-5. Matrix Theory and Applications** Acquired concepts of matrix theory and its application to linear system of equations which will be anintroduction of linear algebra.
MATM-H-CC3-3-TH	**Real Analysis**	**On completion of this course, the student will be able to** • **CO-1. Understand the Rigorous Foundations of Real Analysis** Develop a deep understanding of the Real number system as a complete ordered field with celebrated Bolzano Weierstrass theorem,open set, closed set and dense set in R. • **CO-2. Learn the concept of sequence & its Convergence.** Develop the concept of sequence, convergence of a sequence and its important theorems. This course will make a foundation of sequence of functions and its convergence. • **CO-3. Learn the Concept of Series of Real Numbers.** Develop the concept of a series as a sequence of partial sum, series of positive terms, series of arbitrary termsand related theorems. This course will make a foundation of series of functions and its convergence. • **CO-4. Learn Problem-Solving Skill and Proof Techniques.** Enhance problem-solving skills by constructing rigorous proofs for theorems in real analysis, sequence and series of real numbers and related results. • **CO-5. Demonstrate Graphically using software.** Develop the concept of plotting of recursive sequence, concept of convergence of sequence and series

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MATM-H-CC4-3-TH	Ordinary Differential Equations-I & Group Theory-I	**On completion of this course, the students will acquire knowledge on** • **CO-1. Formulation and solving first order linear and non-linear ODE.** Students will be able to formulate, classify and solve first-order ordinary differential equations, including separable, linear, and exact equations, and apply them to real-world problems. • **CO-2: Analyze and solve second and higher-order linear & non-linear ODE.** Students will learn to construct solve second and higher-order linear ordinary differential equations with constant coefficients, apply methods like D-operator, undetermined coefficients and variation of parameters, and interpret their solutions • **CO-3. Understanding Group Structures** Develop a foundational understanding of basic concept of group theory with the help of several examples, several properties, concept of sub-groups, center of a group and centralizer of a group. • **CO-4. Symmetries and Permutations** Analyze the role of symmetries in mathematical objects and physical systems using permutation groups and their properties. • **CO-5. Lagrange's Theorem, Fermat's theorem and Its Consequences** Understand and apply the concept of cyclic group, finite group, coset and its applications. Lagrange's theorem to determine the structure and order of subgroups in finite groups. Fermat's theorem.
MATH-H-SEC3-3-TH	**Linear Programming & Rectangular Games**	On completion of this course, the students will acquire • **CO1. Formulate and solve optimization problems using linear programming techniques.** Develop mathematical models for real-life scenarios and solve them using the graphical method, algebraic technique. • **CO2. Analyze the structure and properties of feasible solutions in linear programming.** Understand the concepts of convex sets, basic feasible solutions, and optimality conditions. • **CO3. Apply Linear Programming industrial problem** Skills on the solution of a Linear Programming Problem by Simplex Method. Also acquire knowledge on duality, transportation problem, assignment problem and travelling salesman problem. • **CO4. Understand the fundamentals of game theory to analyze competitive strategies.** Solve problems involving two-person zero-sum games using strategies like saddle points, dominance, graphical and mixed strategies. • **CO5. Integrate linear programming and game theory concepts to solve real-world decision-making problems.** Apply optimization and strategic interaction frameworks to areas such as economics, operations research, and resource allocation.
MATH-H-IDC-3-Th	**Mathematics in Daily Life**	On completion of this course, the students will acquire knowledge on • **Understanding and Applying Set Theory**: Students will comprehend fundamental concepts of set theory, including operations on sets, Venn diagrams, and their applications in problem-solving. • **Mastery of Integer Properties and Number Theory**: Students will demonstrate a clear understanding of integers, their properties, divisibility rules, and their role in advanced mathematical computations. • **Logical Reasoning and Mathematical Logic**: Students will develop proficiency in constructing and analyzing logical arguments using propositional and predicate logic, as well as applying these concepts in mathematical proofs. • **Foundations of Operations Research**: Students will acquire basic knowledge of operations research techniques, such as linear programming and optimization, and their applications in decision-making processes. • **Applying Financial Mathematics**: Students will gain the ability to solve problems in financial mathematics, including interest calculations, annuities, and investment analysis.

Corse Code	Course Name	Course Outcome
MATH-H-MC 1-3-Th **(Minor-1)**	**Calculus, Geometry& Vector Analysis**	**On completion of this course, the student will be able to** • **CO-1. Understand Fundamental Concepts** Develop a solid foundation in the principles of calculus, analytical geometry, and vector analysis, including differentiation, integration, and vector operations. • **CO-2. Apply Calculus for solving several problems** Solve real-world problems involving rates of change, optimization, and areas/volumes using techniques of single-variable and multivariable calculus. • **CO-3. Acquired knowledge on Analytical Geometry** Analyze and interpret the properties of lines, planes, and conic sections in two and three dimensions and solve geometric problems in 3D space. • **CO-4. Apply Vector Calculus in various field** Apply concepts of gradient, divergence, and curl to physical and engineering problems, using integral theorems such as Green's, Stokes', and Gauss' theorems. • **CO-5. Solve Interdisciplinary Problems** Utilize mathematical tools from calculus, geometry, and vector analysis to model and solve problems in physics, engineering, and other sciences.
MATM-H-CC5-4-TH	Theory of real Functions	On completion of this course, the students will acquire knowledge on • **CO-1. Understanding Fundamental Concepts** Demonstrate a rigorous understanding of fundamental concepts in real analysis, including limit, continuity, uniform continuity of a function (ϵ-δ) approach, sequential criterion, properties of continuous and uniform continuous function, related theorems. Types of discontinuity of a function. • **CO-2. Differentiability of Real Functions** Differentiability of a function at appoint. Relation between continuity and differentiability of a function and the concept of maxima and minima of a function in an interval. • **CO-3. Application of Theorems** Formulation and prove key theorems such as the Intermediate Value Theorem, Mean Value Theorem, and their applications. • **CO-4. Problem-Solving Skills** Develop problem-solving skills by applying real analysis techniques to theoretical and applied problems, with an emphasis on constructing rigorous proofs. • **CO-5. Advanced Real Analysis Techniques** Explore and solve problems involving advanced topics such as monotonic functions, inverse functions, and the maxima and minima of a function in an interval and applications towards various problems. This portion plays to key role in the applied sciences, especially on ordinary differential equations, Multivariate Calculus-I .
MATM-H-CC6-4-TH	**Mechanics-I**	On completion of this course, the students will acquire • **CO-1. Understand the fundamental Concept on statics** Knowledge on basic principles Statics related to coplanar forces. **CO-2. Problem Solving Skill** Skill for solving problems on coplanar forces and real-life problems. • **CO-3. Understand Basic Principle on particle dynamics.** Analyze and apply Newton's laws of motion to solve problems involving forces and motion. Examine the concepts of work, energy, and power in mechanical systems. • **CO-4. Concept of conservation laws** Use the principles of conservation of energy and work-energy theorem in solving mechanical problems. knowledge and skill for solving problems on system of many particles, collision of elastic bodies,work-power-energy. • **CO-5. Application on Real world problem.** Knowledge of rectilinear and planar motion of a particle in both cartesian and polar system, simple harmonic motion, central orbit, motion under inverse square law and planetary motion.

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MATM-H-CC7-4-TH	**Partial Differential Equations -I & Multi-variate Calculus – I**	On completion of this course, the students will acquire knowledge on • **CO-1. Formulation and solving first order linear and non-linear ODE.** Students will be able to formulate, classify and solve first-order ordinary differential equations, including separable, linear, and exact equations, and apply them to real-world problems. • **CO-2: Analyze and solve second and higher-order linear & non-linear ODE.** Students will learn to construct solve second and higher-order linear ordinary differential equations with constant coefficients, apply methods like D-operator, undetermined coefficients and variation of parameters, and interpret their solutions. • **CO-3. Understand the concept of R^n and functions of two or more variables.** Students will comprehend the basic structure of R^n, concepts on neighbourhood, interior-point, boundary-point, exterior -point, limit-point, definition, domain, range, and visualization of functions of two or more variables, including surface plots and level curves. • **CO-4. Compute and interpret partial derivatives of functions several variables.** Students will calculate partial derivatives, directional derivative, total derivative, chain rule differentiability and understand their geometric and physical interpretations in terms of rate of change along different directions. • **CO-5: Solve problems related to multiple integrals.** Concept of Double and Triple Integration, Change of variables in Multiple Integration, Integral containing arbitrary parameters.
MATH-H-CC8-4-TH	**Group-Theory-II & Ring Theory-I**	On completion of this course, the students will acquire knowledge on • **CO-1. Understand Fundamental Concepts:** Explain and apply the fundamental concepts of ring theory, such as rings, subrings, ideals, prime ideal, maximal ideals, ring homomorphisms, isomorphism to abstract and concrete mathematical problems. • **CO-2. Analyze Ring Structures:** Analyze the properties of special types of rings, including commutative rings, integral domains, and fields, and their applications in algebra. • **CO-3. Concepts of Groups:** Normal Sub-group, Quotient Group, Homomorphism Normal Sub-Group, **CO-4. Determine Group Applications:** Automorphism, application of Factors Group, External Direct Product, Internal Direct Product, Lagrange's theorem. • **CO-5. Link Abstract Theory with Applications:** Connect the abstract structures of ring theory and Group theory to real-world applications in fields such as cryptography, coding theory, and system design. •
MATH-H-MC 2-4-Th (Minor-2)	**Algebra**	**On completion of this course, the student will be able to** • **CO-1. Complex Numbers** Develop proficiency in handling complex numbers and their applications, including De Moivre's theorem and roots of complex equations. This will be foundation of complex analysis. • **CO-2. Theory of Equations** Analyze and solve polynomial equations using techniques like factorization, synthetic division, and fundamental theorems of algebra. • **CO-3. Inequalities** Develop a solid understanding of classical inequalities such as the Cauchy-Schwarz inequality, AM-GM inequality and their applications. • **CO-4. Set theory and Number theory** Develop proficiency in handling relation, mapping, basic concepts of number theory which will foundation of DiscreteMathematics. • **CO-5. Matrix Theory and Applications** Acquired concepts of matrix theory and its application to linear system of equations which will be anintroduction of linear algebra.

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MATH-H-CC9-5-TH	**Probability & Statistics**	On completion of this course, the students will acquire knowledge • **CO-1. Understand the fundamental concepts of probability & its applications.** Analyze random experiments, probability rules, and conditional probability to solve real-world problems. • **CO-2. Apply discrete and continuous probability distributions.** Use distributions like Binomial, Poisson, Normal, and Exponential to evaluate probabilities and expectations. • **CO-3. Utilize correlation and regression techniques.** Analyze and interpret simple and multiple regression models to predict outcomes and understand associations. • **CO-4. Perform statistical data analysis using descriptive and inferential methods.** Summarize datasets using measures of central tendency and dispersion, and make decisions through hypothesis testing and confidence intervals. • **CO-5. Implement statistical techniques in real-world scenarios.** Solve complex problems involving large datasets using software tools like R, Python, or Excel for statistical analysis.
MATH-H-CC10-5-TH	**Ring Theory-II & Linear Algebra-I**	On completion of this course, the students will acquire • **CO1. Analyze the structure of groups through advanced concepts such as homomorphisms, isomorphisms, and factor groups.** Understand and apply the fundamental theorem of homomorphisms and study group actions on sets. • **CO2. Explore Sylow's theorems and their applications to classify finite groups.** Solve problems involving group decomposition and structure using Sylow's theorems. • **CO3. Understand advanced topics in linear transformations and matrix theory.** Study diagonalization, canonical forms, and the spectral theorem for symmetric matrices. • **CO4. Apply concepts of inner product spaces and orthogonality to solve geometric problems.** Analyze and solve problems involving Gram-Schmidt orthogonalization, projections, and least squares approximations. • **CO5. Integrate concepts from Group Theory and Linear Algebra to solve interdisciplinary mathematical problems.** Explore applications of group representations and eigenvalue analysis in physics, computer science, and engineering.
MATH-H-CC11-5-TH	**Riemann Integration & Series of Functions**	On completion of this course, the students will able to • **CO-1. Understand Fundamental Concepts.** Demonstrate an understanding the concept of the Riemann integration, which is a generalization of definite integration. Concept of negligible set, application. of Lebesgue theorem, **CO-2. Integrability of Real Functions.** Analyze the properties of Riemann integrable functions, including boundedness, partition refinement, properties of integrable function, algebra of integrable function, concept of primitive, celebrated Fundamental theorem of integral calculus. • **CO-3. Improper Integration & the Convergence.** Demonstrate an understand the concept of improper integration and their convergence, beta and Gamma functions and their applications. • **CO-4. Series of Functions & Power Series.** Students will learn the concept of sequence of functions, point of convergence, uniform convergence, power series and the convergence to the limit function and solve problems involving them. • **CO-5. Applications of Riemann Integration and Series of Functions.** Students is used Riemann integration to compute the exact area under a curve or surface, volume of a solid, and also for calculating work and energy. Power series is used to approximate function.

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MATH-H-CC12-5-TH	**Mechanics-II**	On completion of this course, the students will able to • **Analysis of Frictional Forces**: Students will understand the principles of friction, differentiate between static and kinetic friction, and apply them to solve real-world problems involving sliding and rolling motion. • **Application of the Principle of Virtual Work**: Students will demonstrate the ability to analyze mechanical systems using the principle of virtual work to determine equilibrium conditions. • **Understanding Stability of Equilibrium**: Students will distinguish between stable and unstable equilibrium and evaluate the stability of mechanical systems through energy and force-based approaches. • **Solving Problems in Three-Dimensional Force Systems**: Students will analyze and solve problems involving forces and moments in three-dimensional systems using vector mechanics. • **Dynamics of Particles and Rigid Bodies**: Students will apply the principles of dynamics to solve problems related to the motion of particles and rigid bodies, including kinematics, kinetics, and rotational motion.
MATH-H-MC 3-5-Th (Minor-3)	Ordinary Differential Equations-I & Group Theory-I	**On completion of this course, the students will acquire knowledge on** • **CO-1. Formulation and solving first order linear and non-linear ODE.** Students will be able to formulate, classify and solve first-order ordinary differential equations, including separable, linear, and exact equations, and apply them to real-world problems. • **CO-2: Analyze and solve second and higher-order linear & non-linear ODE.** Students will learn to construct solve second and higher-order linear ordinary differential equations with constant coefficients, apply methods like D-operator, undetermined coefficients and variation of parameters, and interpret their solutions • **CO-3. Understanding Group Structures** Develop a foundational understanding of basic concept of group theory with the help of several examples, several properties, concept of sub-groups, center of a group and centralizer of a group. • **CO-4. Symmetries and Permutations** Analyze the role of symmetries in mathematical objects and physical systems using permutation groups and their properties. • **CO-5. Lagrange's Theorem, Fermat's theorem and Its Consequences** Understand and apply the concept of cyclic group, finite group, coset and its applications. Lagrange's theorem to determine the structure and order of subgroups in finite groups. Fermat's theorem.
MATH-H-MC 4-6-Th (Minor-4)	**Mechanics-I**	On completion of this course, the students will acquire • **CO-1. Understand the fundamental Concept on statics** Knowledge on basic principles Statics related to coplanar forces. **CO-2. Problem Solving Skill** Skill for solving problems on coplanar forces and real-life problems. • **CO-3. Understand Basic Principle on particle dynamics.** Analyze and apply Newton's laws of motion to solve problems involving forces and motion. Examine the concepts of work, energy, and power in mechanical systems. • **CO-4. Concept of conservation laws** Use the principles of conservation of energy and work-energy theorem in solving mechanical problems. knowledge and skill for solving problems on system of many particles, collision of elastic bodies,work-power-energy. • **CO-5. Application on Real world problem.** Knowledge of rectilinear and planar motion of a particle in both cartesian and polar system, simple harmonic motion, central orbit, motion under inverse square law and planetary motion.