Department of Mathematics									
1.1.2 Details of courses offered by the institution that focus on employability/ entrepreneurship/ skill development during the year.									
S.No.	**Name of the Course**	**Course Code**	**Em**	**Activities Focusing on Employability**	**En**	**Activities Focusing on Entrepreneurship**	**SD**	**Activities Focusing on Skill Development**	**Outcome**
2023-2024									
1	Core Course I: Algebra and Trigonometry	MU231CC1			☑	Find the inverse of a matrix using Cayley Hamilton theorem	☑	Prepare a chart on Trigonometric formulae	To find expansions of trigonometric functions, solve theoretical and applied problems in the field of mathematics.
2	Core Course II: Differential Calculus	MU231CC2			☑	Create a set of derivative puzzles to deduce the original function based on its higher-order derivatives	☑	Calculate the curvature at different points using the formula for curvature	To know the notions of curvature, evolutes, involutes and polar co-ordinates and solving related problems.
3	Elective Course I: Algebra and Differential Equations	MU231EC1			☑	Solve the differential equation of the form Pp+Qq =R	☑	Find the roots of higher order equations using Newton's and Horner's method	To understand the basic ideas on the theory of equations, Matrices and find expansions of trigonometry functions.
4	Non Major Elective NME I: Mathematics for Competitive Examinations- I	MU231NM1	☑	Online Math Quizzes, solve questions based on competitive examinations	☑	Online Math Quizzes	☑	Solve questions based on competitive examinations	To acquire skill in solving quantitative aptitude.
5	Foundation Course: Bridge Mathematics	MU231FC1			☑	llustrate the idea of permutations	☑	Find the differentiation of simple function using uv rule, u/v rule	To bridge the gap and facilitate transition from higher secondary to tertiary education.
6	Core Course III: Coordinate and Spatial Geometry	MU232CC1			☑	Group discussion of real life application on conics	☑	Brain storming question on Polar Coordinates	To analyze characteristics and properties of two and three dimensional geometric shapes and develop mathematical arguments about geometric relationships.
7	Core Course IV: Integral Calculus	MU232CC2			☑	Evaluate the value of double and triple integrals	☑	List out the properties of beta and gamma functions,	To get knowledge on integration and its geometrical applications, double, triple integrals and improper integrals.
8	Elective Course II: Vector Calculus and Fourier Series	MU232EC1			☑	Find out the value of double and triple integrals	☑	Discussion on beta and gamma functions	To understand the concepts of vector differentiation and vector integration.
9	Non-major Elective NME II: Mathematics For Competitive Examinations- II	MU232NM1	☑	Online Math Quizzes	☑	Solve questions based on competitive examinations	☑	Solve puzzle on Time and Distance	To acquire skill in solving quantitative aptitude.
10	Skill Enhancement Course SEC I: Introduction to Computational Mathematics	MU232SE1			☑	Calculate errors in numerical calculation using computer and numerical software	☑	Solve problems using programs	To study and design mathematical models for the numerical solution of scientific problems.
11	Major Core III: Differential Equations and Vector Calculus	MC2031	☑	Poster Presentation of Laplace transform	☑	Calculate the area of geometric models	☑	Determine the solutions of differential equation using Laplace transform	To gain deeper knowledge in differential equations, differentiation and integration of vector functions.
12	Major Core IV: Real Analysis I	MC2032	☑	Explaining the construction of principle of Mathematical Induction, Concept explanation of different properties of convergence sequence			☑	Peer teaching in identifying convergent series Poster Presentation on series, Online quiz on sequences, Assisgnment viva on sequences	To introduce the primary concepts of sequences and series of real numbers and to develop problem solving skills.
13	Allied III: Probability Theory and Distributions	MA2031	☑	Maths dice games	☑	Differentiate between binomial, poisson and normal distribution	☑	Identify the possibilities of accidients occurring in everyday life per hour	To impart knowledge on the basic concepts of Probability theory and Probability distributions and to apply the theory in real life situations.
14	Self-Learning Course: Discrete Mathematics I	MC20S1					☑		To develop the interest of self learning in subject oriented courses.
15	Major Core V: Groups and Rings	MC2041	☑	Poster presentation on Groups, Role play on Rings, Online quiz on Groups			☑	Exhibition on Application of Group theory, Assignment on finding all groups of order less than 8, Math group relay	To introduce the concepts of Group theory and Ring theory and gain more knowledge essential for higher studies in Abstract Algebra.
16	Major Core VI: Analytical Geometry of 3 Dimensions	MC2042	☑	Model making on 3D shapes			☑	Assignment on finding applications in deciding the shapes and their sizes while constructing a building	To gain deeper knowledge in three dimensional Analytical Geometry 2D and to develop creative thinking, innovation and synthesis of information.
17	Allied IV: Applied Statistics	MA2041	☑	To collect the primary data of the census to track population size			☑	To use hypothesis testing to predict the outcome of the semester examinations	To acquire the knowledge of correlation theory and testing hypothesis and to solve problems.
18	Self-Learning Course: Discrete Mathematics II	MC20S2					☑		To develop the interest of self learning in subject oriented courses.

19	Major Core VII: Linear Algebra	MC2051	☑	Chart work on properties of eigen values, Determine rank and nullity of given transformation			☑	Find the inverse of a matrix by using Cayley-Hamilton theorem	To introduce the algebraic system of Vector Spaces, inner product spaces and to use the related study in various physical applications.
20	Major Core VIII: Real Analysis - II	MC2052	☑	Math Relay Races on Analysis, Jigsaw method on metric spaces			☑	Poster presentation on Applications of Analysis, Quiz- to solve SET questions	To introduce Metric Spaces and the concepts of completeness, continuity, connectedness and compactness and to use these concepts in higher studies.
21	Major Core IX: Compter Oriented Numerical Methods	MC2053			☑	Create programs to solve differntiation an integration	☑	Group Discussion in Newton cote's quadrature formula and Trapezoidal rule	To provide suitable and effective numerical methods, for computing approximate numerical values of certain raw data and to lay foundation of programming techniques to solve mathematical problems.
22	Major - Project	MC2054					☑	Literature survey, New findings	To develop the attitude of studying a topic in depth independently.
23	Elective I: a) Graph Theory	MC2055	☑	Model making on applications of graph theory			☑	Determine the dominating set of a graph	To introduce graphs and the concepts of connectedness, matchings, planarity and domination and to apply these concepts in research.
24	Elective I: b) Fuzzy Mathematics	MC2056	☑				☑		To understand Fuzzy concepts of sets and operations and apply the concepts in image processing, machine learning and artificial intelligence.
25	Elective I: c) Object Oriented Programming with C++	MC2057	☑		☑		☑		To learn and write programmes in C++ Language and to enhance job opportunities.
26	Major Core X: Complex Analysis	MC2061	☑	Math Scavenger Hunt on Cauchy's and Cauchy's Residue Theorem, Creative proof writing on Cauchy's Theorem and Singularities			☑	Problem Solving on Finite Integral, Finding bilinear transformation of given spaces, Identify the bilinear transformations in our real life.	To introduce the basic concepts of differentiation and integration of Complex functions and apply the related concepts in higher studies.
27	Major Core XI: Mechanics	MC2062					☑	Presentation on applications of Mechanics in day to day life,	To visualize the application of Mathematics in Physical Sciences and develop the capacity to predict the effects of force and motion.
28	Major Core XII: Number Theory	MC2063	☑	Find the gcd of 3 numbers using Euclidean algorithm			☑	Solving exercise problems	To apply the fundamental principles and concepts in Number Theory in other branches of Mathematics.
29	Major Core XIII: Linear Programming	MC2064	☑	Problem Solving on Dual Simplex			☑	Jigsaw Method on Graphical and Simplex method	To formulate real life problems into mathematical problems and solve decision making problems by optimizing the objective function.
30	Elective II: a) Astronomy	MC2065	☑	Calculate the motion of two particles relative to the common mass Centre			☑	Finding the Parsec	To introduce space science, familiarize the important features of the planets, sun, moon and stellar universe, predict lunar and solar eclipses and study the seasonal changes.
31	Elective II: b)Boolean Algebra	MC2066	☑				☑		To introduce the algebraic structures like lattices and Boolean algebra and apply these concepts in various branches of Mathematics.
32	Elective II: c) Web Designing with HTML	MC2067	☑		☑		☑		To understand the importance of the web as a medium of communication and to create an effective web page with graphic design principles.
33	Skill Enhancement Course: Mathematics for Competitive Examinations	SEM203	☑	Solving exercise problems	☑	Solve puzzle on Profit and Loss	☑	Solve questions based on competitive examinations	To develop the quantitative aptitude of the students and solve problems needed for various competitive examinations.
34	Core Course I: Algebraic Structures	MP231CC1	☑	Group Discussion on pigeon hole principle			☑	Solve SET/ NET questions	To develop working knowledge on class equation, solvability of groups and to understand the concepts of finite abelian groups, linear transformations, real quadratic forms.
35	Core Course II: Real Analysis I	MP231CC2	☑	Discussion on SET/ NET questions			☑	Exploring the convergence with infinite series	To understand the concepts of functions of bounded variation, Riemann-Stieltjes Integration, convergence of infinite series, infinite product and uniform convergence.

36	Core Course III: Ordinary Differential Equations	MP231CC3	☑	Finding the solutions of homogeneous equations			☑	Finding the solutions of homogeneous equations	To find solutions to linear differential equations with constant and variable coefficients and also with singular points.
37	Elective Course I: a) Number theory and Cryptography	MP231EC1	☑	Thought share on security and applications of elliptic curve cryptography			☑	Debate on advantages and disadvantages of Cryptography	To gain deep knowledge about Number theory and know the concepts of Cryptography.
38	Elective Course I: b) Graph Theory and Applications	MP231EC2	☑				☑		To help students to understand various parameters of Graph Theory with applications and to stimulate the analytical mind of the students.
39	Elective Course I: c) Programming in C++	MP231EC3	☑		☑		☑		To apply mathematical concepts in programming and create programs and applications.
40	Elective Course II: a) Discrete Mathematics	MP231EC4	☑	Demonstration with dice to explain permutations and combinations problems	☑	Demonstration by using a model to explain the Tower of Hanoi problem	☑	Demonstration with dice to explain permutations and combinations problems, Demonstration by using a model to explain the Tower of Hanoi problem, Assignment on the Applications of Boolean Algebra	To learn the concepts of Permutations, Combinations, Boolean Algebra and Lattices.
41	Elective Course II: b) Analytic Number Theory	MP231EC5					☑		inter relationship between various arithmetical functions and understand some equivalent forms of the prime number theorem.
42	Elective Course II: c) Fuzzy Sets and their Applications	MP231EC6					☑		To study about Fuzzy sets and their relations, Fuzzy graphs, Fuzzy Relations.
43	Core Course IV: Advanced Algebra	MP232CC1	☑	Proof writing practice on finite fields, Proof creating practice on a theorem in Finite fields			☑	Group Discussion on Extension Fields, Group Presentation on extension fields	To study field extension, roots of polynomials, Galois Theory, finite fields, division rings, solvability by radicals and develop computational skill in abstract algebra.
44	Core Course V: Real Analysis II	MP232CC2	☑	Online Quiz on Riemann and Lebesgue Integrals			☑	Seminar on Measurable sets and Measurable functions	To introduce measure on the real line, Lebesgue measurability and integrability, Fourier Series and Integrals.
45	Core Course VI: Partial Differential Equations	MP232CC3	☑	Quest fest on Non linear PDE of order one			☑	Quest fest on Non linear PDE of order one	To formulate and solve different forms of partial differential equations.
46	Elective Course III: a) Mathematical Statistics	MP232EC1	☑	Identify suitable distributions to solve problems			☑	Presentation on Applications of several tests in statistics	To enhance knowledge in mathematical statistics and acquire basic knowledge about various distributions.
47	Elective Course III: b) Statistical Data Analysis using R Programming	MP232EC2	☑				☑		To equip individuals with the skills to proficiently analyze data, employ statistical methods, and utilize R programming for effective data interpretation and decision-making in various fields.
48	Elective Course III: c) Programming in C++ Practical	MP232EC3	☑		☑		☑		To introduce a higher level language C++ for hands-on experience on computers and adhere to best practices and coding standards in C++ programming.
49	Elective Course IV: a) Operations Modeling	MP232EC4	☑	Presentation on Inventory Model			☑	Math Contest on Queuing Theory	To analyze different situations in the industrial/ business scenario involving limited resources and to finding the optimal solution within constraints.
50	Elective Course IV: b) Mathematical Python	MP232EC5	☑		☑		☑		To familiarize the students with Python programing for Mathematics and train them to develop programs and create functions for Mathematics in Python.
51	Elective Course IV: c) Neural Networks	MP232EC6					☑		To know the main fundamental principles and techniques of neural network systems and investigate the principal neural network models and applications.
52	Skill Enhancement I – Modeling and Simulation with Excel	MP232SE1	☑	Assignment on some frequently used charts			☑	Hands - on training on Data Analysis	To know about modifying a spreadsheet and workbook and to understand the concept of data analysis tools and data analysis for two data sets.
53	Core IX: Field Theory and Lattices	PM2031	☑	Peer Discussion on Galois theory, Solving NET, SET Questions			☑	Seminar Presentation on Extension fields,	To learn in depth the concepts of Field Theory, Galois Theory and Lattices.

54	Core X: Topology	PM2032	☑	Construct mind map on compactness, Concept explanation of separation axioms			☑	Role play on basics of a Topology, Presentation on complete metric spaces, Seminar on limit point, online quiz on compact spaces	To distinguish spaces by means of simple topological invariants and lay the foundation for higher studies in Geometry and Algebraic Topology.
55	Core XI: Measure Theory and Integration	PM2033	☑	Cite examples of measurable sets and measurable functions			☑	Concept explanation of Vitali Covering Lemma	To generalize the concept of integration using measures and develop the concept of analysis in abstract situations.
56	Elective III: a) Algebraic Number Theory and Cryptography	PM2034	☑	Discuss the similarities between RSA and discrete logarithm-based encryption methods			☑	Discuss the differences between RSA and discrete logarithm-based encryption methods	To gain deep knowledge about Number theory and Cryptography.
57	Elective III: b) Stochastic Process	PM2035	☑				☑		To understand the stochastic models and relate the models studied to real life probabilistic situations.
58	Major: Project	PM20PR					☑	Literature survey, New findings	To develop the attitude of studying a topic in depth independently.
59	Self Learning Course: Algebra for SET/CSIR-NET Exam	PM20S1	☑		☑		☑		To enhance problem solving skills and to enable the students to clear the CSIR - NET/SET Exams.
60	Core XII: Complex Analysis	PM2041	☑	MCQ Questions on Singularites, Mind Mapping on Infinite Series, Solving finite integral using Cauchy's Integral Formula			☑	Determining the residue of given functions, Creative proof writing on Cauchy's Theorem	To impart knowledge on complex functions and to facilitate the study of advanced mathematics.
61	Core XIII: Functional Analysis	PM2042	☑	Concept explanation of the adjoint of an operator, Assignment on Normal and Unitary operators			☑	Concept mapping of Banach Spaces, Real Time reactions on Hilbert Spaces	To study the three structure theorems of Functional Analysis and introduce Hilber Spaces and Operator theory.
62	Core XIV:Operations Research	PM2043	☑	Assignment on capital Budgeting Problem, Find optimal solutions			☑	Assign students roles as customers and suppliers, Conduct mock interactions where students negotiate order quantities and lead times to minimize costs	To learn optimizing objective functions and solve decision making problems.
63	Core XV: Algorithmic Graph Theory	PM2044					☑	Finding shortest path in directed graphs using Floyd-Warshall Algorithms, Develop algorithms for finding minimum spanning tree of some specific graphs, Dijkstra's Algorithm Race	To instill knowledge about algorithms and write innovative algorithms for graph theoretical problems.
64	Elective IV : a) Combinatorics	PM1745	☑	Assignment on Weights and Inventories of functions			☑	Demonstration of Hanoi Tower Problem using a model	To do an advanced study of permutations and combinations and solve related problems.
65	Elective IV : b)Coding Theory	PM1746	☑				☑		To learn the different procedures of coding and decoding.
66	Self Learning Course: Analysis for SET/CSIR-NET Exam	PM20S2	☑		☑		☑		To enhance problem solving skills and to enable the students to clear the CSIR-NET/SET Exams.
2022-2023									
67	Major Core I: Differential Calculus and Trigonometry	MC2011			☑	Sketch the tangent lines of different functions, Trigonometric Formulas flow chart	☑	Solving exercise problems	To impart knowledge on Differential Calculus and Trigonometry and enhance problem solving skills.
68	Allied I: Algebra and Calculus	MA2011			☑	Concept Mapping on Matrices, Solve Problems on Beta and Gamma Functions, Finding the transformation of equations using wave and mobile signals	☑	Provide a set of polynomial equations and ask students to find roots using Horner's method, Divide into pair and discuss the approaches of transformation of equations	To impart knowledge in concepts related to Algebra and solve problems in Physical Science.
69	Non Major Elective Course (NME): Quantitative Aptitude I	MNM201	☑	Solve problems based on partnership	☑	Solve problems based on competitve examinations	☑	Prepare MCQ and its solutions	To develop the quantitative aptitude of the students and solve problems required for various competitive examinations.

70	Major Core II: Classical Algebra and Integral Calculus	MC2021			☑	Create differentiation and integration formulae chart	☑	Solving exercise problems	To give a sound knowledge in Classical Algebra and solve problems in applications of Integral Calculus.
71	Allied II: Vector Calculus and Differential Equations	MA2021			☑	Solving exercise problems	☑	Finding area of the classroom using surface integral	To introduce the concept of vector operators and to impart the mathematical knowledge essential for solving problems in Physical Science.
72	Non Major Elective Course (NME): Quantitative Aptitude II	MNM202	☑	Prepare MCQ and its solutions	☑	Create MCQ and its solutions	☑	Solve problems based on competitve examinations	To develop the quantitative aptitude of the students and solve problems required for various competitive examinations.
73	Major Core III: Differential Equations and Vector Calculus	MC2031	☑	Calculate the area of geometric models	☑	Evaluate line and surface integrals using Green's theorem, Stoke's theorem, and Gauss divergence theorem	☑	Solving exercise problems	To gain deeper knowledge in differential equations, differentiation and integration of vector functions.
74	Major Core IV: Real Analysis I	MC2032	☑	Inter-class Quiz on Sequences and Series, Inter-department Quiz, Solving NET, SET Questions on Sequences and Series, Identify the properties of Real numbers			☑	Cite examples of convergence sequence	To introduce the primary concepts of sequences and series of real numbers and develop problem solving skills.
75	Allied III: Probability Theory and Distributions	MA2031	☑	Quiz on Probability and Random Variables, Converting real life problems into mathematical models and solving it using distributions	☑	Converting real life problems into mathematically using probabilty and solving it using distributions, Rolling Dice, Flipping Coins and Playing Cards to demonstrate the problems, Distinguish Binomial, Poisson and Normal Distributions, Draw a normal curve for the given data and to solve by area method	☑	Presentation on distributions and its applications	To impart knowledge on the basic concepts of Probability theory and Probability distributions and to apply the theory in real life situations.
76	Self-Learning Course: Discrete Mathematics I	MC20S1					☑		To develop the interest of self learning in subject oriented courses.
77	Major Core V: Groups and Rings	MC2041	☑	Inter-class Quiz on Groups and Rings, Inter-department Quiz, Solve NET, SET Questions			☑	Find the properties of a group with finite elements	To introduce the concepts of Group theory and Ring theory and gain more knowledge essential for higher studies in Abstract Algebra.
78	Major Core VI: Analytical Geometry of 3 Dimensions	MC2042	☑	Model Making on 3D shapes and its applications, Presentation on the concepts through model, Quiz on Discrete and Continous Randaom Variable			☑	Find angle between two lines and planes, Assignment on apply the properties of plane, sphere in real life object	To gain deeper knowledge in three dimensional Analytical Geometry 2D and to develop creative thinking, innovation and synthesis of information.
79	Allied IV: Applied Statistics	MA2041	☑	Converting real life problems into mathematical models and solving it using test of hypothesis			☑	Use hypothesis testing in election polling	To acquire the knowledge of correlation theory and testing hypothesis and to solve problems.
80	Self-Learning Course: Discrete Mathematics II	MC20S2					☑		To develop the interest of self learning in subject oriented courses.
81	Major Core VII: Linear Algebra	MC2051	☑	Inter-class Quiz on Vector Space and Linear Transformations, Inter-department Quiz			☑	Find the set of all unit vectors in V3(R) with standard form, Convert the linear transformation into matrix and vice versa, Solve SET/NET questions	To introduce the algebraic system of Vector Spaces, inner product spaces and use the related study in various physical applications.
82	Major Core VIII: Real Analysis - II	MC2052	☑	Find continuous and uniformly continuous functions from R to R			☑	Constructing a bounded metric space from the given metric space, Inter-class Quiz on Metric	To introduce Metric Spaces and the concepts of completeness, continuity, connectedness and compactness and use these concepts in higher studies.
83	Major Core IX: Computer Oriented Numerical Methods	MC2053			☑	Solve Numerical problems using C program, Group Discussion on Trapezoidal, Simpson's (1/3)rd rule	☑	Group Discussion onPicard's method and their uses	To provide suitable and effective numerical methods, for computing approximate numerical values of certain raw data and to lay foundation of programming techniques to solve mathematical problems.

84	Major - Project	MC2054					☑	Literature survey, New findings	To develop the attitude of studying a topic in depth independently.
85	Elective I: a) Graph Theory	MC2055	☑	Model Making on Applications of Graph Theory, Seminar Presentation on how to detemine the domination number of a graph			☑	Deliver a lecture on different types of domination in graph, find the domination number of a given graph, draw the planar graph, Identify the graphs which are eulerian and hamiltonian, Illustrate the isomorphism graphs with n vertices, determine the connectivity and coloring of a given graph	To introduce graphs and the concepts of connectedness, matchings, planarity and domination and to apply these concepts in research.
86	Elective I: b) Fuzzy Mathematics	MC2056	☑				☑		To understand Fuzzy concepts of sets and operations and apply the concepts in image processing, machine learning and artificial intelligence.
87	Elective I: c) Object Oriented Programming with C++	MC2057	☑		☑		☑		To learn and write programmes in C++ Language and to enhance job opportunities.
88	Major Core X: Complex Analysis	MC2061	☑	Determine the residue of given functions, Inter-class Quiz on Cauchys theorem, Cauchy's Integral formula and Cauchy's Residue theorem, Solving NET, SET questions			☑	Concept explanation of Complex integration, Find the bilinear transformation of given spaces, Evaluate the value of finite integral using Cauchy's Residue Theorem	To introduce the basic concepts of differentiation and integration of Complex functions and apply the related concepts in higher studies.
89	Major Core XI: Mechanics	MC2062					☑	Group discussion on Forces, Presentation on Equilibrium	To visualize the application of Mathematics in Physical Sciences and develop the capacity to predict the effects of force and motion.
90	Major Core XII: Number Theory	MC2063	☑	Solve problems on Divisibility of Algorithms, Solving exercise problems, Play with numbers			☑	Build up the basic theory of the integers from a list of Axioms, Solve puzzle questions	To apply the fundamental principles and concepts in Number Theory in other branches of Mathematics.
91	Major Core XIII: Linear Programming	MC2064	☑	Develop a flow chart on Transportation problem			☑	Solve the real life situation using assignment problems	To formulate real life problems into mathematical problems and solve decision making problems by optimizing the objective function.
92	Elective II: a) Astronomy	MC2065	☑	Industrial Visit, Find the terrestial latitude and longitude of a particular place			☑	Calculate the motion of two particles relative to the common mass Centre	To introduce space science, familiarize the important features of the planets, sun, moon and stellar universe, predict lunar and solar eclipses and study the seasonal changes.
93	Elective II: b) Boolean Algebra	MC2066	☑				☑		To introduce the algebraic structures like lattices and Boolean algebra.
94	Elective II: c) Web Designing with HTML	MC2067	☑		☑		☑		To understand the importance of the web as a medium of communication and to create an effective web page with graphic design principles.
95	Skill Enhancement Course: Mathematics for Competitive Examinations	SEM203	☑	Problem Solving on TNPSC exam questions	☑	Group Discussion on problems on ages	☑	Problem Solving on Time and Work	To develop the quantitative aptitude of the students and solve problems needed for various competitive examinations.
96	Core I: Algebra I	PM2011	☑	Presentation on Finite Abelian Groups, Quiz on Automorphism			☑	Solve NET and SET questions, Determine number of homomorphism between two groups and rings, Proof writing - isomorphism between two groups	To study abstract Algebraic systems and know the richness of higher Mathematics in advanced application systems.
97	Core II: Analysis I	PM2012	☑	Provide set of spaces - determine which of the spaces are connected, compact, Check the continuity, uniform continuity between two spaces			☑	Prepare a note on the bacground of few named theorems exist in analysis, Solve NET and SET questions	To understand the basic concepts of analysis and formulate a strong foundation for future studies.
98	Core III: Probability and Statistics	PM2013	☑	Model Making on Distributions, Presentation on Central Limit Theorem			☑	Inter class Quiz on Distributions, Analyzing the applications of various distributions	To upgrade the knowledge in Probability theory and solve NET / SET related Statistical problems.
99	Core IV: Ordinary Differential Equations	PM2014	☑	Find regular singular points			☑	Determine the solutions of differential equations	To study mathematical methods for solving differential equations.

100	Elective I: a) Numerical Analysis	PM2015					☑	Provide students with differential equations and guide them through solving them using the Runge-Kutta method of different orders, Compare the accuracy of solutions, Identify the suitable method to solve the problem	To study the various behaviour pattern of numbers and various techniques of solving applied scientific problems.
101	Elective I: b) Fuzzy Sets and Fuzzy Logic	PM2016					☑		To understand Fuzzy logic and apply Fuzzy concepts in other branches of Mathematics.
102	Core V: Modules and Vector Spaces	PM2021	☑	Problem solving in Linear Transformations by applying the theorems and definitions			☑	Develop proof for certain theorems which contain the concepts Linear independence, Linear dependence, Basis and Dimension, Group discussion on NET/ SET exam questions	To understand the concept of Modules and the advanced forms of Matrices related to Linear Transformations.
103	Core VI: Analysis II	PM2022	☑	Group Discussion on Stone Wierstrass theorem, Presentation on The Riemann Stieltjes integrals, Quiz on Sequences and series of functions, Solve SET and NET Questions			☑	NET/SET Questions discussions, Flow chart on Riemann Stieltjes integrals	To make the students understand the advanced concepts of Analysis.
104	Core VII: Partial Differential Equations	PM2023	☑	Solve problems on Non linear partial differential equations of order one, Determine the complete and particular integral for the given PDE			☑	Apply the concepts and methods in physical processes like heat transfer and electrostatics, Solve SET/NET questions	To formulate and solve different forms of partial differential equations and solve the related problems.
105	Core VIII: Graph Theory	PM2024	☑	Model Making on Applications of Graph Theory, Presentation on domination, Creative proof writing, Determine the decompostion of given graph			☑	Create a model on use of digraphs, Presentation on explain the concepts via real life examples	To introduce the important notions of graph theory and develop the skill of solving application oriented problems.
106	Elective II: a) Classical Dynamics	PM2025					☑	Evaluate the system of particles by deriving the Jacobi equation and Jacobi's theorem, Read Research Papers	To gain deep insight into the concepts of dynamics.
107	Elective II: b) Differential Geometry	PM2026					☑		To study coordinate free geometry and apply the theory in Tensors and theory of relativity.
108	Core IX: Field Theory and Lattices	PM2031	☑	Group Discussion on NET, SET Questions, Find the extension fields of roots of polynomial			☑	Solve SET/NET questions, Idenify the roots of given polynomial	To learn in depth the concepts of Field Theory, Galois Theory and Lattices.
109	Core X: Topology	PM2032	☑	Find the extension space using the given space, Quiz on Connected and Compact Space, Solve SET, NET Questions			☑	Construct different topologies on the same set, Construct mathematical proof of results on continuous functions, Presentation on extension space	To distinguish spaces by means of simple topological invariants and lay the foundation for higher studies in Geometry and Algebraic Topology.
110	Core XI: Measure Theory and Integration	PM2033	☑	Construct Lp spaces and outer measurable sets, Presentation on measurable functions			☑	Concept explanation of Lebesgue Convergence theorem	To generalize the concept of integration using measures and develop the concept of analysis in abstract situations.
111	Elective III: a) Algebraic Number Theory and Cryptography	PM2034	☑	Create a game where students need to encrypt and decrypt messages using elliptic curve cryptography			☑	Concept explanation of Public Key cryptography	To gain deep knowledge about Number theory and Cryptography.
112	Elective III: b) Stochastic Process	PM2035	☑				☑		To understand the stochastic models and relate the models studied to real life probabilistic situations.

113	Major - Project	PM20PR					☑	Literature survey, New findings	To develop the attitude of studying a topic in depth independently.
114	Self Learning Course: Algebra for SET/CSIR-NET Exam	PM20S1	☑		☑		☑		To enhance problem solving skills and to enable the students to clear the CSIR - NET/SET Exams.
115	Core XII: Complex Analysis	PM2041	☑	Problem Solving session on finding the value of finite integral using Cauchy's Residue Theorem			☑	Concept explanation of Complex integration, Find the bilinear transformation of given spaces, Determining the residue of given functions	To impart knowledge on complex functions and to facilitate the study of advanced mathematics.
116	Core XIII: Functional Analysis	PM2042	☑	Quiz on Banach spaces, Group Discussion on Hahn Banach Theorem, Solve SET/ NET questions			☑	Concept explanation of the adjoint of an operator, Assignment on Normal and Unitary operators	To study the three structure theorems of Functional Analysis and introduce Hilber Spaces and Operator theory.
117	Core XIV: Operations Research	PM2043	☑	Group Discussion on Queueing Models of Types, Solve Problems on Construction of the time chart, Assignment on capital Budgeting Problem			☑	Assign students roles as customers and suppliers, Conduct mock interactions where students negotiate order quantities and lead times to minimize costs	To learn optimizing objective functions and solve decision making problems.
118	Core XV: Algorithmic Graph Theory	PM2044					☑	Find the shortest path in directed graphs using Floyd-Warshall Algorithms, Develop algorithms for finding minimum spanning tree of some specific graphs	To instill knowledge about algorithms and write innovative algorithms for graph theoretical problems.
119	Elective IV : a) Combinatorics	PM2045	☑	Demonstration with Chessboard to learn about Rook polynomials			☑	Demonstration with dice to explain permutations and combinations problems	To do an advanced study of permutations and combinations and solve related problems.
120	Elective IV : b)Coding Theory	PM2046	☑				☑		To learn the different procedures of coding and decoding.
121	Self Learning Course: Analysis for SET/CSIR-NET Exam	PM20S2	☑		☑		☑		To enhance problem solving skills and to enable the students to clear the CSIR-NET/SET Exams.
2021-2022									
122	Major Core I: Differential Calculus and Trigonometry	MC2011			☑	Find the radius and centre of curvature, Differentiation between Hyberpola and Asymptotes, Solving exercise problems	☑	Find their logarithms of different complex numbers	To impart knowledge on Differential Calculus and Trigonometry and enhance problem solving skills.
123	Allied I: Algebra and Calculus	MA2011			☑	Flow chart on different types of matrix and their properties, Solving exercise problems	☑	Compute the inverses of a matrix using Cayley-Hamilton theorem	To impart knowledge in concepts related to Algebra and solve problems in Physical Science.
124	Non Major Elective Course (NME): Quantitative Aptitude I	MNM201	☑	Solve problems based on Ratio and Proportion	☑	Solve problems based on Profit and Loss	☑	Solve problems based on Percentage	To develop the quantitative aptitude of the students and solve problems required for various competitive examinations.
125	Major Core II: Classical Algebra and Integral Calculus	MC2021			☑	Determine the roots of given polynomial, Construct the polynomial by given roots, Solving exercise problems	☑	Calculating area of the classroom using integrations	To give a sound knowledge in Classical Algebra and solve problems in applications of Integral Calculus.
126	Allied II: Vector Calculus and Differential Equations	MA2021			☑	Playing Integration relay	☑	Solving exercise problems	To introduce the concept of vector operators and to impart the mathematical knowledge essential for solving problems in Physical Science.
127	Non Major Elective Course (NME): Quantitative Aptitude - II	MNM202	☑	Solve problems based on Compound Interest	☑	Solve problems based on Lograthims	☑	Solve problems based on Area	To develop the quantitative aptitude of the students and solve problems required for various competitive examinations.
128	Major Core III: Differential Equations and Vector Calculus	MC2031	☑	Formation of Linear Differential Equations, Solving exercise problems	☑	Determine the solutions of linear differential equations	☑	Find the solution of linear differential equations using Laplace transform	To gain deeper knowledge in differential equations, differentiation and integration of vector functions.

129	Major Core IV: Real Analysis I	MC2032	☑	Apply mathematical induction and writing the proof of simple statements, Solve SET questions			☑	Find the limit of the sequence, Determine the convergence and divergence of sequences and series	To introduce the primary concepts of sequences and series of real numbers and develop problem solving skills.
130	Allied III: Probability Theory and Distributions	MA2031	☑	Rolling Dice, Flipping Coins and Playing Cards to demonstrate the problems, Differentiation between discrete and continuous random variable	☑	Identify the problems on conditional probability, Identify the suitable distribution to solve problems,Converting real life problems into mathematical models and solving it using distributions	☑	Identify the suitable distribution to solve the problem	To impart knowledge on the basic concepts of Probability theory and Probability distributions and to apply the theory in real life situations.
131	Self-Learning Course: Discrete Mathematics I	MC20S1					☑		To develop the interest of self learning in subject oriented courses.
132	Major Core V: Groups and Rings	MC2041	☑	Find the order of an element, Determine homomorphsims between two groups			☑	Identify the zero divisors and nilpotent of a ring, Construction of quotient group, Solve SET questions	To introduce the concepts of Group theory and Ring theory and gain more knowledge essential for higher studies in Abstract Algebra.
133	Major Core VI: Analytical Geometry of 3 Dimensions	MC2042	☑	Converting equation of a line in the intercept form to normal form and vice versa			☑	Find the angle between two planes, line and plane, Solving exercise problems	To gain deeper knowledge in three dimensional Analytical Geometry 2D and to develop creative thinking, innovation and synthesis of information.
134	Allied IV: Applied Statistics	MA2041	☑	Predicting the price of a house given house features			☑	Solving exercise problems	To acquire the knowledge of correlation theory and testing hypothesis and to solve problems.
135	Self-Learning Course: Discrete Mathematics II	MC20S2					☑		To develop the interest of self learning in subject oriented courses.
136	Major Core VII: Linear Algebra	MC1751	☑	Construct the matrix representation of a given linear transformation			☑	Determine whether the given vectors form a basis or not, Solve SET questions, Find the rank and nullity of given matrix, Solve SET questions	To compute quantities that deal with linear systems and eigenvalue problems.
137	Major Core VIII: Real Analysis	MC1752	☑	Distinguish between continuous and uniformly continuous functions			☑	Find all the compact subsets of R, Determine whether the given space is connected and compact, Inter-class quiz, Solve SET questions	To introduce Metric Spaces and the concepts of completeness, continuity, connectedness, compactness and uniform convergence and to use these concepts in higher studies.
138	Major Core IX: Graph Theory	MC1753	☑	Write an algorithm to calculate the longest path between two vertices, Find the chromatic number and connectivity of given graph			☑	Presentation on Eulerian and Hamiltonian graphs	To introduce graphs, directed graphs and the concepts of connectedness and labelings and apply these concepts in research.
139	Major - Project	MC1754					☑	Literature survey, New findings	To develop the attitude of studying a topic in depth independently.
140	Elective I: a) Numerical Methods	MC1755	☑	Find the solution of algebraic and transcendental equations by different methods			☑	Solving exercise problems	To study Numerical differentiation and Numerical integration using different formulae and develop various methods for solving applied scientific problems.
141	Elective I: b) Fuzzy Mathematics	MC1756	☑				☑		To understand Fuzzy concepts of sets and operations and apply the Fuzzy concepts in image processing, machine learning and artificial intelligence.
142	Elective I: c) Object Oriented Programming with C++	MC1757	☑		☑		☑		To learn and write programmes in C++ Language and enhance job opportunities.
143	Mathematics for Competitive Examination - I	MSK175	☑	Solve problems related to percentage	☑	Solve problems based on Time and Distance	☑	Solve problems based on boats and streams	To develop the quantitative aptitude of the students and solve problems needed for various competitive examinations.
144	Major Core X: Complex Analysis	MC1761	☑	Determine the value of the finite integral using Cauchy Residue's theorem, Solve SET questions			☑	Discussing the properties of analytic functions, Developing mind map on the concept of singularity, Finding Taylor's series and Laurent's series of the given function	To introduce the basic concepts of differentiation and integration of Complex functions and apply the related concepts in higher studies.
145	Major Core XI: Mechanics	MC1762					☑	Presentaion on how mechanics is used in real world, Group discussions on Projectiles	To study the application of Mathematics in Physical Sciences and solve related problems.

146	Major Core XII: Number Theory	MC1763	☑	Find the gcd of n numbers using Euclidean algorithm			☑	Exercise problems solving, Group discussion on Chinese remainder theorem, Fermat's Little theorem and Wilsons theorem	To introduce the fundamental principles and concepts in Number Theory and apply these principles in other branches of Mathematics.
147	Major Core XIII: Operations Research	MC1764	☑	Formulating LPP with appropriate objective function and constraints for the given data			☑	Peer teaching in the topic Travelling salesman Problem, Solving exercise problems	To formulate real life problems into mathematical problems and solve decision making problems by optimizing the objective function.
148	Elective II: a) Astronomy	MC1765	☑	Industrial Visit, Interpret latitude and longitude and apply this to find the latitude and longitude of a particular place, Assignment on distinguish between Geometric Parallax and Horizontal Parallax			☑	Calculate the motion of two particles relative to the common mass Centre	To identify, classify and compare the stars and the large scale structures of our Universe.
149	Elective II: b) Boolean Algebra	MC1766	☑				☑		To introduce the algebraic structures like lattices and Boolean algebra and apply these concepts in various branches of Mathematics.
150	Elective II: c) Web Designing with HTML	MC1767	☑		☑		☑		To understand the importance of the web as a medium of communication and create an effective web page with graphic design principles.
151	Skill Based Course: Mathematics forCompetitive Examination - II	MSK176	☑	Solve questions based on compound Interest. Solve puzzle	☑	Solve questions based on Stocks and Shares	☑	Solve questions based on calendar. Solve puzzle	To develop the quantitative aptitude of the students and solve problems needed for various competitive examinations.
152	Core I: Algebra I	PM2011	☑	Group discussion on NET exam questions in Sylow p groups, Verify Fundamental theorem of finite abelian groups			☑	Construct proof for Homomorphisms and Isomorphisms in Rings	To study abstract Algebraic systems and know the richness of higher Mathematics in advanced application systems.
153	Core II: Analysis I	PM2012	☑	Solve SET/NET related questions			☑	Differentiation between continuity and differentiability	To understand the basic concepts of analysis and formulate a strong foundation for future studies.
154	Core III: Probability and Statistics	PM2013	☑	Find the confidence intervals for means and variance, Presentation on application of Central Limit Theorem			☑	Find the approximate percentage of death occurred using poisson distribution, Discuss real-world scenarios where the Poisson and exponential distributions are applicable, such as call center arrivals, customer arrivals at a store, or website visits	To upgrade the knowledge in Probability theory and solve NET / SET related Statistical problems.
155	Core IV: Ordinary Differential Equations	PM2014	☑	Solve problems using the method of successive approximation			☑	Solve SET/ NET questions	To study mathematical methods for solving differential equations.
156	Elective I: a) Numerical Analysis	PM2015					☑	Solve a set of linear systems using Gauss elimination, Emphasize the steps involved and the necessity of pivoting	To study the various behaviour pattern of numbers and various techniques of solving applied scientific problems.
157	Elective I: b)Fuzzy Sets and Fuzzy Logic	PM2016					☑		To understand Fuzzy logic and apply Fuzzy concepts in other branches of Mathematics.
158	Core V: Modules and Vector Spaces	PM2021	☑	Find out the Rank of a matrix in different ways			☑	Develop proof for Linear independence, Linear dependence, Basis and Dimension, Group discussion on NET/ SET exam questions	To understand the concept of Modules and the advanced forms of Matrices related to Linear Transformations.
159	Core VI: Analysis II	PM2022	☑	Presentation on Inverse mapping theorem and its uses, Discussion on SET/ NET questions			☑	Concept explanation on convergence of the sequence	To make the students understand the advanced concepts of Analysis.

160	Core VII: Partial Differential Equations	PM2023	☑	Solve the boundary value problem for the heat equations and the wave equation Discussion on SET/NET questions			☑	Find the Laplace transformation and the Reduction to Canonical (or normal) forms	To formulate and solve different forms of partial differential equations and solve the related problems.
161	Core VIII: Graph Theory	PM2024	☑	Presentation on distance mentioning its various types and applications, Determine the decompostions of given graph			☑	Prepare a research article, Finding minimum spanning tree for a graph using Kruskal and Prim algorithms, Develop algorithms for finding shortest path of some specific graphs	To introduce the important notions of graph theory and develop the skill of solving application oriented problems.
162	Elective II: a) Classical Dynamics	PM2025					☑	Preparing charts of formulae	To gain deep insight into the concepts of dynamics.
163	Elective II: b) Differential Geometry	PM2026					☑		To study coordinate free geometry and apply the theory in Tensors and theory of relativity.
164	Core IX: Field Theory and Lattices	PM2031	☑	Determine the roots of any polynomial using extension concepts, Discussion on SET/NET questions			☑	Discuss how field theory is relevant in other mathematical subject	To learn in depth the concepts of Field Theory , Galois Theory and Lattices.
165	Core X: Topology	PM2032	☑	Discussions on the Urysohn's Lemma, the Urysohn Metrization Theorem, Tietze Extension Theorem, the Tychonoff theorem, Determine the connected and compact subsets of real line, Discussion on SET/NET questions			☑	Discussions on the Urysohn's Lemma, the Urysohn Metrization Theorem, Tietze Extension Theorem, the Tychonoff theorem, Determine the connected and compact subsets of real line, Discussion on SET/NET questions	To distinguish spaces by means of simple topological invariants and lay the foundation for higher studies in Geometry and Algebraic Topology.
166	Core XI: Measure Theory and Integration	PM2033	☑	Compare the different types of measures and Signed measures, Concept explanation of Fatou's Lemma, Construct a monotone function on [0, 1] which is discontinuous at each rational point			☑	Compare the different types of measures and Signed measures, Concept explanation of Fatou's Lemma, Construct a monotone function on [0, 1] which is discontinuous at each rational point	To generalize the concept of integration using measures and develop the concept of analysis in abstract situations.
167	Elective III: a) Algebraic Number Theory and Cryptography	PM2034	☑	Encrypt messages using the recipient's public key and exchange the encrypted messages			☑	Encrypt messages using the recipient's public key and exchange the encrypted messages	To gain deep knowledge about Number theory and Cryptography.
168	Elective III: b) Stochastic Process	PM2035	☑				☑		To understand the stochastic models and relate the models studied to real life probabilistic situations.
169	Major - Project	PM20PR					☑	Literature survey, New findings	To develop the attitude of studying a topic in depth independently.
170	Self Learning Course: Algebra for SET/CSIR-NET Exam	PM20S1	☑		☑		☑		To enhance problem solving skills and to enable the students to clear the CSIR - NET/SET Exams.
171	Core XII: Complex Analysis	PM2041	☑	Determine the integral value of finite integral			☑	Develop mind map on different types of singularity, Discussion on SET/ NET questions	To impart knowledge on complex functions and to facilitate the study of advanced mathematics.
172	Core XIII: Functional Analysis	PM2042	☑	Construct the idea of projections, the spectrum of an operator			☑	Assignment on Matrices	To study the three structure theorems of Functional Analysis and introduce Hilber Spaces and Operator theory.
173	Core XIV: Operations Research	PM2043	☑	Conduct mock interactions where students negotiate order quantities and lead times to minimize costs, Assignment on Capital Budgeting Problem			☑	Assign students roles as customers and suppliers, Conduct mock interactions where students negotiate order quantities and lead times to minimize costs	To learn optimizing objective functions and solve decision making problems.

174	Core XV: Algorithmic Graph Theory	PM2044					☑	Find the shortest path in directed graphs using Floyd-Warshall Algorithms, Develop algorithms for finding minimum spanning tree of some specific graphs	To instill knowledge about algorithms and write innovative algorithms for graph theoretical problems.
175	Elective IV: a) Combinatorics	PM2045	☑	Demonstration with Chessboard to learn about Rook polynomials			☑	Demonstration with dices to explain permutations and combinations problems	To do an advanced study of permutations and combinations and solve related problems.
176	Elective IV: b) Coding Theory	PM2046	☑				☑		To learn the different procedures of coding and decoding.
177	Self Learning Course: Analysis for SET/CSIR-NET Exam	PM20S2	☑		☑		☑		To enhance problem solving skills and to enable the students to clear the CSIR-NET/SET Exams.
2020-2021									
178	Major Core I: Differential Calculus and Trigonometry	MC2011			☑	Explore real world applications of hyperbolic functions, Solving exercise problems	☑	Compare Trigonometric and Hyperbolic functions	To impart knowledge on Differential Calculus and Trigonometry and enhance problem solving skills.
179	Allied I: Algebra and Calculus	MA2011			☑	Solve integrals using Beta and Gamma functions	☑	Solving exercise problems	To impart knowledge in concepts related to Algebra and solve problems in Physical Science.
180	Non Major Elective Course (NME): Quantitative Aptitude I	MNM201	☑	Solve problems based onSimplification	☑	Solve problems based on Ratio and Proportion	☑	Solve problems based on Profit and Loss	To develop the quantitative aptitude of the students and solve problems required for various competitive examinations.
181	Major Core II: Classical Algebra and Integral Calculus	MC2021			☑	Algebraic puzzles	☑	Solving equations race	To give a sound knowledge in Classical Algebra and solve problems in applications of Integral Calculus.
182	Allied II: Vector Calculus and Differential Equations	MA2021			☑	Solve differential equations using Laplace transform, Solving exercise problems	☑	Apply the methods to find the particular integrals of the form e^ax,□sin sin ax,□cos cos ax,x^n,e^ax f(x),x^n f(x)	To introduce the concept of vector operators and to impart the mathematical knowledge essential for solving problems in Physical Science.
183	Non Major Elective Course (NME): Quantitative Aptitude II	MNM202	☑	Solve problems based on Area	☑	Solve problems based on Compound interest	☑	Solve problems based on Lograthims	To develop the quantitative aptitude of the students and solve problems required for various competitive examinations.
184	Major Core III: Differential Equations and Vector Calculus	MC1731	☑	Evaluate integrals using Green's and Stoke's theorems	☑	Solve linear differential equations with constant and variable coefficients	☑	Evaluate integrals using Gauss divergence theorems	To gain deeper knowledge in differential equations, differentiation and integration of vector functions.
185	Major Core IV: Sequences and Series	MC1732	☑	Find the limit of sequence			☑	Determine convergence region of the series, Discussion on SET questions	To introduce the primary concepts of sequences and series of real numbers and develop problem solving skills.
186	Allied III: Probability Theory and Distributions	MA1731	☑	Rolling Dice, Flipping Coins and Playing Cards to demonstrate the problems	☑	Converting real life problems into mathematical models and solving it using distributions	☑	Distinguish Binomial, Poisson and Normal Distributions	To impart knowledge on the basic concepts of Probability theory and Probability distributions and to apply the theory in real life situations.
187	Self-Learning Course: Discrete Mathematics I	MC17S1					☑		To develop the interest of self learning in subject oriented courses.
188	Major Core V: Groups and Rings	MC1741	☑	Construct groups with 10 elements and determine the order of each element			☑	Determine cyclic and normal groups with 20 elements, Discussion on SET questions	To introduce the concepts of Group theory and Ring theory and gain more knowledge essential for higher studies in Abstract Algebra.
189	Major Core VI: Analytical Geometry of 3 Dimensions	MC1742	☑	Find the shortest distance between any two lines, Solving exercise problems			☑	Analyze the projection of 3d shapes into 2 dimensional plane	To gain deeper knowledge in three dimensional Analytical Geometry 2D and to develop creative thinking, innovation and synthesis of information.
190	Allied IV: Applied Statistics	MA1741	☑	Draw the scatter plot diagram			☑	Guessing the age of relatives and record their guess and actual age on record sheet	To acquire the knowledge of correlation theory and testing hypothesis and to solve problems.
191	Self-Learning Course: Discrete Mathematics II	MC17S2					☑		To develop the interest of self learning in subject oriented courses.

192	Major Core VII: Linear Algebra	MC1751	☑	Apply Gram-Schmidt process to construct an orthonormal basis for V_3 (R), Find the basis and dimension of the given vector space, Discussion on SET questions			☑	Find the rank and nullity of a given linear transformation	To compute quantities that deal with linear systems and eigenvalue problems.
193	Major Core VIII: Real Analysis	MC1752	☑	Construct open cover for given metric space, Construct examples for continuous functions but not uniformly continuous functions			☑	Analyze the functions continuity at various point, Discussion on SET questions	To introduce Metric Spaces and the concepts of completeness, continuity, connectedness, compactness and uniform convergence and to use these concepts in higher studies.
194	Major Core IX: Graph Theory	MC1753	☑	Take a real world problem and convert it as a graph, Determine Eulerian path and hamiltonian cycle of the given graph			☑	Identify the existence of a cut vertex or bridge or block in a given graph	To introduce graphs, directed graphs and the concepts of connectedness and labelings and apply these concepts in research.
195	Major - Project	MC1754					☑	Literature survey, New findings	To develop the attitude of studying a topic in depth independently.
196	Elective I: a) Numerical Methods	MC1755	☑	Solve the equations using different methods			☑	Solve the equations using different methods and compare their approximate solutions	To study Numerical differentiation and Numerical integration using different formulae and develop various methods for solving applied scientific problems.
197	Elective I: b) Fuzzy Mathematics	MC1756	☑				☑		To understand Fuzzy concepts of sets and operations and apply the Fuzzy concepts in image processing, machine learning and artificial intelligence.
198	Elective I: c) Object Oriented Programming with C++	MC1757	☑		☑		☑		To learn and write programmes in C++ Language and enhance job opportunities.
199	Skill Based Course: Mathematics for Competitive Examination - I	MSK175	☑	Solve problems based on percentage	☑	Solve problems based on time and distance	☑	Solve problems based on boats and streams	To develop the quantitative aptitude of the students and solve problems needed for various competitive examinations.
200	Major Core X: Complex Analysis	MC1761	☑	Demonstrate geometrical representation of complex numbers and regions, Evaluate the value of line integrals, Discussion on SET questions			☑	Construct the analytical function using C-R equations, Evaluate the integral values using Caucy's theorem	To introduce the basic concepts of differentiation and integration of Complex functions and apply the related concepts in higher studies.
201	Major Core XI: Mechanics	MC1762					☑	Assignment on how mechanics is used in real –world, Group discussion on projectile	To study the application of Mathematics in Physical Sciences and solve related problems.
202	Major Core XII: Number Theory	MC1763	☑	Apply mathematical induction and writing the proof of simple statements, Construct mathematical proofs of theorems and find counter examples for false statements			☑	Collect and use numerical data to form conjectures about the integers	To introduce the fundamental principles and concepts in Number Theory and apply these principles in other branches of Mathematics.
203	Major Core XIII: Operations Research	MC1764	☑	Develope Flow Chart for MODI method			☑	Distinguish the difference between Canonical and Standard Form, Formulate LPP with appropriate objective function and constraints for the given data	To formulate real life problems into mathematical problems and solve decision making problems by optimizing the objective function.
204	Elective II: a) Astronomy	MC1765	☑	Interpret latitude and longitude and apply this to find the latitude and longitude of a particular place, Industrial Visit			☑	Discussion on Kepler's laws	To identify, classify and compare the stars and the large scale structures of our Universe.
205	Elective II: b) Boolean Algebra	MC1766	☑				☑		To introduce the algebraic structures like lattices and Boolean algebra and apply these concepts in various branches of Mathematics.

206	Elective II: c) Web Designing with HTML	MC1767	☑		☑		☑		To understand the importance of the web as a medium of communication and create an effective web page with graphic design principles.
207	Skill Based Course: Mathematics for Competitive Examination - II	MSK176	☑	Solve problems based on volume and surface areas	☑	Solve problems based on calendar	☑	Solve problems based on trains	To develop the quantitative aptitude of the students and solve problems needed for various competitive examinations.
208	Core I: Algebra I	PM2011	☑	Group discussion on NET exam questions, Express a ring into product of rings using unique factorization theorem			☑	Solve problems involved Sylow's theorems and Direct products	To study abstract Algebraic systems and know the richness of higher Mathematics in advanced application systems.
209	Core II: Analysis I	PM2012	☑	Demonstrate the convergence of a sequence with an example			☑	Discussion on SET/ NET questions	To understand the basic concepts of analysis and formulate a strong foundation for future studies.
210	Core III: Probability and Statistics	PM2013	☑	Presentation on Estimation, Confidence intervals of mean			☑	Identify the sutiable distribution to solve the problems	To upgrade the knowledge in Probability theory and solve NET / SET related Statistical problems.
211	Core IV: Ordinary Differential Equations	PM2014	☑	Solve differential equation using appropriate method			☑	Finding the roots of linear equations with variable coefficients	To study mathematical methods for solving differential equations.
212	Elective I: a) Numerical Analysis	PM2015					☑	Interpolate missing values using linear interpolation, Discuss the accuracy and limitations of the method	To study the various behaviour pattern of numbers and various techniques of solving applied scientific problems.
213	Elective I: a) Fuzzy Sets and Fuzzy Logic	PM2016					☑		To understand Fuzzy logic and apply Fuzzy concepts in other branches of Mathematics.
214	Core V: Modules and Vector Spaces	PM2021	☑	Find linear transformations and their relationships with vector spaces and modules			☑	Group Discussions on SET/ NET questions	To understand the concept of Modules and the advanced forms of Matrices related to Linear Transformations.
215	Core VI: Analysis II	PM2022	☑	List out the properties of the integral, Presentation on Contract principle			☑	Group discussion on SET/ NET questions	To make the students understand the advanced concepts of Analysis.
216	Core VII: Partial Differential Equations	PM2023	☑	Solve non- linear first order partial differential equations			☑	Discussion on SET/ NET questions	To formulate and solve different forms of partial differential equations and solve the related problems.
217	Core VIII: Graph Theory	PM2024	☑	Determine the dominating set of given graph			☑	Find the graceful labeling of given graph	To introduce the important notions of graph theory and develop the skill of solving application oriented problems.
218	Elective II: a) Classical Dynamics	PM2025					☑	Discussion on Hamilton's Principle, Hamilton's Equations	To gain deep insight into the concepts of dynamics.
219	Elective II: b) Differential Geometry	PM2026					☑		To study coordinate free geometry and apply the theory in Tensors and theory of relativity.
220	Core IX: Algebra III	PM1731	☑	Determine whether the given set forms a galios group or not, Find the root of any finite polynomial using extension field concepts			☑	Determine the extension fields, Discussion on SET/ NET questions	To learn in depth the concepts of Field Theory , Galois Theory and Lattices.
221	Core X: Topology	PM1732	☑	Developing proof connectedness, Presentation on comparison of the box and product topologies			☑	Distinguish compact space and locally compact space	To distinguish spaces by means of simple topological invariants and lay the foundation for higher studies in Geometry and Algebraic Topology.
222	Core XI: Measure Theory and Integration	PM1733	☑	Concept explanation of Monotone Convergence theorem			☑	Finding properties of convergence of functions	To generalize the concept of integration using measures and develop the concept of analysis in abstract situations.
223	Elective III: a) Algebraic Number Theory	PM1734					☑	Provide historical examples of how binary quadratic forms were used to solve problems in number theory or cryptography	To gain deep knowledge about Number theory and Cryptography.

224	Elective III: b) Stochastic Process	PM1735	☑				☑		To understand the stochastic models and relate the models studied to real life probabilistic situations.
225	Major - Project	PM17PR					☑	Literature survey, New findings	To develop the attitude of studying a topic in depth independently.
226	Self Learning Course: Algebra for SET/CSIR-NET Exam	PM20S1	☑		☑		☑		To enhance problem solving skills and to enable the students to clear the CSIR - NET/SET Exams.
227	Core XII: Complex Analysis	PM1741	☑	Develop mind map on different types of singularity			☑	Determine the integral value of finite integral, Discussion on SET/ NET questions	To impart knowledge on complex functions and to facilitate the study of advanced mathematics.
228	Core XIII: Functional Analysis	PM1742	☑	Compare different types of operators and their properties			☑	Compare different types of operators and their properties	To study the three structure theorems of Functional Analysis and introduce Hilber Spaces and Operator theory.
229	Core XIV: Operations Research	PM1743	☑	Draw the arrow diagram for a list of tasks and their dependencies to visualize the sequence of tasks			☑	Draw the arrow diagram for a list of tasks and their dependencies to visualize the sequence of tasks	To learn optimizing objective functions and solve decision making problems.
230	Core XV: Algorithmic Graph Theory	PM1744					☑	Develop algorithms in the concept of minimum spanning tree, Finding shortest path for a graph using Dijkstra's algorithm	To instill knowledge about algorithms and write innovative algorithms for graph theoretical problems.
231	Elective IV: a) Combinatorics	PM1745	☑	Demonstration with Chessboard to learn about Rook polynomials, Assignment-capital Budgeting Problem			☑	Demonstration with dices to explain permutations and combinations problems	To do an advanced study of permutations and combinations and solve related problems.
232	Elective IV: b) Coding Theory	PM1746	☑				☑		To learn the different procedures of coding and decoding.
233	Self Learning Course: Analysis for SET/CSIR-NET Exam	PM20S2	☑		☑		☑		To enhance problem solving skills and to enable the students to clear the CSIR-NET/SET Exams.
2019-2020									
234	Major Core I: Differential Calculus and Trigonometry	MC1711			☑	Comparing Trigonometric functions	☑	Comparing Hyperbolic functions	To impart knowledge on Differential Calculus and Trigonometry and enhance problem solving skills.
235	Allied I: Algebra and Calculus	MA1711			☑	Identify real-life situations where equations are used	☑	Evaluation of integrals using Beta and Gamma Functions	To impart knowledge in concepts related to Algebra and solve problems in Physical Science.
236	Non Major Elective Course (NMEC): Mathematics for Life - I	MNM171	☑	Solve problems using BODMAS rule	☑	Finding square root by factorization method	☑	Solve problems based on competitve examinations	To develop the quantitative aptitude of the students and solve problems required for various competitive examinations.
237	Major Core II: Classical Algebra and Integral Calculus	MC1721			☑	Evaluation of double integrals	☑	Algebraic puzzles	To give a sound knowledge in Classical Algebra and solve problems in applications of Integral Calculus.
238	Allied II: Vector Calculus and Differential Equations	MA1721			☑	Find examples of real-world scenarios where line integrals are used (e.g., calculating the work done by a force field on a moving object)	☑	Evaluation of line integrals and surface integrals	To introduce the concept of vector operators and to impart the mathematical knowledge essential for solving problems in Physical Science.
239	Non Major Elective Course (NME): Mathematics for Life - II	MNM172	☑	Comparison on ages of two persons	☑	Framing and solving equations involving unknown numbers	☑	Solve problems based on competitve examinations	To develop the quantitative aptitude of the students and solve problems required for various competitive examinations.
240	Major Core III: Differential Equations and Vector Calculus	MC1731	☑	Explain the basic properties of Laplace Transforms and Inverse Laplace Transforms	☑	Form the partial differential equation	☑	Determine the particular integral of given function	To gain deeper knowledge in differential equations, differentiation and integration of vector functions.
241	Major Core IV: Sequences and Series	MC1732	☑	Examine the convergent, divergent of sequence			☑	Discuss the convergence of the series	To introduce the primary concepts of sequences and series of real numbers and develop problem solving skills.
242	Allied III: Probability Theory and Distributions	MA1731	☑	Distinguish Binomial, Poisson and Normal Distributions	☑	Converting real life problems into mathematically using probabilty and solving it using distributions	☑	Identifying the difference between the concepts Discrete and Continuous random variables, Learn with experiments	To impart knowledge on the basic concepts of Probability theory and Probability distributions and to apply the theory in real life situations.

243	Self-Learning Course: Discrete Mathematics I	MC17S1					☑		To develop the interest of self learning in subject oriented courses.
244	Major Core V: Groups and Rings	MC1741	☑	Find the number of groups on a given set			☑	Derive the number of isomorphism between two groups and rings	To introduce the concepts of Group theory and Ring theory and gain more knowledge essential for higher studies in Abstract Algebra.
245	Major Core VI: Analytical Geometry of 3 Dimensions	MC1742	☑	Finding the shortest distance between any two lines			☑	Analyze the projection of 2d shapes into 1 dimensional plane	To gain deeper knowledge in three dimensional Analytical Geometry 2D and to develop creative thinking, innovation and synthesis of information.
246	Allied IV: Applied Statistics	MA1741	☑	Ilustrate a real world problem and test its correlation			☑	Find the angle between regression lines	To acquire the knowledge of correlation theory and testing hypothesis and to solve problems.
247	Self-Learning Course: Discrete Mathematics II	MC17S2					☑		To develop the interest of self learning in subject oriented courses.
248	Major Core VII: Linear Algebra	MC1751	☑	Examine whether a given space is an inner product space			☑	Finding the basis and dimension of the given vector space	To compute quantities that deal with linear systems and eigenvalue problems.
249	Major Core VIII: Real Analysis	MC1752	☑	Constructing counter examples for continuous functions but not uniformly continuous functions			☑	Determine a set is countable or uncountable, Discussion on application of Intermediate value theorem	To introduce Metric Spaces and the concepts of completeness, continuity, connectedness, compactness and uniform convergence and to use these concepts in higher studies.
250	Major Core IX: Graph Theory	MC1753	☑	Find the chromatic number of a locality, Derive adjacency matrix from a graph			☑	Compare Intersection graphs and line graphs and their properties	To introduce graphs, directed graphs and the concepts of connectedness and labelings and apply these concepts in research.
251	Major - Project	MC1754					☑	Literature survey, New findings	To develop the attitude of studying a topic in depth independently.
252	Elective I: a) Numerical Methods	MC1755	☑	Group Discussion on Newton cote's quadrature formula			☑	Peer Teaching in Simpson's (1/3)rd rule, Solving exercise problems	To study Numerical differentiation and Numerical integration using different formulae and develop various methods for solving applied scientific problems.
253	Elective I: b) Fuzzy Mathematics	MC1756	☑				☑		To understand Fuzzy concepts of sets and operations and apply the Fuzzy concepts in image processing, machine learning and artificial intelligence.
254	Elective I: c) Object Oriented Programming with C++	MC1757	☑		☑		☑		To learn and write programmes in C++ Language and enhance job opportunities.
255	Skill Based Course: Mathematics for Competitive Examination - I	MSK175	☑	Solve problems based on Time and Distance	☑	Solve problems based on ratio of speeds	☑	Solve problems based on competitve examinations	To develop the quantitative aptitude of the students and solve problems needed for various competitive examinations.
256	Major Core X: Complex Analysis	MC1761	☑	Demonstrating geometrical representation of complex numbers			☑	Concept explanation of Analytical functions	To introduce the basic concepts of differentiation and integration of Complex functions and apply the related concepts in higher studies.
257	Major Core XI: Mechanics	MC1762					☑	Problem solving in friction, Find the period of oscillation using a simple pendulum	To study the application of Mathematics in Physical Sciences and solve related problems.
258	Major Core XII: Number Theory	MC1763	☑	Construct mathematical proofs of theorems and find counter examples for false statements, Solving exercise problems			☑	Group Discussion on absolute pseudo primes	To introduce the fundamental principles and concepts in Number Theory and apply these principles in other branches of Mathematics.
259	Major Core XIII: Operations Research	MC1764	☑	Developing Flow Chart for MODI method, To distinguish the difference between Canonical and Standard Form			☑	Formulating LPP with appropriate objective function and constraints for the given data	To formulate real life problems into mathematical problems and solve decision making problems by optimizing the objective function.
260	Elective II: a) Astronomy	MC1765	☑	Interpret latitude and longitude and apply this to find the latitude and longitude of a particular place, Field visit			☑	Distinguish between geometric parallax and horizontal parallax	To identify, classify and compare the stars and the large scale structures of our Universe.

261	Elective II: b) Boolean Algebra	MC1766	☑				☑		To introduce the algebraic structures like lattices and Boolean algebra and apply these concepts in various branches of Mathematics.
262	Elective II: c) Web Designing with HTML	MC1767	☑		☑		☑		To understand the importance of the web as a medium of communication and create an effective web page with graphic design principles.
263	Skill Based Course: Mathematics forCompetitive Examination - II	MSK176	☑	Solve problems based on competitve examinations	☑		☑		To develop the quantitative aptitude of the students and solve problems needed for various competitive examinations.
264	Core I: Algebra I	PM1711	☑	Solve in Sylow's theorems and Direct products, Group discussion on NET exam questions			☑	Develop proof for certain theorems which contain the concepts Homomorphisms and Isomorphisms	To study abstract Algebraic systems and know the richness of higher Mathematics in advanced application systems.
265	Core II: Analysis I	PM1712	☑	Differentiate between continuous and discontinuous functions and collect few examples			☑	Determine the convergence of the series and their domain, Discussion on SET/NET questions	To understand the basic concepts of analysis and formulate a strong foundation for future studies.
266	Core III: Probability and Statistics	PM1713	☑	Identify the sutiable distribution to solve the problems			☑	Create questions related to conditional probability and solve it	To upgrade the knowledge in Probability theory and solve NET / SET related Statistical problems.
267	Core IV: Ordinary Differential Equations	PM1714	☑	Finding the roots of linear equations with constant coefficients			☑	Solve problems on Greens functions	To study mathematical methods for solving differential equations.
268	Elective I: a) Numerical Analysis	PM1715					☑	Solve equations using appropriate methods, Compare the number of iterations, computational effort, and accuracy of each method	To study the various behaviour pattern of numbers and various techniques of solving applied scientific problems.
269	Elective I: b) Fuzzy Sets and Fuzzy Logic	PM1716					☑		To understand Fuzzy logic and apply Fuzzy concepts in other branches of Mathematics.
270	Core V: Algebra II	PM1721	☑	Find out the Rank of a matrix in different ways, Group discussion on NET exam questions			☑	Group discussion on NET exam questions, Develop proof for certain theorems	To understand the concept of Modules and the advanced forms of Matrices related to Linear Transformations.
271	Core VI: Analysis II	PM1722	☑	List out the properties of the integral			☑	Solving problems related to Wierstrass theorem, Stone Wierstrass theorem	To make the students understand the advanced concepts of Analysis.
272	Core VII: Partial Differential Equations	PM1723	☑	Finding the complete integral, particular integral, singular integral of the given Nonlinear Partial Differential Equations of order one			☑	Solving the boundry value problems for the heat equations	To formulate and solve different forms of partial differential equations and solve the related problems.
273	Core VIII: Graph Theory	PM1724	☑	Exhibit a model relating the various applications of graph theory			☑	Determine the Ramsey number of certain graphs and identify the center of a graphs	To introduce the important notions of graph theory and develop the skill of solving application oriented problems.
274	Elective II: a) Classical Dynamics	PM1725					☑	Discussion on Virtual work and D' Alembert's Principle, Solving problems on Hamilton's Principle , Hamilton's Equations	To gain deep insight into the concepts of dynamics.
275	Elective II: b) Differential Geometry	PM1726					☑		To study coordinate free geometry and apply the theory in Tensors and theory of relativity.
276	Core IX: Algebra III	PM1731	☑	Determine the roots of the polynomial using galois theory			☑	Compare Distributivity and Modularity	To learn in depth the concepts of Field Theory, Galois Theory and Lattices.
277	Core X: Topology	PM1732	☑	Defining various topologies through illustration, Developing mind map for the concept topology			☑	Construct extension spaces from the locally compact, locally connected space	To distinguish spaces by means of simple topological invariants and lay the foundation for higher studies in Geometry and Algebraic Topology.

278	Core XI: Measure Theory and Integration	PM1733	☑	Construct a sequence {fn} of nonnegative, Riemann integrable functions such that fn increases monotonically to f			☑	Concept explanation of Bounded Convergence theorem	To generalize the concept of integration using measures and develop the concept of analysis in abstract situations.
279	Elective III: a) Algebraic Number Theory	PM1734					☑	Provide examples of how binary quadratic forms were used to solve problems in number theory or cryptography	To gain deep knowledge about Number theory and Cryptography.
280	Elective III: b) Stochastic Process	PM1735	☑				☑		To understand the stochastic models and relate the models studied to real life probabilistic situations.
281	Major -Project	PM17PR					☑	Literature survey, New findings	To develop the attitude of studying a topic in depth independently
282	Self Learning Course: Algebra for SET/CSIR-NET Exam	PM20S1	☑		☑		☑		To enhance problem solving skills and to enable the students to clear the CSIR - NET/SET Exams.
283	Core XII: Complex Analysis	PM1741	☑	Demonstrating geometrical representation of complex numbers, Concept explanation of Analytical functions			☑	Evaluate the finite integral using Cauchy's Residue theorem	To impart knowledge on complex functions and to facilitate the study of advanced mathematics.
284	Core XIII: Functional Analysis	PM1742	☑	Concept explanation of different properties of Banach Spaces			☑	Construct the idea of projections	To study the three structure theorems of Functional Analysis and introduce Hilber Spaces and Operator theory.
285	Core XIV: Operations Research	PM1743	☑	Calculate optimal order quantities for a single-item inventory model and reorder points to minimize costs and maximize profits			☑	Assignment-capital Budgeting Problem	To learn optimizing objective functions and solve decision making problems.
286	Core XV: Algorithmic Graph Theory	PM1744					☑	Explaining the representation of graphs through illustration, Developing algorithms for simple problems using Breadth -first Search algorithm	To instill knowledge about algorithms and write innovative algorithms for graph theoretical problems.
287	Elective IV: a) Combinatorics	PM1745	☑	Demonstration of Hanoi Tower Problem using a model			☑	Develop the concepts of Polya's theorem	To do an advanced study of permutations and combinations and solve related problems.
288	Elective IV: b) Coding Theory	PM1746	☑				☑		To learn the different procedures of coding and decoding.
289	Self Learning Course: Analysis for SET/CSIR-NET Exam	PM20S2	☑				☑		To enhance problem solving skills and to enable the students to clear the CSIR-NET/SET Exams.