FATIMACOLLEGE(AUTONOMOUS),MADURAI–625018
COURSEOUTCOMES

NAMEOFTHEPROGRAMME: M. Sc. MATHEMATICS PROGRAMMECODE: PSMA

COURSECODE	COURSE TITLE	COURSEOUTCOMES
19PG1M1	Algebra	CO1: Recall various properties of algebraic structures and explain counting principle. CO2: Describe Sylow's theorems and solve problems CO3: Distinguish Integral Domain and Euclidean Rings CO4: Classify Rings CO5: Describe basic concepts of Solvable groups
19PG1M2	Real Analysis	CO1: Describe analysis concepts in Real and Complex Number systems CO2: Explain concepts of metric, compact and connected sets CO3: Recall Sequence and series in Real line CO4: Differentiate Continuous functions and Uniformly continuous functions CO5: Describe Derivatives of functions
19PG1M3	Number Theory	CO1: Define and interpret the concepts of divisibility CO2: Explain properties of congruences CO3: Apply the Law of Quadratic Reciprocity CO4: Classify functions of number theory CO5: Solve Linear Diophantine equation

19PG1M4	Classical Mechanics	CO1: Describe the behaviour of a particle, the system of particles and D'Alambert's principle. CO2: Solve problems using Lagrangian formulation CO3: Explain Hamilton's principle in Physical reality CO4: Construct Lagrange's equation for non - holonomic system CO5: Apply the laws of forces in central orbit to solve Kepler's problem
19PGM1EDC	Optimization Methods	CO1: Distinguish Transportation problem and Assignment problem. CO2: Classify the methods of finding IBFS to a transportation problem. CO3: Explain assignment problem and solve. CO4: Solve Sequencing problem. CO5: Define two person zero sum game, saddle point and solve problems
19PG2M5	Advanced Algebra	CO1: Appraise characteristic roots of linear transformations CO2: Explain Matrices and Nilpotent transformation CO3: Classify transformations CO4: Describe various concepts of fields CO5: Analyse Galois theory
19PG2M6	Advanced Real Analysis	CO1: Identify Riemann Integral and Riemann - Stieltjes Integral CO2: Explain Uniform convergence of functions CO3: Define Power Series and Fourier Series CO4: Describe Linear Transformations CO5: Explain Implicit function theorem and Rank theorem

19PG2M7	Differential Equations	CO1: Define Linear differential equations with constant coefficients and prove different theorems and solve problems. CO2: Solving problems of the n^{th} order in differential equations with variable coefficients CO3: Identify Regular singular points and derive Bessel's Equation. CO4: Explain the methods of solving problems in partial differential equations of first order. CO5: Form Partial differential equations of the second order and solve problems in partial differential equations of second order.
19PG2M8	Graph Theory	CO1: Build the knowledge of Connectivity in graphs CO2: Identify Eulerian and Hamiltonian graphs CO3: Explain Digraphs, Matchings and Factorization in graphs CO4: Describe Planarity and Coloring in graphs CO5: Define and Explain Domination in graph
19PGM2EDC	Optimization Methods	CO1: Distinguish Transportation problem and Assignment problem. CO2: Classify the methods of finding IBFS to a transportation problem. CO3: Explain assignment problem and solve. CO4: Solve Sequencing problem. CO5: Define two person zero sum game, saddle point and solve problems
19PG3M9	Measure And Integration	CO1: Explain Lebesgue measurable sets and measurability CO2: Classify Riemann and Lebesgue Integrals CO3: Describe Abstract measure spaces CO4: Define Signed Measures and distinguish Hahn Decomposition and Jorden Decomposition CO5: Explain the concept of measurability in product space

19PG3M10	Optimization Techniques	CO1: Explain revised simplex method and solve problems CO2: Classify integer programming problem and explain cutting plane and branch and bound methods CO3: Recognize dynamic programming problem and formulate recurrence relation CO4: Distinguish inventory control models CO5: Identify Queuing models
19PG3M11	Combinatorics	CO1: Explain the rules of sum and product of permutations and combinations. CO2: Describe distributions of distinct objects into non-distinct cells and partitions of integers. CO3: Identify solutions by the technique of generating functions and recurrence relations with two indices CO4: Solve problems on principle of inclusion and exclusion CO5: Apply Polya's theory using configuration.
19PG3M12	Topology	CO1: Classify various Topologies in Topological spaces CO2: Explain connectedness and Components in Topological spaces CO3: Describe compactness in Topological spaces CO4: Identify Seperation axioms CO5: Explain Urysohn Metrization theorem

19PG3ME1	Fuzzy Sets And Applications	CO1: Distinguish crisp sets and Fuzzy sets CO2: Classify operators on Fuzzy sets CO3: Describe Fuzzy relations CO4: Describe Fuzzy Measures CO5: Apply Fuzzy sets in real life situations
19PG3ME2	Numerical Analysis	CO1: Identify the various methods of solving simultaneous linear algebraic equations. CO2: Recognize difference operators and apply the concept of interpolation. CO3: Compute the values of the derivatives at some point using numerical differentiation and integration. CO4: Solve problems on higher order differential equations using Euler's, CO5: Runge- kutta methods
19PG4M13	Complex Analysis	CO1: Identify continuous, differentiable and analytic functions. CO2: Explain Cauchy's theorem for rectangle and Cauchy's integral formula CO3: Summarize the conditions for a complex variable to be harmonic CO4: Compute analytic functions in series form. CO5: Identify the conditions for a function to be elliptic and bring out its properties.
19PG4M14	Statistics	CO1: Classify discrete and continuous distributions CO2: Describe t, F and limiting distributions CO3: Explain statistical tests CO4: Summarize maximum likelihood methods CO5: Distinguish tests of hypothesis

19PG4M15	Methods Of Applied Mathematics	CO1: Explain Eulers equation and its applications CO2: Solve variational problems CO3: Distinguish Integral equations. CO4: Describe various methods for solving integral equations CO5: Solving problems using fourier transforms
19PG4M16	Functional Analysis	CO1: Create knowledge with the basic concepts, principles and methods of functional analysis and its applications. CO2: Analyze the concept of normed spaces, Banach spaces, and the theory of linear operators CO3: Explain in detail the Hahn-Banach theorem, the open mapping and closed graph theorems CO4: Define and thoroughly explain Hilbert spaces and self-adjoint operators CO5: Discuss in detail the study of the spectrum of an operator and its properties
19PG4ME3	Formal Languages	CO1: Design the basic concepts in automata theory and formal languages CO2: Identify different formal language classes and their relationships CO3: Transform between equivalent deterministic and non-deterministic finite automata, and regular expressions CO4: Discuss about the automata, regular expressions and context-free grammars accepting or generating a certain language CO5: Simplify the theorems in automata theory using its properties

19PG4ME4	Algebraic Graph Theory	CO1: Explain Automorphism Group of a Graph CO2: Describe Cayley Graphs CO3: Explain Transitive graphs CO4: Describe Homomorphism CO5: Explain the concept of Matrix Theory
19PGSLM1	Problems In Advanced Mathematics	CO1: Solve problems in Real Analysis CO2: Solve problems in Complex Analysis CO3: Solve problems in Algebra CO4: Solve problems in Linear Algebra CO5: Solve problems in Differential Equations