RATHINAM COLLEGE OF ARTS AND SCIENCE
DEPARTMENT OF MATHEMATICS

M.SC MATHEMATICS - COURSE OUTCOME

Semester-I	
Algebra	Recall the basic concept of Group Theory.
	Explain the concept of Ring Theory.
	Apply the concept of Fields and Roots of polynomials.
	Examine the concept of finite Fields.
	Compare the concept of Linear Transformations.
	Develop the knowledge on applying finite fields, and Linear transformations.
Real Analysis	Recall the basic concept of Riemann Stieltjes Integral.
	Understand the concept of Convergence and Continuity.
	Apply the concept of Functions Of Several Variables.
	Examine the concept of Lebesgue Measure.
	Explain the concept of Lebesgue Integral.
	Discuss about theory of Lebesgue integration, Riemann integration and properties..
Ordinary Differential Equations	Recall the basic concept of Second order linear equations.
	Demonstrate the concept of Existence and Uniqueness Theorem.
	Apply the concept of Non-homogeneous linear systems.
	Analyze the concept of Successive approximation.
	Compare the concept of linear and non-linear oscillation
	Develop the knowledge about existence, uniqueness, other properties of a solution of differential equations and concept of boundary value problems
LATEX	Recall the basics of Latex software while preparing a Document.
	Understand the Mathematical formulas and Drawing tools of Latex.
	Analyze the need of Latex software.
	Apply the advanced mathematics with Latex tools.
	Discuss the coding Series, symbols and limits.
	Develop the knowledge of investigating and learning new LATEX package

	on their own.
Operations Research	Recall the fundamental concept of Linear Programming Problem.
	Understand the concept of Advanced Linear Programming.
	Examine the concept of Integer L.P. in a suitable way.
	Construct the problems based on Classical optimization Theory.
	Evaluate the problems on Non - linear programming.
	Develop the problem solving techniques using operations research.
Semester-II	
Complex Analysis	Recall the concept of analytic functions.
	Understand the concept of complex integration.
	Apply the concept of calculus of Residues and its corresponding theorems.
	Examine the series and product developments.
	Prove the Riemann Mapping theorem.
	Build deep knowledge of complex numbers and its functions in advanced level.
Linear Algebra	Recall the basic concepts of Vector spaces.
	Understand the concept of algebra of linear transformations.
	Construct the algebra of polynomials .
	Classify the concept of Annihilating polynomials and Invariant subspaces .
	Evaluate the concept of Decomposition .
	Develop the concept of linear algebra to enhance ethical and legal environment.
Partial Differential Equations	Recall the basic concept of Non Linear partial differential equation of first order.
	Illustrate the non Linear partial differential equation of second order.
	Apply the solution of linear hyperbolic equations and its operations.
	Examine the concept of Laplace equation with related problems.
	Evaluate the concept of wave equations.
	Develop the knowledge of partial differential equations and its applications.
Mathematical	Recall the fundamental concept of Random Variables.

Statistics	Understand the concept of Discrete and continuous probability distribution function.
	Apply the concept of Unbiasedness and Cramer- Rao inequality .
	Evaluate the fitting of curves with related problems.
	Classify the Analysis of Variance.
	Develop the problem solving techniques using statistical tools.
Graph Theory	Recall the basic concepts involved in a graph.
	Understand the concept of trees and its applications.
	Apply the concept of Connectivity and Traversability.
	Analyze the concept of Matching and coloring.
	Evaluate the concept of planarity of graph.
	Discuss about the application of Graph theory in computer science and other fields.
Numerical Methods	Recall the concept of numerical differentiation and integration and its applications.
	Understand the concept of solving system of equations through various methods.
	Apply various methods for obtaining a better solution for ODE.
	Analyze the concept of boundary value problems and characteristic equations.
	Evaluate the numerical solution of Partial differential equations.
	Develop the practical knowledge on solving problems using Numerical Methods.
Cryptography and Network Security	Recall the basic concept of cryptography to ensure network security.
	Understand the concept about the encryption techniques
	Analyze Authentication and Hash functions.
	Apply Network security and its applications.
	Explain the need of System level security in order to detection of threads/function.
	Develop the practical knowledge on Cryptography and Network Security.

Astronomy	Recall the General description of Solar system.
	Understand the concept of Celestial sphere and Diurnal motion also length of the day.
	Apply the knowledge of Twilight.
	Analyze refraction with respect to tangent formula.
	Explain the concept of Kepler's Law.
	Discuss about the application of Astronomy in real world.
Semester-III	
Topology	Remember the basic terminologies of Topology.
	Understand about Connectedness and Compactness with its limits.
	Apply the idea of Countability and Separation Axioms.
	Analyze the concept of regular spaces.
	Prove the theorems on Complete Metric spaces.
	Develop the knowledge about the mathematical results like Uryzohn's Lemma and understand the dynamics of the proof techniques.
Fuzzy Logic and Systems	Recall the basic concepts of fuzzy set and its properties.
	Understand the concept of Fuzzy relations.
	Examine the concept of Fuzzy Measures.
	Evaluate the concept of Uncertainty.
	Apply the concept of fuzzy theory in Real world.
	Discuss and develop new technologies so as to improve computing facility to maintain environment sustainability.
Mechanics	Recall the basic concepts of mechanical system.
	Understand the concept of Lagrange's equation s and its derivations.
	Evaluate the concept of Hamilton's equations.
	Examine the concept of Jacobi theory and its equation.
	Apply the concept of Canonical Transformations.
	Develop the knowledge of advanced mechanics.
Control Theory	Recall the basic concept of Linear systems and Observability Grammian.
	Understand about the reconstruction kernel with their Nonlinear Systems.

	Build the Controllability Grammian Constant coefficient systems and Adjoint systems.
	Apply the concept of steering function with Nonlinear systems.
	Analyze the concept of Asymptotic Stability of Linear Systems with the help of uniform stability.
	Develop the concept of Stabilization via linear feedback control, Controllable subspace and Stabilization with restricted feedback.
Operator Theory	Remember the concept of Dual space considerations.
	Understand the concept of Reflexivity and reconvergence.
	Apply the concept of Compact operators and its properties.
	Analyze the Banach space operators.
	Evaluate the concept of Operators and Hilbert space.
	Develop the knowledge of Operator Theory in various fields.
Probability Theory	Recall the basic concept of Probability and its axioms.
	Understand the concept of independence and strong convergence.
	Apply Law of large numbers and also random walk.
	Classify the conditional expectations and conditional probabilities.
	Prove the Central Limit theorem.
	Develop the knowledge of Probability Theory in diverse situations.
Matlab	Understand the basic comments of Matlab.
	Recall the concept of Matrices and Vectors.
	Explain the concept of Scripts and Functions in files.
	Classify the concept of Two and Three dimensional plots.
	Apply the concept of Linear Algebra, Finding Eigen Values and Vectors.
	Develop the knowledge of problem solving techniques in Matlab.
Semester-IV	
Functional Analysis	Understand the concept Banach Spaces and Hahn Banach theorem.
	Analyze the Conjugate of an operator and Orthogonal components.
	Apply the different types of operators with respect to conjugate space.
	Recall the knowledge of Matrices, Determinants of Operator.

	Evaluate the formula for spectral radius.
	Develop the knowledge about numerical analysis and operator equations.
Fluid Dynamics	Remember the basic concept of fluid flow.
	Understand the energy equation of flow of a fluid.
	Apply the concept of two dimensional motion of fluid and the lift forces.
	Analyze viscous flow and the steady flow of fluids.
	Explain the concept of boundary layer.
	Develop the knowledge of Fluid Dynamics and its applications.
Mathematical Methods	Remember the basic concept of integral equations.
	Understand about the boundary value problems.
	Apply the concept of two dimensional motion of fluid and the lift forces.
	Analyze viscous flow and the steady flow of fluids.
	Explain the concept of boundary layer.
	Develop the knowledge of Fluid Dynamics and its applications.
Stochastic Processes	Remember the basic concepts of Stochastic processes.
	Understand the concepts of Bernoulli trails.
	Apply the concept of Poisson process and its extensions.
	Classify the conditional expectations and conditional probabilities.
	Prove the theorems on queuing model .
	Develop the knowledge of Stochastic Processes in diverse situations.
Number Theory	Recall the basic concept of Numbers and need of Number theory.
	Understand the concept of Mobius function.
	Apply the concept of Chebyshev's functions and its connections.
	Analyze the properties of congruences and also reduced residue system.
	Compare the concept of Groups and sub groups.
	Develop the knowledge of Number Theory in different situations.
Differential Geometry	Recall the concept of Analytic representation through curves.
	Understand the concept of Curvature torsion.
	Compare the concepts of Evolutes and Involutes.
	Apply the First & Second Fundamental form of Normal,

	Prove the theorems on Mesniers, Eulers of some surfaces.
	Develop the knowledge of Differential geometry to diverse situations in mathematical contexts.