

MAHENDRA ARTS & SCIENCE COLLEGE
(Autonomous)

Affiliated to Periyar University, Salem.

Accredited by NAAC with 'A' Grade & Recognized u/s 2(f) and 12(B) of the UGC Act 1956
Kalippatti – 637 501, Namakkal (Dt), Tamil Nadu.



DEPARTMENT OF MATHEMATICS

COURSE OUTCOMES (COs)

B.Sc. MATHEMATICS

PRINCIPAL

MAHENDRA ARTS & SCIENCE COLLEGE
(Autonomous)

For the students Kalippatti (PO) - 637 501, Namakkal (Dt)
admitted from the
Academic Year 2019-2020 onwards

Programme Code : UMA		B.Sc. Mathematics		
Course Code: M19UMA01		Core Course – I- Algebra and Trigonometry		
Batch 2019- 2020	Semester I	Hours / Week 5	Total Hours 75	Credits 4

Course Objectives

This course introduces fundamental concepts such as matrix, theory of equations & vector calculus. It covers concepts such as Partial fractions Binomial, Exponential, Logarithmic Series, Symmetric, Skew Symmetric, Hermitian, Skew Hermitian, Orthogonal, Unitary matrices, Rank of a Matrix, consistency of Equations, Eigen values and Eigen vectors, Cayley – Hamilton theorem, Theory of equations and Trigonometry.. It provides technical skills to understand and develop various applications.

Course Outcomes:

On the successful completion of the course, students will be able to

CO	Statement	Knowledge Level
CO1	Identify the logic behind the execution of various Characterizations in Matrices and Partial fractions Binomial, Exponential, Logarithmic Series.	K1
CO2	Understand the concepts of Eigen values, vectors, rank and Hamilton theorems.	K2
CO3	Analyze and discover the Theory of equations.	K4
CO4	Develop the idea about trigonometry and its problem.	K3
CO5	Apply the concepts to solve hyperbolic function & Logarithm of a complex number .	K3

Programme Code : UMA		B.Sc. Mathematics		
Course Code: M19UMA02		Core Course – II- Mathematics for Competitive Examinations		
Batch 2019-2020	Semester I	Hours / Week 4	Total Hours 60	Credits 4

Course Objectives

This course introduces fundamental concepts such as Numbers, system in Quantitative aptitude. It covers concepts such HCF, LCM, SQUARE ROOT, average, numbers, profit, loss , percentage, proposition & partnership. It provides technical skills to understand and develop various department examinations like Group Exams, TNPSC, RRB, SSC & IBPS.

Course Outcomes:

On the successful completion of the course, students will be able to

CO	Statement	Knowledge Level
CO1	Identify the logic behind numbers and fractions	K1
CO2	Understand the concepts of Square root, cube root and average.	K2
CO3	Analyze the problems on numbers and problems on ages.	K2
CO4	Develop the problems on indices, percentage, Profit And Loss.	K2
CO5	Apply the concepts to solve a problem for Ratio and Proportion , Partnership.	K3

Programme Code : UMA		B.Sc. Mathematics		
Course Code: M19UMA03		Core Course – III- Differential Calculus & Integral Calculus		
Batch 2019-2020	Semester II	Hours / Week 6	Total Hours 90	Credits 5

Course Objectives:

This course introduces fundamental concepts of differential and integral calculus. It covers concepts such as successive differentiation, Radius of curvature, integration by parts, Multiple integral, change of order of integration and applications of differential and integral calculus. It provides technical skills to understand and study various concepts about calculus.

Course Outcomes:

On the successful completion of the course, students will be able to

CO	Statement	Knowledge Level
CO1	Identify the logic behind the differentiation and successive differentiation.	K1
CO2	Understand the Radius of curvature and related problems.	K2
CO3	Analyze the integration concepts and integration by parts.	K4
CO4	Develop the idea about reduction formulae and multiple integrals and its problems.	K3
CO5	Apply the change of order of integration concepts to solve a real-time problem using Jacobians and convergence ideas.	K3

Programme Code : UMA		B.Sc. Mathematics		
Course Code: M19UMA04		Core Course – IV- Analytical Geometry 2D & 3D		
Batch 2019-2020	Semester II	Hours / Week 5	Total Hours 75	Credits 4

Course Objectives

This course introduces fundamental concepts of Analytical geometry 2D & 3D. It covers concepts such as Straight lines, planes, tangent, normal, Sphere, cone & cylinder. It provides technical skills to understand and study various concepts geometry.

Course Outcomes:

On the successful completion of the course, students will be able to

CO	Statement	Knowledge Level
CO1	Identify the logic behind the straight lines	K1
CO2	Understand the polar co ordinates, Straight line & Conic	K2
CO3	Analyze the concept of straight lines in 3D, co planarity and shortest distance between two lines.	K4
CO4	Develop the idea about the sphere, tangent plane to the sphere and equation of the conic.	K3
CO5	Apply the cone and cylinder concepts to the 3D problems.	K3

Programme Code : UMA		B.Sc. Mathematics		
Course Code: M19UMA05		Core Course – V- Differential Equations And Laplace Transforms		
Batch 2019-2020	Semester III	Hours / Week 4	Total Hours 60	Credits 4

Course Objectives

This course introduces fundamental concepts of differential equations. It covers concepts such as Linear differential equations with constant coefficients and variable coefficients, Exact differential equations, Clairaut's form, Partial differential equations, Laplace transform, inverse Laplace transform. It provides technical skills to understand and study various concepts in differential equations.

Course Outcomes:

On the successful completion of the course, students will be able to

CO	Statement	Knowledge Level
CO1	Acquiring knowledge of basic idea of differential equations	K1
CO2	Understand the exact differential equations and Clairaut's form.	K2
CO3	Demonstrate understanding of the importance of partial differential equations.	K3
CO4	Develop the idea about the Laplace transform and its properties and simple problem.	K3
CO5	Understanding the inverse Laplace transform and its problem.	K3

Programme Code : UMA		B.Sc. Mathematics		
Course Code: M19UMA06		Core Course – VI- STATICS		
Batch 2019-2020	Semester III	Hours / Week 5	Total Hours 75	Credits 4

Course Objectives

This course introduces fundamental concepts of Mechanics. It covers concepts such as Law of forces, moments, frictions and centenary. It provides technical skills to understand and study various concepts in statics.

Course Outcomes:

On the successful completion of the course, students will be able to

CO	Statement	Knowledge Level
CO1	Law of forces and their properties.	K1
CO2	Understand the concept of moments and couples.	K2
CO3	Analyze the concept of Equilibrium of three forces	K3
CO4	Develop the idea about Friction laws and its properties.	K3
CO5	Understanding the catenary and its common properties and its real life problems.	K4

Programme Code : UMA		B.Sc. Mathematics		
Course Code: M19UMA07		Core Course – VII- Verbal and Non - Verbal Reasoning		
Batch 2019-2020	Semester I	Hours / Week 5	Total Hours 75	Credits 4

Course Objectives

This course introduces fundamental concepts of aptitude. It covers concepts such as Series Completion, Coding Decoding, Blood Relations, Direction Sense Test, Logical Venn Diagrams, Mathematical Operations, Logical Sequence of Words, Inserting the Missing Character, Assertion and Reason and Verification of Truth of the Statement. It provides technical skills to understand and study various concepts in verbal reasoning.

Course Outcomes:

On the successful completion of the course, students will be able to

CO	Statement	Knowledge Level
CO1	Series Completion, Coding Decoding and their properties.	K1
CO2	Understand the concept of Blood Relations and Direction Sense Test.	K2
CO3	Classification, Analytical reasoning and their properties.	K3
CO4	Analyze the concept of Mirror images, Water images.	K3
CO5	Develop the ideas about incomplete	K3

Programme Code : UMA		B.Sc. Mathematics		
Course Code: M19UMA07		Core Course – VII- VECTOR CALCULUS AND FOURIER SERIES		
Batch 2019-2020	Semester IV	Hours / Week 4	Total Hours 60	Credits 4

Course Objectives

This course introduces fundamental concepts of calculus. It covers concepts such as vector calculus and Fourier Series. It provides technical skills to understand and study various concepts in analysis.

Course Outcomes:

On the successful completion of the course, students will be able to

CO	Statement	Knowledge Level
CO1	Acquiring knowledge of Gradient, directional derivative of scalar point functions, Equations of tangent plane	K1
CO2	Understand the Vector point function.	K2
CO3	Demonstrate understanding of the Fourier series.	K4
CO4	Develop the idea about the Half Range sine series.	K3
CO5	Understanding the applications Fourier integral.	K3

Programme Code : UMA		B.Sc. Mathematics		
Course Code: M19UMA08		Core Course – VIII- DYNAMICS		
Batch 2019-2020	Semester IV	Hours / Week 5	Total Hours 75	Credits 4

Course Objectives

This course introduces fundamental concepts of Mechanics. It covers concepts such as velocity , acceleration, projectile, impact, SHM and central orbits. It provides technical skills to understand and study various concepts in Dynamics.

Course Outcomes:

On the successful completion of the course, students will be able to

CO	Statement	Knowledge Level
CO1	Basic concepts of velocity and acceleration.	K1
CO2	Behavior of motion of objects. Applications of Projectile in practical problems	K2
CO3	Analyze the Behavior of elastic bodies in real life problems.	K2
CO4	Develop the idea about Simple Harmonic Motion and its Applications.	K3
CO5	Law of forces in central orbit and Law of inverse square.	K4

Programme Code : UMA		B.Sc. Mathematics		
Course Code: M19UMAS02		SEC-II - PROGRAMMING IN C		
Batch 2019-2020	Semester IV	Hours / Week 2	Total Hours 30	Credits 2

Course Objectives

This course introduces the student to gain knowledge on various services of programming in C. It also presents various sample programs.

Course Outcomes:

On successful completion of the course, students will be able to

CO	Statement	Knowledge Level
CO1	Understand the basic concepts of C language	K2
CO2	Apply different types of decision making statements in c program	K3
CO3	Remember different types of String handling function	K1
CO4	Analyze different kinds of Arrays and functions	K4
CO5	Evaluate the concepts in C Programming	K5

Programme Code : UMA		B.Sc. Mathematics		
Course Code: M19UMA09		Core Course – IX- ALGEBRAIC STRUCTURES – I		
Batch 2019-2020	Semester V	Hours / Week 6	Total Hours 90	Credits 5

Course Objectives

This course introduces fundamental concepts of Algebraic structures. It covers concepts such as groups, cyclic groups, normal groups, homomorphism, Automorphism, rings, integral domain, field and Principal ideal Ring. It provides technical skills to understand and study various concepts in algebra.

Course Outcomes:

On the successful completion of the course, students will be able to

CO	Statement	Knowledge Level
CO1	Acquiring knowledge of basic abstract systems of Mathematics.	K2
CO2	Understand the normal sub group and Quotient groups.	K2
CO3	Demonstrate understanding of the importance of homomorphism and isomorphism in groups.	K4
CO4	Develop the idea about the rings, integral domain, field and maximal ideal.	K3
CO5	Understanding the Field of Quotient of an Integral Domain, Euclidean Rings, Principal ideal Ring.	K3

Programme Code : UMA		B.Sc. Mathematics		
Course Code: M19UMA10		Core Course – X -REAL ANALYSIS - I		
Batch 2019-2020	Semester V	Hours / Week 6	Total Hours 90	Credits 5

Course Objectives

This course introduces fundamental concepts of Real Analysis. It covers concepts such as Functions, Sequence, Series, Metric space and Continuous. It provides technical skills to understand and study various concepts in analysis.

Course Outcomes:

On the successful completion of the course, students will be able to

CO	Statement	Knowledge Level
CO1	Basic concepts of functions and sequence	K1
CO2	Understand the bounded sequence, monotone sequence, limit superior and inferior	K2
CO3	Analyze the concept of series and tests for absolute convergence.	K4
CO4	Develop the idea about the Metric space and limits in metric space	K3
CO5	Understanding the continuous functions in metric spaces, Open sets and closed sets and discontinuous	K4

Programme Code : UMA		B.Sc. Mathematics		
Course Code: M19UMA11		Core Course – XI- NUMERICAL METHODS		
Batch 2019-2020	Semester V	Hours / Week 5	Total Hours 75	Credits 4

Course Objectives

This course introduces fundamental concepts of Numerical methods. It covers concepts such as Bisection method, Iteration method, Regular Falsi method, Newton-Raphson method, Direct methods, Gauss elimination method, Gauss-Jordan method, Iterative methods, Jacobi method, Gauss-Seidal method, Gregory-Newton interpolation formulae, Interpolation with unequal intervals, Lagrange's interpolation formula, Inverse interpolation, Trapezoidal rule, Simpson's one third rule, Simpson's three-eighth rule, Taylor series method, Euler's method, Runge- Kutta methods-2nd Order, Runge- Kutta methods-3rd Order, Runge- Kutta methods-4th Order. It provides technical skills to understand and study various concepts in Numerical analysis.

Course Outcomes:

On the successful completion of the course, students will be able to

CO	Statement	Knowledge Level
CO1	Acquiring knowledge of basic idea of the solution of algebraic and transcendental equations.	K1
CO2	Understand the Solution of simultaneous linear algebraic equations.	K2
CO3	Demonstrate understanding of the importance of interpolation	K2
CO4	Develop the idea about the Numerical differentiation and integration .	K3
CO5	Understanding the Numerical solution of ordinary differential equation	K3

Programme Code : UMA		B.Sc. Mathematics		
Course Code: M19UMA12		Core Course – XII- OPERATION RESEARCH - I		
Batch 2019-2020	Semester V	Hours / Week 6	Total Hours 90	Credits 4

Course Objectives

This course introduces fundamental concepts of Operation Research. It covers concepts linear Programming, Simplex Method, Duality in Linear Programming, Transportation Problem, Assignment problem, Inventory Control. It provides technical skills to understand the concepts in applied mathematics.

Course Outcomes:

On the successful completion of the course, students will be able to

CO	Statement	Knowledge Level
CO1	Acquiring knowledge of basic idea of the linear programming.	K1
CO2	Understand the Solution of the simplex method.	K2
CO3	Demonstrate understanding of the importance of the duality of linear programming	K4
CO4	Develop the idea about the Transportation problem.	K3
CO5	Understanding the concept of Assignment problem.	K4

Programme Code : UMA		B.Sc. Mathematics		
Course Code: 19UMAS03		SEC-III - MATLAB		
Batch 2019-2020	Semester V	Hours / Week 2	Total Hours 30	Credits 2

Course Objectives

This course introduces fundamental concepts of Matlab theory. It covers concepts Basics of Matlab, The MATLAB Environment, Files Input / Output, Passing Functions To M – Files , Errors, Round Off Errors and Truncation Errors. It provides technical skills to understand the concepts in Matlab.

Course Outcomes

On the successful completion of the course, students will be able to

CO	Statement	Knowledge Level
CO1	Acquiring knowledge of basic idea of the Basic Matlab.	K1
CO2	Understand the Matlab programming skills.	K3
CO3	Demonstrate understanding of the Matlab Commands and Various Page Styles.	K2
CO4	Develop the idea about the Passing Functions To M – Files	K3
CO5	Understanding the concept errors handling.	K4

Programme Code : UMA		B.Sc. Mathematics		
Course Code: M19UMA13		Core Course – XIII- ALGEBRAIC STRUCTURES -II		
Batch 2019-2020	Semester VI	Hours / Week 6	Total Hours 90	Credits 5

Course Objectives

This course introduces fundamental concepts of Algebraic structures. It covers concepts such as vector space, Quotient space, Inner product space, Linear transformation, matrices, trace, transpose and determinants. It provides technical skills to understand and study various concepts in algebra.

Course Outcomes

On the successful completion of the course, students will be able to

CO	Statement	Knowledge Level
CO1	Acquiring knowledge of vector space, Internal direct sum and External direct sum.	K1
CO2	Understand the Linear Independence & Quotient space.	K2
CO3	Demonstrate understanding of the importance of inner product space.	K3
CO4	Develop the idea about the linear transformation, matrices.	K3
CO5	Understanding the traces, transposes and determinants.	K4

Programme Code : UMA		B.Sc. Mathematics		
Course Code: M19UMA14		Core Course -XIV- REAL ANALYSIS - II		
Batch 2019-2020	Semester VI	Hours / Week 6	Total Hours 90	Credits 5

Course Objectives

This course introduces fundamental concepts of Real Analysis. It covers concepts such as connected, complete, compact, Riemann integral, Point wise convergence and uniform convergence of series of functions. It provides technical skills to understand and study various concepts in Real analysis.

Course Outcomes

On the successful completion of the course, students will be able to

CO	Statement	Knowledge Level
CO1	Basic concepts of connected sets and complete metric space.	K2
CO2	Understand the continuous functions in compact metric space and uniform continuous.	K2
CO3	Existence of Riemann integral and properties of Riemann integral.	K4
CO4	Develop the idea about the Rolls theorem, Law of mean and Improper integrals.	K3
CO5	Understanding the Point wise convergence of sequence of functions, uniform convergence of sequence of functions and uniform convergence of series of functions	K4

Programme Code : UMA		B.Sc. Mathematics		
Course Code: M19UMA15		Core Course – XV- COMPLEX ANALYSIS		
Batch 2019-2020	Semester VI	Hours / Week 6	Total Hours 90	Credits 4

Course Objectives

This course introduces fundamental concepts of complex analysis . It covers concepts such as Complex Numbers and Analytical Functions, Bilinear Transformations and Mapping By Elementary Functions, Power Series and Series Expansions, Complex Integration and Calculus Of Residues. It provides technical skills to understand and study various concepts in analysis.

Course Outcomes:

On the successful completion of the course, students will be able to

CO	Statement	Knowledge Level
CO1	Acquiring knowledge of Complex Numbers And Analytical Functions.	K1
CO2	Understand Bilinear Transformations And Mapping By Elementary Functions.	K2
CO3	Demonstrate understanding of the Power Series And Series Expansions.	K4
CO4	Develop the idea about the Complex Integration.	K4
CO5	Understanding the applications Calculus of Residues.	K3

Programme Code : UMA		B.Sc. Mathematics		
Course Code: M19UMA16		Core Course –XVI- Operation Research –II		
Batch 2019-2020	Semester VI	Hours / Week 5	Total Hours 75	Credits 4

Course Objectives

This course introduces fundamental concepts of Operation Research. It covers Non-Linear Programming, Sequencing Problem, Dynamic Programming, Replacement Problem and System Reliability , Queuing Theory, Network Routing Problems and Network Scheduling By PERT / CPM. It provides technical skills to understand the concepts in applied mathematics.

Course Outcomes:

On the successful completion of the course, students will be able to

CO	Statement	Knowledge Level
CO1	Acquiring knowledge of basic idea of the Non-Linear Programming.	K1
CO2	Understand the Solution of Sequencing Problem.	K2
CO3	Demonstrate understanding of the importance of the Inventory Control.	K4
CO4	Develop the idea about the Queuing Theory.	K3
CO5	Understanding the concept of Network Routing Problems and Network Scheduling By PERT / CPM	K4

Programme Code : UMA		B.Sc. Mathematics		
Course Code: 19UMAS04		SEC-IV- QUANTITATIVE APTITUDE		
Batch 2019-2020	Semester VI	Hours / Week 2	Total Hours 30	Credits 2

Course Objectives

This course introduces fundamental concepts such as Numbers, system in Quantitative aptitude. It covers concepts such Time & Work, Pipes & Cistern, Time & Distance, Problem on Trains, Simple Interest, Compound Interest, Area, Volume & Surface Areas, Permutations & Combinations Probability. It provides technical skills to understand and develop various department examinations like Group Exams, TNPSC, RRB, SSC & IBPS.

Course Outcomes:

On the successful completion of the course, students will be able to

CO	Statement	Knowledge Level
CO1	Identify the logic behind Time & Work Pipes & Cistern.	K1
CO2	Understand the concepts of Time & Distance and Problem on Trains	K2
CO3	Analyze the problems on Simple Interest And Compound Interest	K2
CO4	Develop the Area Volume & Surface Areas.	K2
CO5	Apply the concepts to solve a problem for Permutations & Combinations Probability.	K3

Programme Code : UMA		B.Sc. Mathematics		
Course Code: M19UMAE01		Elective - I- DISCRETE MATHEMATICS		
Batch 2019-2020	Semester V	Hours / Week 5	Total Hours 75	Credits 4

Course Objectives

This course introduces fundamental concepts of discrete mathematics. It covers concepts such as Mathematical Logic, Normal Forms, Statement Calculus, Relations, Functions, Algebraic systems, homomorphism of semi groups & monoids, Lattices as Algebraic systems and Boolean Functions . It provides technical skills to understand and study various concepts in abstract algebra.

Course Outcomes:

On the successful completion of the course, students will be able to

CO	Statement	Knowledge Level
CO1	Acquiring knowledge of Mathematical Logic and Statement Formulas and Truth Table.	K1
CO2	Understand Normal Forms , Statement Calculus.	K2
CO3	Demonstrate understanding of the Relations and Functions.	K3
CO4	Develop the idea about the Algebraic systems, homomorphism of semi groups & monoids	K4
CO5	Understanding the applications of Lattices as Algebraic systems and Boolean Functions	K3

Programme Code : UMA		B.Sc. Mathematics		
Course Code: M19UMAE02		Elective – I- ELEMENTARY NUMBER THEORY		
Batch 2019-2020	Semester V	Hours / Week 5	Total Hours 75	Credits 4

Course Objectives

This course introduces fundamental concepts of Number theory. It covers concepts such as Divisibility of integers-Division, Euclidean algorithm, Prime and Composite numbers, Divisors of an integer-Arithmetic functions, Perfect numbers, Euler function, Congruence's, linear congruence, Fermat's theorem, Wilson's theorem, Lagrange's theorem. It provides technical skills to understand and study various concepts in number theory analysis.

Course Outcomes:

On the successful completion of the course, students will be able to

CO	Statement	Knowledge Level
CO1	Acquiring knowledge of the Divisibility of integers-Division and Euclidean algorithm.	K1
CO2	Understand Prime and Composite numbers and Divisors of an integer-Arithmetic functions	K2
CO3	Demonstrate understanding of the Perfect numbers and Euler function.	K3
CO4	Develop the idea about the Congruence's and linear congruence.	K3
CO5	Understanding the applications of Fermat's theorem, Wilson's theorem, Lagrange's theorem.	K3

Programme Code : UMA		B.Sc. Mathematics		
Course Code: M19UMAE03		Elective-I- Astronomy		
Batch 2019-2020	Semester V	Hours / Week 5	Total Hours 75	Credits 4

Course Objectives

This course introduces fundamental concepts of Astronomy. It covers concepts such as Standard formulae in Spherical Trigonometry , Diurnal motion Astronomical Refraction , Geocentric parallax , Kepler's laws of planetary motion , Fixing the position of the First point of Aries , Eclipses , General description of solar system and Stellar universe, . It provides technical skills to understand and study various concepts in space analysis.

Course Outcomes:

On the successful completion of the course, students will be able to

CO	Statement	Knowledge Level
CO1	Introducing the exciting world of astronomy to the students.	K1
CO2	Helping the students to study about the celestial objects.	K2
CO3	Understanding the effects of refractions geocentric parallax.	K3
CO4	Compiling solar and lunar ellipses. Understanding Kepler's laws of planetary motion	K2
CO5	Understanding the variation in duration of day and night in various zones of earth.	K4

Programme Code : UMA		B.Sc. Mathematics		
Course Code: M19UMAE04		Elective – II- Graph Theory		
Batch 2019-2020	Semester VI	Hours / Week 5	Total Hours 75	Credits 4

Course Objectives

This course introduces fundamental concepts of Graph theory . It covers as Graphs, Sub graphs, Operatrions on graphs, paths, connection, blocks, Eulerian, Hamiltonian, Trees and directed graphs. It provides technical skills to understand the concepts in applied mathematics.

Course Outcomes:

On the successful completion of the course, students will be able to

CO	Statement	Knowledge Level
CO1	Acquiring knowledge of basic idea graphs and sub graphs.	K1
CO2	Understand the Paths, connections.	K2
CO3	Demonstrate understanding of the importance of the cut point, cutedge and blocks.	K3
CO4	Develop the idea about the trees and centre of tree.	K3
CO5	Understanding the concept of directed graphs and its characterization.	K4

Programme Code : UMA		B.Sc. Mathematics		
Course Code: M19UMAE05		Elective – II- MATHEMATICAL MODELLING		
Batch 2019-2020	Semester VI	Hours / Week 5	Total Hours 75	Credits 4

Course Objectives

This course introduces fundamental concepts of Mathematical modeling. It covers Linear growth model, Non-linear growth and decay models, Modeling in population dynamics, Modeling of epidemics, Modeling in second order O.D. E, Elliptic motion of a satellites, Modeling through difference equations, Harrod model, Modeling through graphs, Communication network and Detection of clique. It provides technical skills to understand the concepts in applied mathematics.

Course Outcomes:

On the successful completion of the course, students will be able to

CO	Statement	Knowledge Level
CO1	Acquiring knowledge of basic idea of the Linear growth model, Non-linear growth and decay models.	K1
CO2	Understand the Modeling in population dynamics and Modeling of epidemics.	K2
CO3	Demonstrate understanding of the importance of the Modeling in second order O.D. E, Elliptic motion of a satellites.	K2
CO4	Develop the idea about the Modeling through difference equations, Harrod model.	K3
CO5	Understanding the concept of Modeling through graphs, Communication network and Detection of clique.	K3

Programme Code : UMA		B.Sc. Mathematics		
Course Code: M19UMAE06		Elective-II-Probability Theory		
Batch 2019-2020	Semester VI	Hours / Week 5	Total Hours 75	Credits 4

Course Objectives

This course introduces fundamental concepts of Statistics . It covers such as probability Axioms, conditional probability , probability distribution of a random variable, Discrete and continuous variables, Functions of a random variable, Moment generating functions, Binomial distribution, Poisson distribution, Gamma distribution, Normal distribution, Regression model Two way analysis of variance. It provides technical skills to understand the concepts in applied mathematics.

Course Outcomes:

On the successful completion of the course, students will be able to

CO	Statement	Knowledge Level
CO1	Acquiring knowledge of basic idea of probability Axioms, conditional probability.	K1
CO2	Understand the probability distribution of a random variable, Discrete and continuous variables.	K2
CO3	Demonstrate understanding of the importance of the Functions of a random variable, Moment generating functions.	K2
CO4	Develop the idea about the Binomial distribution, Poisson distribution, Gamma distribution, Normal distribution.	K3
CO5	Understanding the concept of Regression model Two way analysis of variance.	K3

Programme Code : UMA		B.Sc. Mathematics		
Course Code: M19UMAA01		Allied Course – I Algebra, Integral Calculus and Fourier Series		
Batch 2019-2020	Semester I	Hours / Week 5	Total Hours 75	Credits 4

Course Objectives

This course introduces fundamental concepts of Basic Mathematics. It covers such as matrix, Eigen Values and Eigen Vectors, Cayley Hamilton theorem, Polynomial equations, Imaginary and irrational roots, Descartes's rule of signs, Radius of curvature in Cartesian and polar co-ordinates, Integral Calculus, Integration by Parts, Fourier Series, Half range series. It provides technical skills to understand the concepts in allied mathematics.

Course Outcomes:

On the successful completion of the course, students will be able to

CO	Statement	Knowledge Level
CO1	Acquiring knowledge of basic idea of matrix, Eigen Values and Eigen Vectors, Cayley Hamilton theorem.	K1
CO2	Understand the theory of equations and its properties.	K2
CO3	Demonstrate understanding of the importance of the radius of curvature.	K2
CO4	Develop the idea about the solution of Integral Calculus, Integration by Parts.	K2
CO5	Understanding the concept of Fourier Series, Half range series.	K3

Programme Code : UMA		B.Sc. Mathematics		
Course Code: M19UMAA02		Allied Course –II -Differential Equations and Laplace Transforms		
Batch 2019-2020	Semester I	Hours / Week 5	Total Hours 75	Credits 4

Course Objectives

This course introduces fundamental concepts of Basic Mathematics. It covers such as Second order differential equation with constant coefficient, Formation of partial differential equation by eliminating arbitrary constants and arbitrary functions, Solutions of standard types of partial differential equations, Laplace transforms, Inverse Laplace transforms . It provides technical skills to understand the concepts in allied mathematics.

Course Outcomes:

On the successful completion of the course, students will be able to

CO	Statement	Knowledge Level
CO1	Acquiring knowledge of basic idea of Second order differential equation with constant coefficient and its problems.	K1
CO2	Understand the Formation of partial differential equation by eliminating arbitrary constants and arbitrary functions.	K2
CO3	Demonstrate understanding of the importance of the Solutions of standard types of partial differential equations	K2
CO4	Develop the idea about the solution of the Laplace transforms and its problems.	K2
CO5	Understanding the concept of the inverse Laplace transforms and its problems.	K3

Programme Code : UMA		B.Sc. Mathematics		
Course Code: M19UMAAP01		Allied Practical – I - Mathematics		
Batch 2019-2020	Semester II	Hours / Week 2	Total Hours 75	Credits 2

Course Objectives

This course introduces fundamental concepts of Basic Mathematics. It covers such as Characteristic equation, Cayley Hamilton theorem, nth derivative, Leibnitz formula for nth derivative, Partial differentiation, Homogeneous functions, Scalar point function Divergence, curl of a vector point function Solenoidal and irrotational vectors. Application of Laplace transforms to solve second order differential equations with constant coefficients. It provides technical skills to understand the concepts in allied mathematics.

Course Outcomes:

On the successful completion of the course, students will be able to

CO	Statement	Knowledge Level
CO1	Acquiring knowledge of basic idea of Characteristic equation, Cayley Hamilton theorem and its problems.	K1
CO2	Understand the Formation of nth derivative, Leibnitz formula for nth derivative.	K2
CO3	Demonstrate understanding of the importance of the Solutions Partial differentiation, Homogeneous functions.	K2
CO4	Develop the idea about the solution of the Scalar point function Divergence, curl of a vector point function , Solenoidal and irrotational vectors.	K2
CO5	Understanding the concept of the Application of Laplace transforms to solve second order differential equations with constant coefficients.	K3

Programme Code : UMA		B.Sc. Mathematics		
Course Code: M19NMA01		NMEC-I - Mathematics For Competitive Examination - I		
Batch 2019-2020	Semester III	Hours / Week 2	Total Hours 30	Credits 2

Course Objectives

This course introduces fundamental concepts such as Numbers, system in Quantitative aptitude. It covers concepts such HCF, LCM, Square Root, average, numbers, profit, loss, percentage, proposition & partnership. It provides technical skills to understand and develop various department examinations like Group Exams, TNPSC, RRB, SSC & IBPS.

Course Outcomes:

On the successful completion of the course, students will be able to

CO	Statement	Knowledge Level
CO1	Identify the logic behind numbers and fractions	K1
CO2	Understand the concepts of Square root, cube root and average.	K2
CO3	Analyze the problems on numbers and problems on ages.	K2
CO4	Develop the problems on indices, percentage, Profit And Loss.	K2
CO5	Apply the concepts to solve a problem for Ratio and Proportion, Partnership.	K3

Programme Code : UMA		B.Sc. Mathematics		
Course Code: M19NMA02		NMEC – I - MATRIX ALGEBRA		
Batch 2019-2020	Semester III	Hours / Week 2	Total Hours 30	Credits 2

Course Objectives

This course introduces fundamental concepts of Basic Mathematics. It covers such as Matrix, Addition, Subtraction, Multiplication, Transpose of a Matrix, adjoint of a Matrix, Inverse of the Matrix, Symmetric, Skew symmetric, Hermitian and Skew Hermitian Matrix, Rank of The Matrix, Cayley Hamilton Theorem. It provides technical skills to understand the concepts in allied mathematics.

Course Outcomes:

On the successful completion of the course, students will be able to

CO	Statement	Knowledge Level
CO1	Acquiring knowledge of basic idea of Matrix, Addition, Subtraction, Multiplication,	K1
CO2	Understand the Transpose of a Matrix, Adjoint of a Matrix, Inverse of the Matrix.	K2
CO3	Demonstrate understanding of the importance of the Symmetric, Skew symmetric, Hermitian and Skew Hermitian Matrix.	K2
CO4	Develop the idea about the Rank of The Matrix.	K2
CO5	Understanding the concept Cayley Hamilton Theorem and its problem.	K3

Programme Code : UMA		B.Sc. Mathematics		
Course Code: M19NMA03		NMEC – II - Mathematics For Competitive Examination – II		
Batch 2019-2020	Semester IV	Hours / Week 2	Total Hours 30	Credits 2

Course Objectives

This course introduces fundamental concepts such as Numbers, system in Quantitative aptitude. It covers concepts such as Partnership, Simple interest, Compound interest, Area and Odd man out & series. It provides technical skills to understand and develop various department examinations like Group Exams, TNPSC, RRB, SSC & IBPS.

Course Outcomes:

On the successful completion of the course, students will be able to

CO	Statement	Knowledge Level
CO1	Identify the logic behind Partnership and its problem.	K1
CO2	Understand the concepts of Simple interest and its problem.	K2
CO3	Analyze the problems on Compound interest and its problem.	K2
CO4	Develop the problems on Area and its problem. .	K2
CO5	Apply the concepts to solve a problem for Odd man out & series.	K3

Programme Code : UMA		B.Sc. Mathematics		
Course Code: M19NMA04		NMEC – II - Applied Numerical Methods		
Batch 2019-2020	Semester IV	Hours / Week 2	Total Hours 30	Credits 2

Course Objectives

This course introduces fundamental concepts such as Numerical methods. It covers concepts such as Solution of algebraic and Transcendental equations , Bisection Method, Newton – Raphson Method, Finite difference , Expression of any value of y in terms of the initial value y_0 and differences, Newton Forward difference, Newton Backward difference, Central differences. It provides technical skills to understand and develop the numerical ability.

Course Outcomes:

On the successful completion of the course, students will be able to

CO	Statement	Knowledge Level
CO1	Identify the logic behind Solution of algebraic and Transcendental equations , Bisection Method, Newton – Raphson Method.	K1
CO2	Understand the concepts of , Finite difference , Expression of any value of y in terms of the initial value y_0 and differences	K2
CO3	Analyze the problems on Newton Forward difference and its problem.	K3
CO4	Develop the problems on Newton backward difference and its problem. .	K2
CO5	Apply the concepts to solve a problem for Central differences.	K3

Programme Code : UMA		B.Sc. Mathematics		
Course Code: M 19UMAVA01		Value Added – I - Verbal and Logical Reasoning		
Batch 2019-2020	Semester III	Hours / Week 2	Total Hours 30	Credits 2

Course Objectives

This course introduces fundamental concepts such as verbal and logical reasoning in Quantitative aptitude. It covers concepts such as Verbal Reasoning, Non - Verbal Reasoning, Problems on seating Arrangements, Family based on problems, Odd man out and series. It provides technical skills to understand and develop various department examinations like Group Exams, TNPSC, RRB, SSC & IBPS.

Course Outcomes:

On the successful completion of the course, students will be able to

CO	Statement	Knowledge Level
CO1	Identify the logic behind Verbal Reasoning and its problem.	K1
CO2	Understand the concepts of Verbal Reasoning and its problem.	K2
CO3	Understand the concepts of Non - Verbal Reasoning and its problem.	K2
CO4	Develop the Family based on problems.	K2
CO5	Apply the concepts to solve a problem for Odd man out and series.	K3

Programme Code : UMA		B.Sc. Mathematics		
Course Code: M19UMAVA02		Value Added – II - Quantitative Aptitude Examinations		
Batch 2019-2020	Semester IV	Hours / Week 2	Total Hours 30	Credits 2

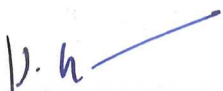
Course Objectives

This course introduces fundamental concepts such as Numbers, system in Quantitative aptitude. It covers concepts such as Time & Work, Pipes & Cistern, Time & Distance, Problems on Trains, Boats & Streams. It provides technical skills to understand and develop various department examinations like Group Exams, TNPSC, RRB, SSC & IBPS.

Course Outcomes:

On the successful completion of the course, students will be able to

CO	Statement	Knowledge Level
CO1	Identify the logic behind Time & Work and its problem.	K1
CO2	Understand the concepts of Pipes & Cistern and its problem.	K2
CO3	Analyze the problems on Time & Distance and its problem.	K2
CO4	Develop the problems on Trains and its problem. .	K2
CO5	Apply the concepts to solve a problem for Boats & Streams.	K3


Head of the Department
 Head of the Department of Mathematics
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 KALIPPATTI - 637 501,
 Namakkal District.


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Principal
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Kalippatti – 637 501, Namakkal (Dt), Tamil Nadu.

DEPARTMENT OF MATHEMATICS

PROGRAMME OUTCOMES (POs) OF B.Sc. MATHEMATICS

Academic year 2020-2021

PO1: Provides a solid foundation in the discipline of Mathematics and enable students to formulate mathematical solutions to real life problems.

PO2: Under graduate students are to be passionately engaged in initial learning with an aim to think differently as agents of new knowledge, understanding and applying new ideas in order to acquire employability/ self employment.

PO3: Under graduate students are trained to take up higher learning programmes.

PO4: Under graduate students are to be exposed to technical, analytical and creative skills.

PO5: Under graduate students are to be imparted with a board conceptual background in the Biological sciences/Computer sciences/ Languages and cultures / Management studies / Physical sciences.


Head of the Department

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DEPARTMENT OF MATHEMATICS

PROGRAMME SPECIFIC OUTCOMES (PSOs) OF B.Sc. MATHEMATICS

Academic year 2020-2021

PSO 1: Understand and apply mathematical concepts in various contexts related to science, technology, business, and industry.


PSO 2: Acquire the knowledge to apply analytical and theoretical skills to model and solve mathematical problems.

PSO 3: Formulate and develop mathematical arguments in a logical manner.

PSO 4: Apply the critical thinking ability to carry out extended investigation and innovation of mathematical formulations.


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