KONGUNADU ARTS AND SCIENCE COLLEGE (AUTONOMOUS)

Re-accredited by NAAC with 'A' Grade – 3.64 CGPA out of 4 (3rd Cycle)

College of Excellence (UGC)

Coimbatore – 641 029

DEPARTMENT OF MATHEMATICS (Aided)

COURSE OUTCOMES (CO)

B.Sc. MATHEMATICS

**For the students admitted
In the
Academic Year 2018-2019**

Programme Code : 02		B.Sc Mathematics		
Course Code:	18UMA101	Core Paper 1 - Classical Algebra		
Batch	Semester	Hours / Week	Total Hours	Credits
2018-2021	I	4	60	4

Course Objectives

1. To get the knowledge of convergence and divergence of a series.
2. To find the summation of series.
3. To understand the nature of the roots of an algebraic equation.

Course Outcomes (CO)

K1	CO1	Finding the roots of a polynomial function.
K2	CO2	Classifying convergence and divergence of a series.
K3	CO3	Applying the Binomial theorem, Exponential theorem, logarithmic theorem to find summation of series.
K4	CO4	Analyzing the nature of the roots of the equation.

Programme Code : 02		B.Sc Mathematics		
Course Code:	18UMA102	Core Paper 2 –CALCULUS		
Batch	Semester	Hours / Week	Total Hours	Credits
2018-2021	I	5	75	4

Course Objectives

1. To give basic knowledge about Mathematical concepts in calculus.
2. To evaluate double and triple integrals.
3. To learn different methods of integration, Beta and Gamma integrals which form the basis for higher studies.

Course Outcomes (CO)

K1	CO1	Remembering the formulas in differentiation and integration.
K2	CO2	Interpret the definite integral geometrically as the area under a curve.
K3	CO3	Apply the concept of definite integral to solve various kinds of problems.
K4	CO4	Analyze the values of the derivative at a point algebraically.

Programme Code	: 02	B.Sc Mathematics		
Course Code	: 18UMA1I1	Allied Paper 1-STATISTICS – I		
Batch	Semester	Hours / Week	Total Hours	Credits
2018-2021	I	7	105	5

Course Objectives

1. To enable the students to acquire the knowledge of statistics.
2. To remember the properties of various statistical functions.
3. To understand the concepts of some statistical distributions.

Course Outcomes (CO)

K1	CO1	Remembering the concepts of probability and random variables
K2	CO2	Understanding the properties of some distributions.
K3	CO3	Solving mean, median, mode, moments and moment generating functions of Binomial, Poission and Normal distributions.
K4	CO4	Analyzing how correlation is used to identify the relationships between variables and how regression analysis is used to predict outcomes.

Programme Code : 02		B.Sc Mathematics		
Course Code: 18UMA203		Core Paper 3 - Differential Equations And Laplace Transforms		
Batch	Semester	Hours / Week	Total Hours	Credits
2018-2021	II	4	60	4

Course Objectives

1. To solve second-order linear differential equations with constant and variable coefficient.
2. To get the ability of solving first and second order ordinary differential equations and first order partial differential equations.
3. To get the knowledge about Laplace and inverse Laplace transforms.

Course Outcomes (CO)

K1	CO1	Recalling the concept of first order linear differential equations.
K2	CO2	Understanding the concept of first order higher degree ordinary differential equations
K3	CO3	Solving Linear partial differential equations by using the Lagrange's method.
K4	CO4	Analyzing the concepts of Laplace transforms and inverse Laplace transforms to solve ODE with constant coefficients.

Programme Code : 02	B.Sc Mathematics			
Course Code: 18UMA204	Core Paper 4 - Trigonometry, Vector Calculus And Fourier Series			
Batch	**Semester**	**Hours / Week**	**Total Hours**	**Credits**
2018-2021	II	5	75	4

Course Objectives

1. To Enable the students to provide basic knowledge of trigonometry
2. To Inculcate the knowledge of vector calculus and applying it for theorems
3. To understand the expansions of Fourier series.

Course Outcomes (CO)

K1	CO1	Defining the hyperbolic and inverse hyperbolic functions.
K2	CO2	Illustrating the Fourier co-efficient for Periodic functions.
K3	CO3	Applying the differential operator to find Gradient, Divergence and Curl
K4	CO4	Examining the multiple integrals by applying Gauss divergence theorem, Stoke's theorem and Green's theorem.

Programme Code : 02	B.Sc Mathematics			
Course Code : 18UMA2I2	Allied Paper 2- STATISTICS – II			
Batch	**Semester**	**Hours / Week**	**Total Hours**	**Credits**
2018-2021	II	7	105	5

Course Objectives

1. To enable the students to give inference on statistical population based on sample statistics.
2. To Understand the concepts of various estimators.
3. To study the concepts of analysis of variance.

Course Outcomes (CO)

K1	CO1	Finding the derivations of t, χ^2 and F distributions.
K2	CO2	Explaining the procedure for Testing of hypothesis and sampling of attributes.
K3	CO3	Applying the concepts of various distributions in real time situations.
K4	CO4	Analyzing one - way and two – way Classifications and design of experiments.

Programme Code : 02		B.Sc Mathematics		
Course Code: 18UMA305		Core Paper 5 - Analytical Geometry		
Batch 2018-2021	Semester III	Hours / Week 4	Total Hours 60	Credits 4

Course Objectives

1. To gain knowledge about coordinate geometry and also about geometrical aspects.
2. To know the concepts of cone and cylinder.
3. To determine coordinate axes and coordinate planes in the dimensional space.

Course Outcomes (CO)

K1	CO1	Remembering the equation of a line that passes through a given point which is parallel or perpendicular to a given line.
K2	CO2	Understanding the results based on the properties of a sphere.
K3	CO3	Identifying conic sections.
K4	CO4	Analyzing the concepts of geometry.

Programme Code : 02		B.Sc Mathematics		
Course Code:	18UMA306	Core Paper 6 – Statics		
Batch 2018-2021	Semester III	Hours / Week 3	Total Hours 45	Credits 4

Course Objectives

1. To enable the knowledge of Forces and Moments.

2. To understand the notions of Friction.

3. To solve problems under friction and equilibrium of strings.

Course Outcomes (CO)

K1	CO1	Remembering the notions of friction and equilibrium of strings and deploy them in solving the problems.
K2	CO2	Understanding the concepts of forces and moments.
K3	CO3	Applying the concepts of forces in finding the resultant of any number of forces and the resultant of force and moments.
K4	CO4	Analyzing the basics of coplanar forces and equilibrium of forces acting on a rigid body and solving the problems.

Programme Code : 02		B.Sc Mathematics		
		GENERAL AWARENESS		
Batch	Semester	Hours / Week	Total Hours	Credits
2018-2021	III	2	30	3

Course Objectives

1. To acquire knowledge in relation to various competitive examinations.
2. To encourage the students to newspaper reading and journals.
3. To familiarise the students with online examinations which are being adopted in competitive examinations.

Course Outcomes (CO)

K1	CO1	Knowledge about literature, Reasoning, Science and Technology and Youth Red Cross.
K2	CO2	Remembering important data on general knowledge
K3	CO3	Make use of the data for competitive examinations
K4	CO4	Analyse social phenomena

Programme Code : 02		B.Sc Mathematics		
Course Code: 18UMA407		Core Paper 7- Graph Theory		
Batch	Semester	Hours / Week	Total Hours	Credits
2018-2021	IV	3	45	4

Course Objectives

1. To understand about the fundamental definitions and properties of graphs.
2. To Know more about directed and undirected graphs.
3. To enable to know the numerous applications of graph theory.

Course Outcomes (CO)

K1	CO1	Remembering the basic concepts of graph theory
K2	CO2	Understanding about the operations of graphs, trees, cut sets and network flows
K3	CO3	Interpreting the matrix representation of graphs
K4	CO4	Analyzing real time problems using the concept of graph theory

Programme Code : 02		B.Sc Mathematics		
Course Code: 18UMA408		Core Paper 8 – Dynamics		
Batch 2018-2021	Semester IV	Hours / Week 4	Total Hours 60	Credits 4

Course Objectives

1. To enable the students to know the laws, principles and understand the concepts of motion of a particle and projectiles.
2. To provide the knowledge about the field of kinematics and impact between spheres.
3. To gain knowledge about simple harmonic motion and central orbits.

Course Outcomes (CO)

K1	CO1	Remembering the concepts of motion of a particle and projectile in different angles.
K2	CO2	Understanding the notions of impact between two smooth spheres in different ways.
K3	CO3	Applying the concept of simple harmonic motions in composition of two bodies in different directions.
K4	CO4	Distinguishing between the pedal equations of well known curves and solving two fold problems in central orbits.

Programme Code : 02		B.Sc Mathematics		
Course Code: 18UMA4S2		Skill Based Subject 2 THEORY OF NUMBERS		
Batch 2018-2021	Semester IV	Hours / Week 2	Total Hours 30	Credits 3

Course Objectives

1. To expose the basics of theory of numbers to the students.
2. To enable the students to learn the usage of prime numbers and factors.
3. To instill the method of Euclidean algorithm.

Course Outcomes (CO)

K1	CO1	Defining the concepts of divisibility, congruence, GCD and prime numbers.
K2	CO2	Explaining various divisibility tests.
K3	CO3	Identifying G.C.D and L.C.M using prime factors.
K4	CO4	Analyzing the nature of numbers.

Programme Code : 02		B.Sc Mathematics		
Course Code: 18UMA509		Core paper 9 - Real Analysis-I		
Batch	Semester	Hours / Week	Total Hours	Credits
2018-2021	V	5	75	3

Course Objectives

1. To know about the basic notions of the real numbers system, set theory, relations and functions .
2. To enable to have knowledge about the basic topological properties and theorems based on point set topology.
3. To Study about the covering theorems, compactness, metric spaces and continuity of a function.

Course Outcomes (CO)

K1	CO1	Remembering the basic properties in the field of real numbers.
K2	CO2	Understanding the concepts of continuity, convergent sequences and metric spaces.
K3	CO3	Applying the concept of point set topology in related theorems
K4	CO4	Analyzing the compactness and to classify the continuity of a function with its limits.

Programme Code: 02		B.Sc Mathematics		
Course Code: 18UMA510		Core Paper 10 - Complex Analysis – I		
Batch	Semester	Hours / Week	Total Hours	Credits
2018-2021	V	6	90	4

Course Objectives

1. To recognize complex analysis as an essential part of mathematical background for engineers, physists and other scientists.
2. To introduce the students about the complex number system.
3. To Justify the need for a complex number system and explain how it is related to other existing number systems.

Course Outcomes (CO)

K1	CO1	Defining continuity, differentiability and analyticity of a complex valued function which helps the students to acquire deeper knowledge.
K2	CO2	Showing the condition(s) for a complex valued function to be analytic and/or harmonic.
K3	CO3	Developing the concept of sequences and series with respect to the complex numbers system.
K4	CO4	Analyzing complex integration, Cauchy's integral formulae and

Programme Code : 02	B.Sc Mathematics			
Course Code: 18UMA511	Core Paper 11 - Modern Algebra I			
Batch	**Semester**	**Hours / Week**	**Total Hours**	**Credits**
2018-2021	V	6	90	4

Course Objectives

1. To know the concepts of group theory and ring theory
2. To understand the concepts of Ideals and Quotient Rings
3. To enable the concepts of Cauchy's theorem for Abelian groups , Sylow's theorem for Abelian groups , Automorphisms , Inner automorphism and Cayley's theorem.

Course Outcomes (CO)

K1	CO1	Finding whether a given abstract structure is a group or a ring.
K2	CO2	Understanding the elementary concepts of rings and fields and compare the similarities and differences between these concepts and those of group theory.
K3	CO3	Applying the concepts of homomorphism and isomorphism for comparing the algebraic features of mathematical systems in groups, rings and fields
K4	CO4	Examining the results from group theory to study the properties of rings and fields and to possess the ability to work within their algebraic structures.

Programme Code : 02	B.Sc Mathematics			
Course Code: 18UMA512	Core paper 12 - Programming in C			
Batch	**Semester**	**Hours / Week**	**Total Hours**	**Credits**
2018-2021	V	4	60	3

Course Objectives

1. To understand the C Programming language.
2. To learn the concept of control statements, one dimensional and two dimensional arrays.
3. To solve the mathematical problems using C Programs.

Course Outcomes (CO)

K1	CO1	Remembering the functioning of C Programming.
K2	CO2	Understanding the various features of a C Program.
K3	CO3	Applying the operators and functions to solve Mathematical problems.
K4	CO4	Analyzing the accuracy of the results obtained.

Course Code:	18UMA5CL	Core Practical 1 - Programming in C		
Batch	Semester	Hours / Week	Total Hours	Credits
2018-2021	V	2	30	2

Course Objectives

1. To provide practical experience for the students to understand the structure of a C Program.
2. To enrich the knowledge in solving mathematical problems using C Programs.
3. To train the students to write C Programs on their own.

Course Outcomes (CO)

K3	CO1	Applying the various operators and functions of C language in Programs
K4	CO2	Analyzing the various data types and formatting features available in C language
K5	CO3	Evaluating the mathematical problems using C Programs

Programme Code : 02	B.Sc Mathematics
Course Code:18UMA5S3	Skill Based Subject 3 Fundamentals of LaTeX -

		Theory		
Batch	**Semester**	**Hours / Week**	**Total Hours**	**Credits**
2018-2021	V	2	30	3

Course Objectives

1. To enable the students to understand the concept of *LaTeX* for typesetting and formatting of mathematical and scientific documents.
2. To apply the array techniques for creating Matrices.
3. To use the preamble of *LaTeX* file to define document class and layout options.

Course Outcomes (CO)

K1	CO1	Tells the advantages of LaTeX .
K2	CO2	Understanding the scientific document layout.
K3	CO3	Construct the document which contains more complicated Mathematical formulas by using LaTeX.
K4	CO4	Analyzing the basic structures of a different journal article.

Programme Code : 02		**B.Sc Mathematics**		
Course Code:	18UMA613	Core Paper 13 - Real Analysis-II		
Batch	**Semester**	**Hours / Week**	**Total Hours**	**Credits**
2018-2021	VI	6	90	4

Course Objectives

1. To understand the concept of functions, Connectedness, uniform continuity, fixed point and related theorems.
2. To find the Derivatives and related theorems and Functions of bounded variations and related theorems.
3. To enable to know about the Reimann- Stieltjes integrals and its properties.

Course Outcomes (CO)

K1	CO1	Remembering the concept of derivatives, bounded variation.
K2	CO2	Understanding the concepts of connectedness
K3	CO3	Applying the differentiability of real functions in related theorems.
K4	CO4	Analyzing the Riemann Integrals.

Programme Code : 02	**B.Sc Mathematics**

Course Code:18UMA614		Core paper 14 - Complex Analysis – II		
Batch 2018-2021	**Semester** VI	**Hours / Week** 6	**Total Hours** 90	**Credits** 4

Course Objectives

1. To learn about Taylor's Series and Laurent's series.
2. To understand the concept of singularities and residues.
3. To study the concept of definite integrals.

Course Outcomes (CO)

K1	CO1	Recalling the fundamental theorem of algebra in complex number system.
K2	CO2	Illustrating the Taylor's and Laurent's expansions of simple functions.
K3	CO3	Applying Laurent's series for isolated singularities and determine residues.
K4	CO4	Analyzing the concepts of residues and residue theorem to compute real definite integrals using contours.

Programme Code : 02			B.Sc Mathematics		
Course Code:	18UMA615		Core Paper 15 - Modern Algebra II		
Batch	Semester	Hours / Week	Total Hours		Credits
2018-2021	VI	6	90		4

Course Objectives

1. To know the concepts of Hermitian and Skew-Hermitian Matrices , Orthogonal and Unitary Matrices ,Characteristic Roots and Characteristic Vectors of a Square Matrix.

2. To enable the concepts of linear independence, basis and dimension of a vector spaces.
3. To understand the concept of linear transformation and matrices which will enrich the knowledge of logical thinking.

Course Outcomes (CO)

K1	CO1	Recalling the basic concepts of matrices, rank of a Matrix
K2	CO2	Understanding the basic ideas of vector spaces and the concepts of linear span, linear independence, basis, dimension and to apply these concepts to vector spaces, subspaces and inner product spaces.
K3	CO3	Applying the principles of matrix algebra to linear transformations and compute their rank.
K4	CO4	Examining whether the given set of vector is linearly independent or linearly dependent .

Course Code:18UMA6S4		Skill Based Subject 4 Fundamentals of LaTeX-Practical		
Batch	Semester	Hours / Week	Total Hours	Credits
2018-2021	VI	2	30	3

Course Objectives

1. LaTeX is a typewriting system that is extremely useful for typing and formatting scientific documents.
2. Typing Mathematical equations is very intuitive and easy in LaTeX.
3. This practical subject is Job and Skill oriented for the students.

Course Outcomes(CO)

K3	CO1	Constructing the letters, dissertation, curriculum vitae and other documents using LaTeX.
K4	CO2	Analyzing the LaTeX software for the preparation of question papers and tables.
K5	CO3	Choosing LaTeX for typing Mathematical equation, case statements and Matrices.

Programme Code : 02		B.Sc Mathematics	
Major Elective Paper - DISCRETE MATHEMATICS AND AUTOMATA THEORY			
Batch	Hours / Week	Total Hours	Credits
2018-2021	5	75	5

Course Objectives

1 To understand mathematical foundations to create mathematical arguments.
2 To enable to know how lattices and Boolean algebra are used as mathematical models of network systems.
3. To know about Automata Theory and its applications.

Course Outcomes (CO)

K1	CO1	Remembering the concepts of Mathematical logic.
K2	CO2	Explaining the implication problems using truth table , replacement process and rules of inference.
K3	CO3	Solving normal forms of given logical expression.
K4	CO4	Analyzing Karnaugh map for simplifying the Boolean expression.

Programme Code : 02		B.Sc Mathematics	
Major Elective Paper OPERATIONS RESEARCH			
Batch	Hours / Week	Total Hours	Credits
2018-2021	5	75	5

Course Objectives

1. To introduce certain OR techniques such as LPP, Transportation problems, Assignment problems, Game theory and Inventory.
2. To help the students to develop logical reasoning.
3. To apply mathematical tools to managerial and real life problems.

Course Outcomes (CO)

K1	CO1	Remembering the concept of linear programming problem using Simplex Method.
K2	CO2	Understanding the rules of game theory for solving games and summarize the concept of inventory control.
K3	CO3	Applying the notions of linear programming in solving transportation problems and Assignment Problem.
K4	CO4	Analyzing the concept of CPM & PERT

Programme Code: 02		B.Sc Mathematics		
Major Elective Paper - NUMERICAL METHODS				
Batch	Hours / Week	Total Hours		Credits
2018-2021	5	75		5

Course Objectives

1. To solve algebraic and transcendental equations for finding roots using numerical methods.
2. To Solve simultaneous algebraic linear equations using various numerical methods
3. To know about finite differences and its uses to interpolate the values for equal and unequal intervals.

Course Outcomes (CO)

K1	CO1	Remembering various numerical methods for finding the solution of algebraic and transcendental equations.
K2	CO2	Demonstrating various numerical algorithms for solving simultaneous linear algebraic equations.
K3	CO3	Applying finite difference methods for interpolation.
K4	CO4	Analyzing the ordinary differential equations by using numerical methods.

Programme Code : 02		B.Sc Mathematics		
Major Elective Paper - LINEAR ALGEBRA				
Batch	Hours / Week	Total Hours		Credits
2018-2021	5	75		5

Course Objectives

1. Represent mathematical information and communicate mathematical reasoning symbolically and verbally.
2. Apply mathematical methods involving arithmetic, algebra, geometry, and graphs to solve problems.
3. Interpret and analyze numerical data, mathematical concepts, and identify patterns to formulate and validate reasoning

Course Outcomes(CO)

K1	CO1	Remember to write the system of linear equations in terms of matrix equations
K2	CO2	Understanding the systems of linear equations and matrix equations to determine linear dependency or independency.
K3	CO3	Solve problems that can be modeled by systems of linear equations.
K4	CO4	Examining the solution set of a system of linear equations

Programme Code : 02		B.Sc Mathematics		
Major Elective Paper - BUSINESS APPLICATION SOFTWARE				
Batch	Hours / Week		Total Hours	Credits
2018-2021	5		75	5

Course Objectives

1. To enable the students to acquire knowledge about some advanced topics in Software like windows 95.
2. To work in Microsoft word , Microsoft Excel and Microsoft Access .
3. To make presentations using power point.

Course Outcomes(CO)

K1	CO1	Finding word processing techniques to produce a well-designed and esthetical pleasing formal document.
K2	CO2	Inferring to use standard spread sheet features to produce a representation and analysis of numerical data.
K3	CO3	Building charts, template and saving data, modify animation, sounds and art in Microsoft power point and an overview on Microsoft access.
K4	CO4	Analyzing and respond to an ethical issue related to computer usage.

Programme Code : 02		B.Sc Mathematics		
Major Elective Paper - ASTRONOMY				
Batch	Hours / Week		Total Hours	Credits
2018-2021	5		75	5

Course Objectives

1. To acquire the knowledge about the celestial objects and planets.
2. Develop skills to design observing projects with research telescopes and projects drawing upon data in the literature and in archives.

3. To be familiar with the appearance of a range of common astronomical objects, such as asteroids, comets, satellites, planets, stars, and galaxies.

Course Outcomes(CO)

K1	CO1	• Defining about the observed properties of physical systems that comprise the known universe.
K2	CO2	Demonstrate their ability to read, understand, and critically analyze the astronomical/physical concepts
K3	CO3	Applying their physics and mathematical skills to problems in the areas of planetary science.

K4	CO4	Analyze to draw valid scientific conclusions and communicate those conclusions in a clear and articulate manner.

Programme Code : 02		B.Sc Mathematics		
Major Elective Paper FUZZY MATHEMATICS				
Batch	Hours / Week	Total Hours	Credits	
2018-2021	5	75	5	

Course Objectives

1. To know the basic definitions of fuzzy set theory.

2. To know the fundamentals of fuzzy Algebra.

3. To know the applications of fuzzy Technology.

Course Outcomes(CO)

K1	CO1	Remembering the basic concepts of Boolean algebra.
K2	CO2	Understanding the concepts of fuzzy sets.
K3	CO3	Identifying the concepts of Algebra of fuzzy relations and logic connectives.
K4	CO4	Analyzing fuzzy subgroup and Preimage of subgroupoid.

Programme Code : 02		B.Sc Mathematics		
Major Elective Paper COMBINATORICS				
Batch	Hours / Week	Total Hours	Credits	
2018-2021	5	75	5	

Course Objectives

1. To learn about recurrence relation.

2. To have knowledge about permutation.

3. To be familiar with assignment problems.

Course Outcomes(CO)

K1	CO1	Remembering the basic concepts of Fibonacci sequence.
K2	CO2	Understanding the concepts of Permutation and Fibonacci type relation.
K3	CO3	Identifying the concepts of counting simple electrical networks.
K4	CO4	Analyzing inclusion and Exclusion principle.

Programme Code : 02	B.Sc Mathematics
Major Elective Paper **STOCHASTIC PROCESSES**	
~~Batch~~ ~~Hours / Week~~ ~~Total Hours~~ ~~Credits~~	

Programme Code: 03	B.Sc Physics				
Course Code: 18UMA1A1	Allied A Paper 1 Mathematics				
Batch	Semester	Hrs/Week	Total Hours	Credits
2018-2021	I	5	105	5

Course Objectives

1. To know the basic concepts of Laplace transforms.
2. To study the fundamentals of stochastic process.
3. To know the applications of queuing systems.

Course Outcomes(CO)

K1	CO1	Remembering the basic concepts of Difference equations.
K2	CO2	Understanding the concepts of Markov chains.
K3	CO3	Identifying the concepts of Poisson process and related distributions.
K4	CO4	Analyzing Stochastic process in queuing and reliability.

Course Objectives

1.To provide the basic knowledge of Trigonometry and Matrices.
2.To get the ability of solving first and second order ordinary differential equations
and first order partial differential equations
3.To give basic knowledge about Mathematical concepts in Calculus.

Course Outcomes (CO)

K1	CO1	Defining hyperbolic and inverse hyperbolic functions.
K2	CO2	Understanding the concept of Characteristic equations to find Eigen Values and Eigen Vector.
K3	CO3	Applying finite difference methods for interpolation.
K4	CO4	Analyzing the Laplace and inverse Laplace transforms and solve Ordinary differential equations.

Programme Code: 03		B.Sc Physics		
Course Code: 18UMA2A1		Allied A Paper 2 Mathematics II		
Batch	**Semester**	**Hrs/Week**	**Total Hours**	**Credits**
2018-2021	II	5	105	5

Course Objectives

1. To provide the basic knowledge of Probability.
2. To get the ability to solve Partial differential equations.
3. **To Understand basic knowledge in Vector Calculus.**

Course Outcomes (CO)

K1	CO1	Defining the multiple integrals using Green's Theorem.
K2	CO2	Illustrating the Fourier Coefficient for periodic Functions.
K3	CO3	Solving Partial Differential Equation by using the Lagrange's Method.
K4	CO4	Examining the General solution of Bessel's equations.

Programme Code: 04		B.Sc Chemistry		
Course Code: 18UMA1A2		Allied A Paper 1 Mathematics I		
Batch	**Semester**	**Hrs/Week**	**Total Hours**	**Credits**
2018-2021	I	5	105	5

Course Objectives

1. To provide the basic knowledge of Trigonometry.
2. To get the ability of solving first and second order ordinary differential equations and first order partial differential equations
3. To know about finite differences and its uses to interpolate the values for equal and unequal intervals.

Course Outcomes (CO)

K1	CO1	Defining hyperbolic and inverse hyperbolic functions.
K2	CO2	Understanding the concept of first order higher degree ordinary differential equations.
K3	CO3	Applying finite difference methods for interpolation.
K4	CO4	Analyzing the Laplace and inverse Laplace transforms to solve the Ordinary differential equations.

Programme Code: 04		B.Sc Chemistry		
Course Code: 18UMA2A2		Allied A Paper 2 Mathematics II		
Batch	Semester	Hrs/Week	Total Hours	Credits
2018-2021	II	5	105	5

Course Objectives

1. To give basic knowledge about Mathematical concepts in Calculus.

2. To understand the concepts of Evaluating Double and Triple integrals.

3. To get the ability of solving Partial differential equations .

Course Outcomes (CO)

K1	CO1	Remembering the formulas in Differentiation and Integration.
K2	CO2	Illustrating the Fourier Coefficient for periodic Functions.
K3	CO3	Solving Partial Differential Equation by using the Lagrange's Method.
K4	CO4	Analyzing the differential operator to find Gradient, Divergence and Curl

Programme Code : 09		B.Sc Computer Science		
Course Code: 18UCS1A1		Allied 1 - DISCRETE MATHEMATICS AND STATISTICS		
Batch	Semester	Hours / Week	Total Hours	Credits
2018-2021	I	6	90	5

Course Objectives

1. To understand the concepts of discrete structures, formal languages.
2. To use finite state machines to model computer operations.
3. To solve real time problems using various statistical techniques.

Course Outcomes (CO)

K1	CO1	Remembering the fundamental ideas and notation of discrete mathematics with examples.
K2	CO2	Understanding the concept of measures of central tendency, measures of dispersion, Correlation, regression, probability distributions, hypothesis testing.
K3	CO3	Applying problem solving techniques to solve real world problems.
K4	CO4	Analyzing the experimental and observational data and draw appropriate conclusions.

Programme Code: 11		B.Sc Computer Technology		
Course Code: 18UCT1A1		Allied 1-Discrete Mathematics and Statistics		
Batch	Semester	Hours / Week	Total Hours	Credits
2018-2021	I	6	90	5

Course Objectives

Programme Code : 08		B.Sc Biotechnology		
Course Code: 18UBT3A3		BASIC MATHEMATICS AND STATISTICS		
Batch	Semester	Hours / Week	Total Hours	Credits
2018-2021	III	6	90	4

1. To understand the concepts and principles of mathematical logic, formal languages
2. To classify Measures of central tendency and dispersion
3. To know the purpose of correlation and regression

Course Outcomes (CO)

K1	CO1	Remembering about the fundamental ideas and notation of discrete mathematics with examples
K2	CO2	Understanding the concepts of measures of central tendency and dispersion
K3	CO3	Applying Logic and Boolean algebra concepts in circuit construction
K4	CO4	Analyzing grammar in shortest path construction

Programme Code: 10		BCA		
Course Code: 18 UCA3A3		OPERATIONS RESEARCH		
Batch	Semester	Hours / Week	Total Hours	Credits
2018-2021	III	6	90	5

Course Objectives

1. To identify and develop operational research models from the verbal description of the real system.

2. To understand the mathematical tools that are needed to solve optimization problems.

3. To develop a report that describes the model and the solving technique.

Course Outcomes (CO)

K1	CO1	Showing that the real time problems can be solved by using operations research techniques.
K2	CO2	Demonstrating the idea of finding the shortest path using transportation problem.
K3	CO3	Appling the concept of inventory control and replacement techniques in business.
K4	CO4	Examining the concept of traffic intensity in real life problems.

Course Objectives

1. To understand the basic concepts in mathematics and statistics.

2. To analysis wide variety of data.
3. To make deductions from assumption.

Course Outcomes (CO)

K1	CO1	Remember the basic concepts in mathematics and statistics.
K2	CO2	Understand the scope of data collections using statistical methods.
K3	CO3	Apply the concepts of Differentiation and Integration in the field of Bio-technology.
K4	CO4	Analyze the correlation among the variables.

Programme Code : 12	B.Sc Information Technology			
Course Code: 18UIT1A1	MATHEMATICAL FOUNDATION OF COMPUTER SCIENCE			
Batch	Semester	Hours / Week	Total Hours	Credits
2018-2021	I	6	90	5

Course Objectives

1. To understand Matrices, Set theory, Mathematical logic, Relations and Graph theory.
2. To solve the problems of Eigen values and Eigen vector.
3. To solve the problems of statement calculus and predicate calculus

Course Outcomes (CO)

K1	CO1	Remembering the concepts of matrices, set theory, mathematical logic, relations and graph theory
K2	CO2	Understanding the basic terminology of discrete mathematics
K3	CO3	Applying theory inference for statement calculus and predicate calculus
K4	CO4	Analyzing the results through the program outputs

Programme Code : 16	BBA			
Course Code : 18UBB1A1	MATHEMATICS FOR MANAGEMENT – I			
Batch	Semester	Hours / Week	Total Hours	Credits
2018-2021	I	6	90	5

Course Objectives

1. To Understand the concepts of Matrices, concepts related with banking and concepts of various statistical tools.
2. To study the concepts of statistics, Measures of dispersion and Analysis of time series. Also understand the applications of these concepts in real world problems.
3. To use mathematical knowledge to analyze and solve problems.

Course Outcomes (CO)

K1	CO1	Remembering the basic concepts of mathematics in business analysis
K2	CO2	Understanding the problem-solving methods
K3	CO3	Applying basic mathematical calculations in business problems
K4	CO4	Analyzing mathematical techniques and applications

Programme Code : 17			BBA CA		
Course Code :	18UBA1A1		MATHEMATICS FOR MANAGEMENT – I		
Batch	Semester	Hours / Week	Total Hours		Credits
2018-2021	I	6	90		5

Course Objectives

1. To Understand the concepts of Matrices, concepts related with banking and concepts of various statistical tools.
2. To study the concepts of statistics, Measures of dispersion and Analysis of time series. Also understand the applications of these concepts in real world problems.
3. To use mathematical knowledge to analyze and solve problems.

Course Outcomes (CO)

K1	CO1	Remembering the basic concepts of mathematics in business analysis
K2	CO2	Understanding the problem-solving methods
K3	CO3	Applying basic mathematical calculations in business problems
K4	CO4	Analyzing mathematical techniques and applications

Programme Code : 13			B.Com		
Course Code:	18UCM3A3		BUSINESS MATHEMATICS		
Batch	Semester	Hours / Week	Total Hours		Credits
2018-2021	III	6	90		5

Course Objectives

1. To give basic knowledge about Mathematical concepts
2. To solve the modern business problems using various mathematical techniques.
3. To solve the various real life business problems.

Course Outcomes (CO)

Programme Code :14		B.Com CA		
Course Code: 18UCC1A1		BUSINESS MATHEMATICS		
Batch 2018-2021	Semester I	Hours / Week 6	Total Hours 90	Credits 5

K4	CO4	Analyzing the business conditions using Effective rate of Interest.

Programme Code : 15		B.Com PA		
Course Code: 18UPA1A1		BUSINESS MATHEMATICS		
Batch 2018-2021	Semester I	Hours / Week 6	Total Hours 90	Credits 5

Course Objectives

1. On successful completion of this course, the student should have understood the basic concepts.
2. To use Mathematical Techniques to solve the modern business problems.
3. To enable the students to apply basic mathematical knowledge to solve the real life business problems.

Course Outcomes (CO)

K1	CO1	Remembering the basic concepts of mathematics in business analysis
K2	CO2	Understanding the concepts of mathematics in finance
K3	CO3	Applying basic mathematical calculations in business problems
K4	CO4	Analyzing the business conditions using Differentiation and Integration

Course Objectives

1. To give basic knowledge about Mathematical concepts
2. To solve the modern business problems using various mathematical techniques
3. To enable the students to apply basic mathematical knowledge to solve the real life business problems.

Course Outcomes (CO)

K1	CO1	Remembering the basic concepts of mathematics in business analysis
K2	CO2	Understanding the concepts of mathematics in finance
K3	CO3	Applying basic mathematical calculations in business problems

K4	CO4	Analyzing the business conditions using Differentiation and Integration

Programme Code : 11		B.Sc Computer Science		
Course Code:	18UCS2A2	ALLIED 2 - OPERATIONS RESEARCH		
Batch	Semester	Hours / Week	Total Hours	Credits
2018-2021	II	6	90	5

Course Objectives

1. To understand the various mathematical applications in industries and decision making for real time environment.
2. To gain the knowledge about the principles and applications of operations research.
3. To develop skills necessary to effectively analyze and synthesize the inter-relationships inherent in complex socio-economic productive systems.

Course Outcomes (CO)

K1	CO1	Remembering mathematical formulation of the problem.
K2	CO2	Understanding the notions of linear programming in solving transportation problems and Assignment Problems.
K3	CO3	Applying the fundamental concept of inventory control and Queuing theory.
K4	CO4	Analyzing CPM and PERT techniques, to plan, schedule, and control project activities.

Programme Code :12		B.Sc Information Technology		
Course Code:	18UIT2A2	COMPUTER ORIENTED NUMERICAL & STATISTICAL METHODS		
Batch	Semester	Hours / Week	Total Hours	Credits
2018-2021	II	6	90	5

Course Objectives

1. To have indepth knowledge of various advanced methods in numerical analysis and statistics.
2. To get numerical solutions of equations like transcendental and non linear differential equations when ordinary analytical methods fail.
3. To learn fundamentals and concepts of statistical methods, in particular, with reference to frequency distribution and measures of central tendency, measures of dispersion, Correlation and Regression.

Course Outcomes (CO)

Programme Code : 08		B.Sc Biotechnology		
Course Code:	18UBT4AL	C PROGRAMMING - Lab		
Batch	Semester	Hours / Week	Total Hours	Credits
2018-2021	IV	2	30	2

		integration			
K3	CO3	Applying an appropriate numerical method for solving algebraic or transcendental equation			
K4	CO4	Analyzing the concept of Measure of central tendency, Measures of dispersion , Correlation and Regression			

Programme Code :08		B.Sc Biotechnology		
Course Code:	18UBT4A4	C PROGRAMMING AND NUMERICAL METHODS		
Batch	Semester	Hours / Week	Total Hours	Credits
2018-2021	IV	5	75	4

Course Objectives

1. To understand the C Programming language.
2. To solve the mathematical problems using C Programs.
3. To learn the problem solving techniques in Numerical methods.

Course Outcomes (CO)

K1	CO1	Remember the functioning of C Programming
K2	CO2	Understand the various features of a C Program
K3	CO3	Apply the operators and functions to solve the Mathematical problems
K4	CO4	Analyze the accuracy of the results obtained

Course Objectives

1. To provide practical experience for the students to understand the structure of a C Program.
2. To enable the students to enrich their knowledge in the compilation of C Programs.
3. To solve mathematical problems using C Programs.

Course Outcomes (CO)

K3	CO1	Apply the various operators and functions of C language in Programs
K4	CO2	Analyze the various data types and formatting features available in C language
K5	CO3	Determine the solution of mathematical problems using C Programs

Programme Code :14		B.Com CA		
Course Code: 18UCC2A2		BUSINESS STATISTICS		
Batch 2018-2021	**Semester** II	**Hours / Week** 6	**Total Hours** 90	**Credits** 5

Course Objectives

1. To demonstrate understanding of basic concepts of probability and statistics embedded in their courses
2. Statistics in the social sciences involves the collection, analysis, interpretation, and

Programme Code : 13		B.Com		
Course Code: 18UCM4A4		BUSINESS STATISTICS		
Batch 2018-2021	**Semester** IV	**Hours / Week** 6	**Total Hours** 90	**Credits** 5

Presentation of data to answer questions about the social world.
3. To Perform Correlation & Compute the equation of simple regression line from a sample data and the intercept of the equation

Course Outcomes (CO)

K1	CO1	Select appropriate Statistical techniques for summarizing and displaying business data.
K2	CO 2	Understand the measures of central tendency, symmetrical and asymmetrical distribution
K3	CO3	Identify and carryout basic statistical analyses used in sociological inquiry.
K4	CO4	Analyze and draw inferences from business data using appropriate statistical methods.

Course Objectives
1. To give basic knowledge about statistical concepts.
2. To solve the modern business problems using various statistical techniques
3. To estimate the mean and standard deviation of the marginal distribution of the response variable and use this information to inform a business decision

Course Outcomes (CO)

K1	CO1	Select appropriate Statistical techniques for summarizing and displaying business data
K2	CO2	Interpret correlation coefficients and Formulate regression line by identifying dependent and independent variables.
K3	CO3	Identify and carryout basic statistical analyses used in sociological inquiry.

K4	CO4	Analyze and draw inferences from business data using appropriate statistical methods.

Course Objectives

1. To give basic knowledge about statistical concepts.
2. To solve the modern business problems using various statistical techniques
3. To estimate the mean and standard deviation of the marginal distribution of the response variable and use this information to inform a business decision

Course Outcomes (CO)

Programme Code : 15		B.Com PA		
Course Code: 18UPA2A2		STATISTICS FOR BUSINESS		
Batch	Semester	Hours / Week	Total Hours	Credits
2018-2021	II	6	90	5

Programme Code :16		BBA		
Course Code : 18UBB2A2		MATHEMATICS FOR MANAGEMENT - II		
Batch	Semester	Hours / Week	Total Hours	Credits
2018-2021	II	6	90	5

Course Objectives

1. To understand various mathematical applications in industries.
2. To know the mathematical tools that are needed to solve optimization
    Problems.
3. To understand the Decision making for real time environment.

Course Outcomes (CO)

K1	CO1	Remembering to use the variables for formulating mathematical models in management.
K2	CO2	Understanding the concept of Transportation and Assignment models
K3	CO3	Applying the fundamental concept of Queuing theory.
K4	CO4	Analyzing CPM and PERT techniques, to plan, schedule, and control project activities.

Programme Code :17		BBA CA		
Course Code : 18UBA2A2		MATHEMATICS FOR MANAGEMENT - II		
Batch	Semester	Hours / Week	Total Hours	Credits

2018-2021	II	6	90	5

Course Objectives

1. To understand various mathematical applications in industries.
2. To know the mathematical tools that are needed to solve optimization
   Problems.
3. To understand the Decision making for real time environment.

Course Outcomes (CO)

K1	CO1	Remembering to use the variables for formulating mathematical models in management.
K2	CO2	Understanding the concept of Transportation and Assignment models
K3	CO3	Applying the fundamental concept of Queuing theory.
K4	CO4	Analyzing CPM and PERT techniques, to plan, schedule, and control project activities.

KONGUNADU ARTS AND SCIENCE COLLEGE (AUTONOMOUS)
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College of Excellence (UGC)
Coimbatore – 641 029

DEPARTMENT OF MATHEMATICS (Aided)

COURSE OUTCOMES (CO)

B.Sc. MATHEMATICS

For the students admitted
In the
Academic Year 2019-2020

Programme Code : 02		B.Sc Mathematics		
Course Code: 19UMA101		Core Paper 1 - Classical Algebra		
Batch	**Semester**	**Hours / Week**	**Total Hours**	**Credits**
2019-2022	I	4	60	4

Course Objectives

1. To get the knowledge of convergence and divergence of a series.
2. To find the summation of series.
3. To understand the nature of the roots of an algebraic equation.

Course Outcomes (CO)

K1	CO1	Finding the roots of a polynomial function.
K2	CO2	Classifying convergence and divergence of a series.
K3	CO3	Applying the Binomial theorem, Exponential theorem, logarithmic theorem to find summation of series.
K4	CO4	Analyzing the nature of the roots of the equation.

Programme Code : 02		B.Sc Mathematics		
Course Code: 19UMA102		Core Paper 2 –CALCULUS		
Batch	**Semester**	**Hours / Week**	**Total Hours**	**Credits**
2019-2022	I	5	75	4

Course Objectives

1. To give basic knowledge about Mathematical concepts in calculus.
2. To evaluate double and triple integrals.
3. To learn different methods of integration, Beta and Gamma integrals which form the basis for higher studies.

Course Outcomes (CO)

K1	CO1	Remembering the formulas in differentiation and integration.
K2	CO2	Interpret the definite integral geometrically as the area under a curve.
K3	CO3	Apply the concept of definite integral to solve various kinds of problems.
K4	CO4	Analyze the values of the derivative at a point algebraically.

Programme Code : 02	B.Sc Mathematics		
Course Code : 19UMA1I1	Allied Paper 1-STATISTICS – I		
Batch	Semester	Hours / Week	Total Hours	Credits
2019-2022	I	7	105	5

Course Objectives

1. To enable the students to acquire the knowledge of statistics.
2. To remember the properties of various statistical functions.
3. To understand the concepts of some statistical distributions.

Course Outcomes (CO)

K1	CO1	Remembering the concepts of probability and random variables
K2	CO2	Understanding the properties of some distributions.
K3	CO3	Solving mean, median, mode, moments and moment generating functions of Binomial, Poission and Normal distributions.
K4	CO4	Analyzing how correlation is used to identify the relationships between variables and how regression analysis is used to predict outcomes.

Programme Code : 02	B.Sc Mathematics		
Course Code: 19UMA203	Core Paper 3 - Differential Equations And Laplace Transforms		
Batch	Semester	Hours / Week	Total Hours	Credits
2019-2022	II	4	60	4

Course Objectives

1. To solve second-order linear differential equations with constant and variable coefficient.
2. To get the ability of solving first and second order ordinary differential equations and first order partial differential equations.
3. To get the knowledge about Laplace and inverse Laplace transforms.

Course Outcomes (CO)

K1	CO1	Recalling the concept of first order linear differential equations.
K2	CO2	Understanding the concept of first order higher degree ordinary differential equations
K3	CO3	Solving Linear partial differential equations by using the Lagrange's method.
K4	CO4	Analyzing the concepts of Laplace transforms and inverse Laplace transforms to solve ODE with constant coefficients.

Programme Code : 02		B.Sc Mathematics		
Course Code: 19UMA204		Core Paper 4 - Trigonometry, Vector Calculus And Fourier Series		
Batch	Semester	Hours / Week	Total Hours	Credits
2019-2022	II	5	75	4

Course Objectives
1. To Enable the students to provide basic knowledge of trigonometry
2. To Inculcate the knowledge of vector calculus and applying it for theorems
3. To understand the expansions of Fourier series.

Course Outcomes (CO)

K1	CO1	Defining the hyperbolic and inverse hyperbolic functions.
K2	CO2	Illustrating the Fourier co-efficient for Periodic functions.
K3	CO3	Applying the differential operator to find Gradient, Divergence and Curl
K4	CO4	Examining the multiple integrals by applying Gauss divergence theorem, Stoke's theorem and Green's theorem.

Programme Code : 02		B.Sc Mathematics		
Course Code : 19UMA2I2		Allied Paper 2- STATISTICS – II		
Batch	Semester	Hours / Week	Total Hours	Credits
2019-2022	II	7	105	5

Course Objectives

1. To enable the students to give inference on statistical population based on sample statistics.
2. To Understand the concepts of various estimators.
3. To study the concepts of analysis of variance.

Course Outcomes (CO)

K1	CO1	Finding the derivations of t, χ^2 and F distributions.
K2	CO2	Explaining the procedure for Testing of hypothesis and sampling of attributes.
K3	CO3	Applying the concepts of various distributions in real time situations.
K4	CO4	Analyzing one - way and two – way Classifications and design of experiments.

Programme Code : 02		B.Sc Mathematics		
Course Code: 19UMA305		Core Paper 5 - Analytical Geometry		
Batch 2019-2022	Semester III	Hours / Week 4	Total Hours 60	Credits 4

Course Objectives

1. To gain knowledge about coordinate geometry and also about geometrical aspects.
2. To know the concepts of cone and cylinder.
3. To determine coordinate axes and coordinate planes in the dimensional space.

Course Outcomes (CO)

K1	CO1	Remembering the equation of a line that passes through a given point which is parallel or perpendicular to a given line.
K2	CO2	Understanding the results based on the properties of a sphere.
K3	CO3	Identifying conic sections.
K4	CO4	Analyzing the concepts of geometry.

Programme Code : 02		B.Sc Mathematics		
Course Code: 19UMA306		Core Paper 6 – Statics		
Batch 2019-2022	Semester III	Hours / Week 3	Total Hours 45	Credits 4

Course Objectives

1. To enable the knowledge of Forces and Moments.

2. To understand the notions of Friction.

3. To solve problems under friction and equilibrium of strings**.**

Course Outcomes (CO)

K1	CO1	Remembering the notions of friction and equilibrium of strings and deploy them in solving the problems.
K2	CO2	Understanding the concepts of forces and moments.
K3	CO3	Applying the concepts of forces in finding the resultant of any number of forces and the resultant of force and moments.
K4	CO4	Analyzing the basics of coplanar forces and equilibrium of forces acting on a rigid body and solving the problems.

Programme Code : 02		B.Sc Mathematics		
		GENERAL AWARENESS		
Batch	Semester	Hours / Week	Total Hours	Credits
2018-2021	III	2	30	3

Course Objectives

1. To acquire knowledge in relation to various competitive examinations.
2. To encourage the students to newspaper reading and journals.
3. To familiarise the students with online examinations which are being adopted in competitive examinations.

Course Outcomes (CO)

K1	CO1	Knowledge about literature, Reasoning, Science and Technology and Youth Red Cross.
K2	CO2	Remembering important data on general knowledge
K3	CO3	Make use of the data for competitive examinations
K4	CO4	Analyse social phenomena

Programme Code : 02		B.Sc Mathematics		
Course Code: 19UMA407		NUMBER THEORY		
Batch	Semester	Hours / Week	Total Hours	Credits

2019-2022	IV	3	45	3

Course Objectives

1. To expose the basics of number theory to the students.
2. To enable the students to learn the usage of prime numbers and factors.
3. To solve linear congruences.

Course Outcomes (CO)

K1	CO1	Remembering the concepts of divisibility, congruence, GCD and prime numbers.
K2	CO2	Explaining various divisibility tests.
K3	CO3	Identifying G.C.D and L.C.M using prime factors.
K4	CO4	Analyzing the nature of numbers.

Programme Code : 02	B.Sc Mathematics			
Course Code: 19UMA408	Core Paper 8 – Dynamics			
Batch	Semester	Hours / Week	Total Hours	Credits
2019-2022	IV	4	60	4

Course Objectives

1. To enable the students to know the laws, principles and understand the concepts of motion of a particle and projectiles.
2. To provide the knowledge about the field of kinematics and impact between spheres.
3. To gain knowledge about simple harmonic motion and central orbits.

Course Outcomes (CO)

K1	CO1	Remembering the concepts of motion of a particle and projectile in different angles.
K2	CO2	Understanding the notions of impact between two smooth spheres in different ways.
K3	CO3	Applying the concept of simple harmonic motions in composition of two bodies in different directions.
K4	CO4	Distinguishing between the pedal equations of well known curves and solving two fold problems in central orbits.

Programme Code : 02	B.Sc Mathematics
Course Code: 19UMA4S2	Skill Based Subject 2 – Mathematical Structures

Batch	Semester	Hours / Week	Total Hours	Credits
2019-2022	IV	2	30	3

Course Objectives

1. To understand mathematical foundations to create mathematical arguments.
2. To enable to know how lattices and Boolean algebra are used as mathematical models of network systems.
3. To know how the switching circuits are used in electrical switches.

Course Outcomes (CO)

K1	CO1	Remembering the concepts of Mathematical logic.
K2	CO2	Explaining the implication problems using truth table, replacement process and rules of inference.
K3	CO3	Solving normal forms of given logical expression.
K4	CO4	Analyzing Karnaugh map for simplifying the Boolean expression.

Programme Code : 02	B.Sc Mathematics			
Course Code: 19UMA509	Core paper 9 - Real Analysis-I			
Batch	Semester	Hours / Week	Total Hours	Credits
2019-2022	V	5	75	3

Course Objectives

1. To know about the basic notions of the real numbers system, set theory, relations and functions .
2. To enable to have knowledge about the basic topological properties and theorems based on point set topology.
3. To Study about the covering theorems, compactness, metric spaces and continuity of a function.

Course Outcomes (CO)

K1	CO1	Remembering the basic properties in the field of real numbers.
K2	CO2	Understanding the concepts of continuity, convergent sequences and metric spaces.
K3	CO3	Applying the concept of point set topology in related theorems
K4	CO4	Analyzing the compactness and to classify the continuity of a function with its limits.

Programme Code: 02	B.Sc Mathematics			
Course Code: 19UMA510	Core Paper 10 - Complex Analysis – I			
Batch	Semester	Hours / Week	Total Hours	Credits

Programme Code : 02	B.Sc Mathematics			
Course Code: 19UMA511	Core Paper 11 - Modern Algebra I			
Batch	**Semester**	**Hours / Week**	**Total Hours**	**Credits**
2019-2022	V	6	90	4

Course Objectives

1. To recognize complex analysis as an essential part of mathematical background for engineers, physists and other scientists.
2. To introduce the students about the complex number system.
3. To Justify the need for a complex number system and explain how it is related to other existing number systems.

Course Outcomes (CO)

K1	CO1	Defining continuity, differentiability and analyticity of a complex valued function which helps the students to acquire deeper knowledge.
K2	CO2	Showing the condition(s) for a complex valued function to be analytic and/or harmonic.
K3	CO3	Developing the concept of sequences and series with respect to the complex numbers system.
K4	CO4	Analyzing complex integration, Cauchy's integral formulae and Cauchy's fundamental theorem and evaluation of complex integration.

Course Objectives

1. To know the concepts of group theory and ring theory
2. To understand the concepts of Ideals and Quotient Rings
3. To enable the concepts of Cauchy's theorem for Abelian groups , Sylow's theorem for Abelian groups , Automorphisms , Inner automorphism and Cayley's theorem.

Course Outcomes (CO)

K1	CO1	Finding whether a given abstract structure is a group or a ring.
K2	CO2	Understanding the elementary concepts of rings and fields and compare the similarities and differences between these concepts and those of group theory.
K3	CO3	Applying the concepts of homomorphism and isomorphism for comparing the algebraic features of mathematical systems in groups, rings and fields
K4	CO4	Examining the results from group theory to study the properties of rings and fields and to possess the ability to work within their algebraic structures.

Programme Code : 02	B.Sc Mathematics			
Course Code: 19UMA512	Core paper 12 - Programming in C			
Batch	**Semester**	**Hours / Week**	**Total Hours**	**Credits**

2019-2022	V	4	60	3

Course Objectives

1. To understand the C Programming language.
2. To learn the concept of control statements, one dimensional and two dimensional arrays.
3. To solve the mathematical problems using C Programs.

Course Outcomes (CO)

K1	CO1	Remembering the functioning of C Programming.
K2	CO2	Understanding the various features of a C Program.
K3	CO3	Applying the operators and functions to solve Mathematical problems.
K4	CO4	Analyzing the accuracy of the results obtained.

Course Code:	19UMA5CL	Core Practical 1 - Programming in C		
Batch	**Semester**	**Hours / Week**	**Total Hours**	**Credits**
2019-2022	V	2	30	2

Course Objectives

1. To provide practical experience for the students to understand the structure of a C Program.
2. To enrich the knowledge in solving mathematical problems using C Programs.
3. To train the students to write C Programs on their own.

Course Outcomes (CO)

K3	CO1	Applying the various operators and functions of C language in Programs
K4	CO2	Analyzing the various data types and formatting features available in C language
K5	CO3	Evaluating the mathematical problems using C Programs

Programme Code : 02		**B.Sc Mathematics**		
Course Code:19UMA5S3		Skill Based Subject 3 Fundamentals of LaTeX - Theory		
Batch	**Semester**	**Hours / Week**	**Total Hours**	**Credits**
2019-2022	V	2	30	3

Course Objectives

1. To enable the students to understand the concept of *LaTeX* for typesetting and formatting of mathematical and scientific documents.
2. To apply the array techniques for creating Matrices.
3. To use the preamble of *LaTeX* file to define document class and layout options.

Course Outcomes (CO)

K1	CO1	Tells the advantages of LaTeX .
K2	CO2	Understanding the scientific document layout.
K3	CO3	Construct the document which contains more complicated Mathematical formulas by using LaTeX.
K4	CO4	Analyzing the basic structures of a different journal article.

Extra Departmental Course (EDC)				
Course Code: 19UMA5X1		Fundamentals of Mathematics		
Batch	**Semester**	**Hours/Week**	**Total Hours**	**Credits**
2019-2022	V	2	30	3

Course Objectives

1. To understand the basic concepts in Mathematics and Statistics.
2. To study the concepts related with banking using various Mathematical concepts.
3. To understand the application of these mathematical concepts in the real life problems.

Course Outcomes (CO)

K1	CO1	Remembering the concepts of matrices and set theory.
K2	CO2	Understand the appropriate Statistical techniques for summarizing and displaying business data.
K3	CO3	Applying basic mathematical concepts in business problems.
K4	CO4	Analyze the correlation and its types.

Programme Code : 02	**B.Sc Mathematics**

Course Code:	19UMA613	Core Paper 13 - Real Analysis-II		
Batch	**Semester**	**Hours / Week**	**Total Hours**	**Credits**
2019-2022	VI	6	90	4

Course Objectives

1. To understand the concept of functions, Connectedness, uniform continuity, fixed point and related theorems.
2. To find the Derivatives and related theorems and Functions of bounded variations and related theorems.
3. To enable to know about the Reimann- Stieltjes integrals and its properties.

Course Outcomes (CO)

K1	CO1	Remembering the concept of derivatives, bounded variation.
K2	CO2	Understanding the concepts of connectedness
K3	CO3	Applying the differentiability of real functions in related theorems.
K4	CO4	Analyzing the Riemann Integrals.

Course Code:19UMA614	Core paper 14 - Complex Analysis – II			
Batch	**Semester**	**Hours / Week**	**Total Hours**	**Credits**
2019-2022	VI	6	90	4

Course Objectives

1. To learn about Taylor's Series and Laurent's series.
2. To understand the concept of singularities and residues.
3. To study the concept of definite integrals.

Course Outcomes (CO)

K1	CO1	Recalling the fundamental theorem of algebra in complex number system.
K2	CO2	Illustrating the Taylor's and Laurent's expansions of simple functions.
K3	CO3	Applying Laurent's series for isolated singularities and determine residues.
K4	CO4	Analyzing the concepts of residues and residue theorem to compute real definite integrals using contours.

Programme Code : 02	B.Sc Mathematics			
Course Code:	19UMA615	Core Paper 15 - Modern Algebra II		
Batch	**Semester**	**Hours / Week**	**Total Hours**	**Credits**
2019-2022	VI	6	90	4

Course Objectives

1. To know the concepts of Hermitian and Skew-Hermitian Matrices, Orthogonal and Unitary Matrices ,Characteristic Roots and Characteristic Vectors of a Square Matrix.

2. To enable the concepts of linear independence, basis and dimension of a vector spaces.
3. To understand the concept of linear transformation and matrices which will enrich the knowledge of logical thinking.

Course Outcomes (CO)

K1	CO1	Recalling the basic concepts of matrices, rank of a Matrix
K2	CO2	Understanding the basic ideas of vector spaces and the concepts of linear span, linear independence, basis, dimension and to apply these concepts to vector spaces, subspaces and inner product spaces.
K3	CO3	Applying the principles of matrix algebra to linear transformations and compute their rank.
K4	CO4	Examining whether the given set of vector is linearly independent or linearly dependent .

Course Code:19UMA6S4		Skill Based Subject 4 Fundamentals of LaTeX-Practical		
Batch	**Semester**	**Hours / Week**	**Total Hours**	**Credits**
2019-2022	VI	2	30	3

Course Objectives

1. LaTeX is a typewriting system that is extremely useful for typing and formatting scientific documents.
2. Typing Mathematical equations is very intuitive and easy in LaTeX.
3. This practical subject is Job and Skill oriented for the students.

Course Outcomes(CO)

K3	CO1	Constructing the letters, dissertation, curriculum vitae and other documents using LaTeX.
K4	CO2	Analyzing the LaTeX software for the preparation of question papers and tables.
K5	CO3	Choosing LaTeX for typing Mathematical equation, case statements and Matrices.

Programme Code : 02	B.Sc Mathematics		
Major Elective Paper - DISCRETE MATHEMATICS AND AUTOMATA THEORY			
Batch	**Hours / Week**	**Total Hours**	**Credits**

2019-2022	5	75	5

Course Objectives

1. To understand mathematical foundations to create mathematical arguments.
2. To enable to know how lattices and Boolean algebra are used as mathematical models of network systems.
3. To know about Automata Theory and its applications.

Course Outcomes (CO)

K1	CO1	Remembering the concepts of Mathematical logic.
K2	CO2	Explaining the implication problems using truth table , replacement process and rules of inference.
K3	CO3	Solving normal forms of given logical expression.
K4	CO4	Analyzing Karnaugh map for simplifying the Boolean expression.

Programme Code : 02		B.Sc Mathematics	
Major Elective Paper OPERATIONS RESEARCH			
Batch	**Hours / Week**	**Total Hours**	**Credits**
2019-2022	5	75	5

Course Objectives

1. To introduce certain OR techniques such as LPP, Transportation problems, Assignment problems, Game theory and Inventory.
2. To help the students to develop logical reasoning.
3. To apply mathematical tools to managerial and real life problems.

Course Outcomes (CO)

K1	CO1	Remembering the concept of linear programming problem using Simplex Method.
K2	CO2	Understanding the rules of game theory for solving games and summarize the concept of inventory control.
K3	CO3	Applying the notions of linear programming in solving transportation problems and Assignment Problem.
K4	CO4	Analyzing the concept of CPM & PERT

Programme Code: 02	B.Sc Mathematics

Major Elective Paper - NUMERICAL METHODS			
Batch	**Hours / Week**	**Total Hours**	**Credits**
2019-2022	5	75	5

Course Objectives

1. To solve algebraic and transcendental equations for finding roots using numerical methods.
2. To Solve simultaneous algebraic linear equations using various numerical methods
3. To know about finite differences and its uses to interpolate the values for equal and unequal intervals.

Course Outcomes (CO)

K1	CO1	Remembering various numerical methods for finding the solution of algebraic and transcendental equations.
K2	CO2	Demonstrating various numerical algorithms for solving simultaneous linear algebraic equations.
K3	CO3	Applying finite difference methods for interpolation.
K4	CO4	Analyzing the ordinary differential equations by using numerical methods.

Programme Code : 02	**B.Sc Mathematics**

Major Elective Paper - LINEAR ALGEBRA			
Batch	**Hours / Week**	**Total Hours**	**Credits**
2019-2022	5	75	5

Course Objectives

1. Represent mathematical information and communicate mathematical reasoning symbolically and verbally.
2. Apply mathematical methods involving arithmetic, algebra, geometry, and graphs to solve problems.
3. Interpret and analyze numerical data, mathematical concepts, and identify patterns to formulate and validate reasoning

Course Outcomes(CO)

K1	CO1	Remember to write the system of linear equations in terms of matrix equations
K2	CO2	Understanding the systems of linear equations and matrix equations to determine linear dependency or independency.
K3	CO3	Solve problems that can be modeled by systems of linear equations.
K4	CO4	Examining the solution set of a system of linear equations

Programme Code : 02	**B.Sc Mathematics**		
Major Elective Paper - BUSINESS APPLICATION SOFTWARE			
Batch	**Hours / Week**	**Total Hours**	**Credits**

2019-2022	5	75	5

Course Objectives

1. To enable the students to acquire knowledge about some advanced topics in Software like windows 95.
2. To work in Microsoft word , Microsoft Excel and Microsoft Access .
3. To make presentations using power point.

Course Outcomes(CO)

K1	CO1	Finding word processing techniques to produce a well-designed and esthetical pleasing formal document.
K2	CO2	Inferring to use standard spread sheet features to produce a representation and analysis of numerical data.
K3	CO3	Building charts, template and saving data, modify animation, sounds and art in Microsoft power point and an overview on Microsoft access.
K4	CO4	Analyzing and respond to an ethical issue related to computer usage.

Programme Code : 02	B.Sc Mathematics		
Major Elective Paper - ASTRONOMY			
Batch	Hours / Week	Total Hours	Credits
2019-2022	5	75	5

Course Objectives

1. To acquire the knowledge about the celestial objects and planets.
2. Develop skills to design observing projects with research telescopes and projects drawing upon data in the literature and in archives.
3. To be familiar with the appearance of a range of common astronomical objects, such as asteroids, comets, satellites, planets, stars, and galaxies.

Course Outcomes(CO)

K1	CO1	• Defining about the observed properties of physical systems that comprise the known universe.
K2	CO2	Demonstrate their ability to read, understand, and critically analyze the astronomical/physical concepts
K3	CO3	Applying their physics and mathematical skills to problems in the areas of planetary science.
K4	CO4	Analyze to draw valid scientific conclusions and communicate those conclusions in a clear and articulate manner.

Programme Code : 02		B.Sc Mathematics	
Major Elective Paper **FUZZY MATHEMATICS**			
Batch	**Hours / Week**	**Total Hours**	**Credits**
2019-2022	5	75	5

Course Objectives

1. To know the basic definitions of fuzzy set theory.

2. To know the fundamentals of fuzzy Algebra.

3. To know the applications of fuzzy Technology.

Course Outcomes(CO)

K1	CO1	Remembering the basic concepts of Boolean algebra.
K2	CO2	Understanding the concepts of fuzzy sets.
K3	CO3	Identifying the concepts of Algebra of fuzzy relations and logic connectives.
K4	CO4	Analyzing fuzzy subgroup and Preimage of subgroupoid.

Programme Code : 02		B.Sc Mathematics	
Major Elective Paper **COMBINATORICS**			
Batch	**Hours / Week**	**Total Hours**	**Credits**
2019-2022	5	75	5

Course Objectives

1. To learn about recurrence relation.

2. To have knowledge about permutation.

3. To be familiar with assignment problems.

Course Outcomes(CO)

K1	CO1	Remembering the basic concepts of Fibonacci sequence.
K2	CO2	Understanding the concepts of Permutation and Fibonacci type relation.
K3	CO3	Identifying the concepts of counting simple electrical networks.
K4	CO4	Analyzing inclusion and Exclusion principle.

Programme Code : 02		B.Sc Mathematics	
Major Elective Paper **STOCHASTIC PROCESSES**			
Batch	**Hours / Week**	**Total Hours**	**Credits**
2019-2022	5	75	5

Course Objectives

Programme Code: 03		B.Sc Physics		
Course Code: 19UMA1A1		Allied A Paper 1 Mathematics		
Batch	Semester	Hrs/Week	Total Hours	Credits
2019-2022	I	5	105	5

1. To know the basic concepts of Laplace transforms.

2. To study the fundamentals of stochastic process.

3. To know the applications of queuing systems.

Course Outcomes(CO)

K1	CO1	Remembering the basic concepts of Difference equations.
K2	CO2	Understanding the concepts of Markov chains.
K3	CO3	Identifying the concepts of Poisson process and related distributions.
K4	CO4	Analyzing Stochastic process in queuing and reliability.

Course Objectives

1.To provide the basic knowledge of Trigonometry and Matrices.
2.To get the ability of solving first and second order ordinary differential equations
and first order partial differential equations
3.To give basic knowledge about Mathematical concepts in Calculus.

Course Outcomes (CO)

K1	CO1	Defining hyperbolic and inverse hyperbolic functions.
K2	CO2	Understanding the concept of Characteristic equations to find Eigen Values and Eigen Vector.
K3	CO3	Applying finite difference methods for interpolation.
K4	CO4	Analyzing the Laplace and inverse Laplace transforms and solve Ordinary differential equations.

Programme Code: 03		B.Sc Physics		
Course Code: 19UMA2A1		Allied A Paper 2 Mathematics II		
Batch	Semester	Hrs/Week	Total Hours	Credits

2019-2022	II	5	105	5

Course Objectives

1. To provide the basic knowledge of Probability.
2. To get the ability to solve Partial differential equations.
3. **To Understand basic knowledge in Vector Calculus.**

Course Outcomes (CO)

K1	CO1	Defining the multiple integrals using Green's Theorem.
K2	CO2	Illustrating the Fourier Coefficient for periodic Functions.

Programme Code: 04		B.Sc Chemistry		
Course Code: 19UMA2A2		Allied A Paper 2 Mathematics II		
Batch	**Semester**	**Hrs/Week**	**Total Hours**	**Credits**
2019-2022	II	5	105	5

Programme Code: 04		B.Sc Chemistry		
Course Code: 19UMA1A2		Allied A Paper 1 Mathematics I		
Batch	**Semester**	**Hrs/Week**	**Total Hours**	**Credits**
2019-2022	I	5	105	5

Course Objectives

1. To provide the basic knowledge of Trigonometry.
2. To get the ability of solving first and second order ordinary differential equations and first order partial differential equations
3. To know about finite differences and its uses to interpolate the values for equal and unequal intervals.

Course Outcomes (CO)

K1	CO1	Defining hyperbolic and inverse hyperbolic functions.
K2	CO2	Understanding the concept of first order higher degree ordinary differential equations.
K3	CO3	Applying finite difference methods for interpolation.
K4	CO4	Analyzing the Laplace and inverse Laplace transforms to solve the Ordinary differential equations.

Course Objectives

1. To give basic knowledge about Mathematical concepts in Calculus.

2. To understand the concepts of Evaluating Double and Triple integrals.

3. To get the ability of solving Partial differential equations .

Course Outcomes (CO)

K1	CO1	Remembering the formulas in Differentiation and Integration.
K2	CO2	Illustrating the Fourier Coefficient for periodic Functions.
K3	CO3	Solving Partial Differential Equation by using the Lagrange's Method.
K4	CO4	Analyzing the differential operator to find Gradient, Divergence and Curl

Programme Code : 09	B.Sc Computer Science			
Course Code:	19UCS1A1	Allied 1 - DISCRETE MATHEMATICS AND STATISTICS		
Batch	Semester	Hours / Week	Total Hours	Credits
2019-2022	I	6	90	5

Course Objectives

1. To understand the concepts of discrete structures, formal languages.
2. To use finite state machines to model computer operations.
3. To solve real time problems using various statistical techniques.

Course Outcomes (CO)

K1	CO1	Remembering the fundamental ideas and notation of discrete mathematics with examples.
K2	CO2	Understanding the concept of measures of central tendency, measures of dispersion, Correlation, regression, probability distributions, hypothesis testing.
K3	CO3	Applying problem solving techniques to solve real world problems.
K4	CO4	Analyzing the experimental and observational data and draw appropriate conclusions.

Programme Code: 11		B.Sc Computer Technology		
Course Code:	19UCT1A1	Allied 1-Discrete Mathematics and Statistics		
Batch	Semester	Hours / Week	Total Hours	Credits
2019-2022	I	6	90	5

Course Objectives

1. To understand the concepts and principles of mathematical logic, formal languages
2. To classify Measures of central tendency and dispersion
3. To know the purpose of correlation and regression

Course Outcomes (CO)

K1	CO1	Remembering about the fundamental ideas and notation of discrete mathematics with examples

K2	CO2	Understanding the concepts of measures of central tendency and dispersion
K3	CO3	Applying Logic and Boolean algebra concepts in circuit construction
K4	CO4	Analyzing grammar in shortest path construction

Programme Code: 10		BCA			
Course Code:	19 UCA3A3	**OPERATIONS RESEARCH**			
Batch	Semester	Hours / Week	Total Hours	Credits	
2019-2022	III	6	90	5	

Programme Code : 08		B.Sc Biotechnology			
Course Code: 19UBT3A3		BASIC MATHEMATICS AND STATISTICS			
Batch	Semester	Hours / Week	Total Hours	Credits	
2019-2022	III	6	90	4	

Course Objectives

1. To identify and develop operational research models from the verbal description of the real system.

2. To understand the mathematical tools that are needed to solve optimization problems.

3. To develop a report that describes the model and the solving technique.

Course Outcomes (CO)

K1	CO1	Showing that the real time problems can be solved by using operations research techniques.
K2	CO2	Demonstrating the idea of finding the shortest path using transportation problem.
K3	CO3	Appling the concept of inventory control and replacement techniques in business.
K4	CO4	Examining the concept of traffic intensity in real life problems.

Course Objectives

1. To understand the basic concepts in mathematics and statistics.
2. To analysis wide variety of data.
3. To make deductions from assumption.

Course Outcomes (CO)

K1	CO1	Remember the basic concepts in mathematics and statistics.
K2	CO2	Understand the scope of data collections using statistical methods.

K3	CO3	Apply the concepts of Differentiation and Integration in the field of Bio-technology.
K4	CO4	Analyze the correlation among the variables.

Programme Code : 12		B.Sc Information Technology		
Course Code:	19UIT1A1	MATHEMATICAL FOUNDATION OF COMPUTER SCIENCE		
Batch	Semester	Hours / Week	Total Hours	Credits
2019-2022	I	6	90	5

Course Objectives

1. To understand Matrices, Set theory, Mathematical logic, Relations and Graph theory.
2. To solve the problems of Eigen values and Eigen vector.
3. To solve the problems of statement calculus and predicate calculus

Course Outcomes (CO)

K1	CO1	Remembering the concepts of matrices, set theory, mathematical logic, relations and graph theory
K2	CO2	Understanding the basic terminology of discrete mathematics
K3	CO3	Applying theory inference for statement calculus and predicate calculus
K4	CO4	Analyzing the results through the program outputs

Programme Code : 16		BBA		
Course Code :	19UBB1A1	MATHEMATICS FOR MANAGEMENT – I		
Batch	Semester	Hours / Week	Total Hours	Credits
2019-2022	I	6	90	5

Course Objectives

1. To Understand the concepts of Matrices, concepts related with banking and concepts of various statistical tools.
2. To study the concepts of statistics, Measures of dispersion and Analysis of time series. Also understand the applications of these concepts in real world problems.
3. To use mathematical knowledge to analyze and solve problems.

Course Outcomes (CO)

K1	CO1	Remembering the basic concepts of mathematics in business analysis
K2	CO2	Understanding the problem-solving methods
K3	CO3	Applying basic mathematical calculations in business problems
K4	CO4	Analyzing mathematical techniques and applications

Programme Code : 17		BBA CA		
Course Code : 19UBA1A1		MATHEMATICS FOR MANAGEMENT – I		
Batch	Semester	Hours / Week	Total Hours	Credits
2019-2022	I	6	90	5

Course Objectives

1. To Understand the concepts of Matrices, concepts related with banking and concepts of various statistical tools.
2. To study the concepts of statistics, Measures of dispersion and Analysis of time series. Also understand the applications of these concepts in real world problems.
3. To use mathematical knowledge to analyze and solve problems.

Course Outcomes (CO)

K1	CO1	Remembering the basic concepts of mathematics in business analysis
K2	CO2	Understanding the problem-solving methods
K3	CO3	Applying basic mathematical calculations in business problems
K4	CO4	Analyzing mathematical techniques and applications

Programme Code : 13		B.Com		
Course Code: 19UCM3A3		BUSINESS MATHEMATICS		
Batch	Semester	Hours / Week	Total Hours	Credits
2019-2022	III	6	90	5

Course Objectives

1. To give basic knowledge about Mathematical concepts
2. To solve the modern business problems using various mathematical techniques.
3. To solve the various real life business problems.

Course Outcomes (CO)

K1	CO1	Remembering the application of mathematics in business analysis
K2	CO2	Understanding the concepts of mathematics in finance
K3	CO3	Applying basic mathematical calculations in business problems

K4	CO4	Analyzing the business conditions using Effective rate of Interest.

Programme Code : 15		B.Com PA		
Course Code:	19UPA1A1	BUSINESS MATHEMATICS		
Batch	Semester	Hours / Week	Total Hours	Credits
2019-2022	I	6	90	5

Course Objectives

1. On successful completion of this course, the student should have understood the basic concepts.
2. To use Mathematical Techniques to solve the modern business problems.
3. To enable the students to apply basic mathematical knowledge to solve the real life

Programme Code :14		B.Com CA		
Course Code:	19UCC1A1	BUSINESS MATHEMATICS		
Batch	Semester	Hours / Week	Total Hours	Credits
2019-2022	I	6	90	5

business problems.

Course Outcomes (CO)

K1	CO1	Remembering the basic concepts of mathematics in business analysis
K2	CO2	Understanding the concepts of mathematics in finance
K3	CO3	Applying basic mathematical calculations in business problems
K4	CO4	Analyzing the business conditions using Differentiation and Integration

Course Objectives

1. To give basic knowledge about Mathematical concepts
2. To solve the modern business problems using various mathematical techniques
3. To enable the students to apply basic mathematical knowledge to solve the real life business problems.

Course Outcomes (CO)

K1	CO1	Remembering the basic concepts of mathematics in business analysis
K2	CO2	Understanding the concepts of mathematics in finance
K3	CO3	Applying basic mathematical calculations in business problems

K4	CO4	Analyzing the business conditions using Differentiation and Integration

Programme Code : 11		B.Sc Computer Science		
Course Code:	19UCS2A2	ALLIED 2 - OPERATIONS RESEARCH		
Batch	Semester	Hours / Week	Total Hours	Credits
2019-2022	II	6	90	5

Course Objectives

1. To understand the various mathematical applications in industries and decision making for real time environment.
2. To gain the knowledge about the principles and applications of operations research.
3. To develop skills necessary to effectively analyze and synthesize the inter-relationships inherent in complex socio-economic productive systems.

Course Outcomes (CO)

K1	CO1	Remembering mathematical formulation of the problem.
K2	CO2	Understanding the notions of linear programming in solving transportation problems and Assignment Problems.
K3	CO3	Applying the fundamental concept of inventory control and Queuing theory.
K4	CO4	Analyzing CPM and PERT techniques, to plan, schedule, and control project activities.

Programme Code :12		B.Sc Information Technology		
Course Code: 19UIT2A2		COMPUTER ORIENTED NUMERICAL & STATISTICAL METHODS		
Batch 2019-2022	**Semester** II	**Hours / Week** 6	**Total Hours** 90	**Credits** 5

Course Objectives

1. To have indepth knowledge of various advanced methods in numerical analysis and statistics.
2. To get numerical solutions of equations like transcendental and non linear differential equations when ordinary analytical methods fail.
3. To learn fundamentals and concepts of statistical methods, in particular, with reference to frequency distribution and measures of central tendency, measures of dispersion, Correlation and Regression.

Course Outcomes (CO)

K1	CO1	Remembering the concept of numerical and statistical methods
K2	CO2	Understanding the concepts of numerical differentiation and integration
K3	CO3	Applying an appropriate numerical method for solving algebraic or transcendental equation
K4	CO4	Analyzing the concept of Measure of central tendency, Measures of dispersion , Correlation and Regression

Programme Code :08		B.Sc Biotechnology		
Course Code: 19UBT4A4		C PROGRAMMING AND NUMERICAL METHODS		
Batch 2019-2022	**Semester** IV	**Hours / Week** 5	**Total Hours** 75	**Credits** 4

Course Objectives

1. To understand the C Programming language.
2. To solve the mathematical problems using C Programs.
3. To learn the problem solving techniques in Numerical methods.

Course Outcomes (CO)

K1	CO1	Remember the functioning of C Programming
K2	CO2	Understand the various features of a C Program
K3	CO3	Apply the operators and functions to solve the Mathematical problems
K4	CO4	Analyze the accuracy of the results obtained

Programme Code : 08		B.Sc Biotechnology			
Course Code:	19UBT4AL	C PROGRAMMING - Lab			
Batch	**Semester**	**Hours / Week**	**Total Hours**		**Credits**
2019-2022	IV	2	30		2

Course Objectives

1. To provide practical experience for the students to understand the structure of a C Program.
2. To enable the students to enrich their knowledge in the compilation of C Programs.

Programme Code : 13		B.Com			
Course Code: 19UCM4A4		BUSINESS STATISTICS			
Batch	**Semester**	**Hours / Week**	**Total Hours**		**Credits**
2019-2022	IV	6	90		5

3. To solve mathematical problems using C Programs.

Course Outcomes (CO)

K3	CO1	Apply the various operators and functions of C language in Programs
K4	CO2	Analyze the various data types and formatting features available in C language
K5	CO3	Determine the solution of mathematical problems using C Programs

Course Objectives

1. To demonstrate understanding of basic concepts of probability and statistics embedded in their courses
2. Statistics in the social sciences involves the collection, analysis, interpretation, and
3. Presentation of data to answer questions about the social world.
4. To Perform Correlation & Compute the equation of simple regression line from a sample data and the intercept of the equation

Course Outcomes (CO)

K1	CO1	Select appropriate Statistical techniques for summarizing and displaying business data.
K2	CO2	Understand the measures of central tendency, symmetrical and asymmetrical distribution
K3	CO3	Identify and carryout basic statistical analyses used in sociological inquiry.
K4	CO4	Analyze and draw inferences from business data using appropriate statistical methods.

Programme Code :14		B.Com CA		
Course Code: 19UCC2A2		BUSINESS STATISTICS		
Batch 2019-2022	**Semester** II	**Hours / Week** 6	**Total Hours** 90	**Credits** 5

Course Objectives
1. To give basic knowledge about statistical concepts.
2. To solve the modern business problems using various statistical techniques
3. To estimate the mean and standard deviation of the marginal distribution of the response variable and use this information to inform a business decision

Course Outcomes (CO)

K1	CO1	Select appropriate Statistical techniques for summarizing and displaying business data
Programme Code : 15		B.Com PA
Course Code: 19UPA2A2		STATISTICS FOR BUSINESS
Batch 2019-2022	**Semester** II	**Hours / Week** 6 ... **Total Hours** 90 ... **Credits** 5

Course Objectives

1. To give basic knowledge about statistical concepts.
2. To solve the modern business problems using various statistical techniques
3. To estimate the mean and standard deviation of the marginal distribution of the response variable and use this information to inform a business decision

Course Outcomes (CO)

K1	CO1	Choose a statistical method for solving practical problems.
K2	CO2	Understand and use the basic measure of central tendency.
K3	CO3	Identify different types of statistical data.
K4	CO4	Classify the structure and characteristics of statistical data.

Programme Code :16		BBA		
Course Code : 19UBB2A2		MATHEMATICS FOR MANAGEMENT - II		
Batch 2019-2022	**Semester** II	**Hours / Week** 6	**Total Hours** 90	**Credits** 5

Course Objectives

1. To understand various mathematical applications in industries.
2. To know the mathematical tools that are needed to solve optimization

Problems.

3. To understand the Decision making for real time environment.

Course Outcomes (CO)

K1	CO1	Remembering to use the variables for formulating mathematical models in management.
K2	CO2	Understanding the concept of Transportation and Assignment models
K3	CO3	Applying the fundamental concept of Queuing theory.
K4	CO4	Analyzing CPM and PERT techniques, to plan, schedule, and control project activities.

Programme Code :17		BBA CA		
Course Code : 19UBA2A2		MATHEMATICS FOR MANAGEMENT - II		
Batch	Semester	Hours / Week	Total Hours	Credits
2019-2022	II	6	90	5

Course Objectives

1. To understand various mathematical applications in industries.
2. To know the mathematical tools that are needed to solve optimization
   Problems.
3. To understand the Decision making for real time environment.

Course Outcomes (CO)

K1	CO1	Remembering to use the variables for formulating mathematical models in management.
K2	CO2	Understanding the concept of Transportation and Assignment models
K3	CO3	Applying the fundamental concept of Queuing theory.
K4	CO4	Analyzing CPM and PERT techniques, to plan, schedule, and control project activities.