

DEPARTMENT OF MATHEMATICS

Programme: B. Sc. Mathematics

Vision

To be among the top ten centers of excellence in Mathematics at the national level through quality Mathematics education and research.

Mission

Department of Mathematics, through our enlightened management and committed faculty envisages to

- provide world-class education to the students of Mathematics
- give them a learning-centered environment
- ensure knowledge transfer
- instill research aptitude
- infuse ethical and cultural values
- transform our students into disciplined citizens in order to improve their quality of life.

Program Educational Objectives:

PEO1	The programme provides a strong foundation in breadth and depth of Mathematics and some specific areas of computer science which enables the student to pursue post-graduation in Mathematics, Applied Mathematics and computer applications.
PEO2	The programme also inculcate certain quantitative skills (self-confidence, leadership, decision making etc.) which would prepare students for managerial careers and transform the stakeholders into successful entrepreneurs.
PEO3	The practical and technical knowledge ensure significant and rewarding career opportunities in various service domains both National and Global level.
PEO4	The programme will stimulate logical and analytical reasoning that enables the students to crack competitive exams.
PEO5	With an interdisciplinary learning environment, the student develops necessary skills and values to handle diversified circumstances either individually or as a team.

Program Outcomes:

On successful completion of the B.Sc., Mathematics programme, Students can able to

PO1	Communication skills: Develop confidence, positive attitude and interest towards Mathematics through communication skills. (K1)
PO2	Disciplinary knowledge: understand and apply basic concepts of Mathematics, Statistics and Physics and their importance in the solution of some real-world problems. (K2)
PO3	Critical thinking: apply various Mathematical techniques within the domain and also extend to multi-disciplinary environment. (K3)
PO4	Problem solving: analyze and make critical observations of any situation with Mathematical approach and demonstrate ways to solve them logically with precision. (K4)
PO5	Research related skills: endorse independent learning of languagepapers and acquire sound knowledge to understand the basic branches of Mathematics and apply in research.(K3)
PO6	Analytical reasoning: have thorough grasp over the concepts which faster individual discipline, responsibility and commitment and ensure professional ethics. (K5)
PO7	Self-directed learning: formulate new problems and find the ideas to attain their solutions and develop the codes using C and C++ languages for simple problems. (K4)

Program Specific Outcomes:

PSO – 01	provide advanced knowledge on topics in pure and applied Mathematics, empowering thestudents to pursue higher degrees at universities and reputed academic institutions like NBHM, NIT, IIT, IISC etc.
PSO – 02	motivate and prepare students to clear civil service exams and to get employability in education, IT, Banking and insurancesectors and also to become successful entrepreneur .

Mapping

PEOs POs \ PSOs	PEO1	PEO2	PEO3	PEO4	PEO5
PO1: Communication skills	H	H	H	M	H
PO2: Disciplinary knowledge	M	H	H	H	H
PO3: Critical thinking	H	H	H	H	H
PO4: Problem solving	H	H	H	H	M
PO5: Research related skills	H	M	H	M	H
PO6: Analytical reasoning	M	H	H	H	H
PO7: Self-directed learning	H	H	M	H	M
PSO1	H	H	H	M	H
PSO2	H	H	M	H	H

Programme Code:	B.Sc.	Programme Title:	Mathematics	
Course Code:	22UMS101	Title	Batch:	2022 - 2025
Lecture Hrs./Week or Practical Hrs./Week	5	CLASSICAL ALGEBRA	Semester:	I
			Credits:	4

Course Objective

This course provides the learners a wide spectrum of basic mathematical concepts including summation of series, roots of an equation and matrices.

Course Outcomes

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

CO Number	CO Statement	Knowledge Level
CO1	Apply the numerical methods for approximating the solution to problems of algebraic and transcendental equations.	K3
CO2	Apply the concepts of convergence and divergence of series using various tests like Cauchy's root test, D'Alembert's ratio test to solve problems.	K3
CO3	Solve problems related to Binomial, Exponential and Logarithmic series.	K4
CO4	Apply Newton's method of divisors and Horner's Method to analyze the nature of the roots.	K4
CO5	Diagonalize the matrix using Cayley-Hamilton theorem.	K3

Mapping

PO / PSO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2
CO									
CO1	H	H	M	M	H	H	M	H	H
CO2	H	H	H	H	H	H	M	H	H
CO3	H	H	H	H	H	H	M	H	H
CO4	H	H	H	H	H	H	M	H	H
CO5	H	H	H	H	H	H	H	H	H

H - HIGH; M - MEDIUM; L - LOW.

Programme Code:	B.Sc.	Programme Title:	Mathematics	
Course Code:	22UMS102	Title	Batch:	2022 - 2025
Lecture Hrs./Week or Practical Hrs./Week	6	CALCULUS	Semester:	I
			Credits:	4

Course Objective

This paper enables the students to gain the ability to solve the problems related to multiple integrals, Beta and Gamma functions. It also provides the basic knowledge about Laplace transforms and use it to solve the differential equations.

Course Outcomes (CO)

On successful completion of this core paper, the students will be able to

CO Number	CO Statement	Knowledge Level
CO1	Recall the methods of solving ordinary differential equations.	K1
CO2	Solve the linear differential equations with constant and variable coefficients.	K3
CO3	Compute area and volume of the solids using multiple integrals	K3
CO4	Analyze and apply the concepts of Laplace Transform, inverse Laplace Transform to solve linear ordinary differential equations with constant coefficients.	K4
CO5	Expose differential equation as a powerful tool in solving problems in Physical and Social sciences.	K3

Mapping

PO /PSO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2
CO1	M	M	M	M	H	H	M	H	H
CO2	H	H	H	H	H	H	M	H	H
CO3	H	H	H	H	H	H	M	H	H
CO4	H	H	H	H	H	H	M	H	H
CO5	H	H	H	H	H	H	H	H	H

H - HIGH; M - MEDIUM; L - LOW.

Programme Code:	B.Sc.	Programme Title:	Mathematics	
Course Code:	22UMS1A1	Title	Batch:	2022 - 2025
Lecture Hrs./Week or Practical Hrs./Week	6	MATHEMATICAL STATISTICS- I	Semester:	I
			Credits:	5

Course Objectives

The aim of this course is to introduce the concept of discrete and continuous random variables, probability functions, expectations, moment generating functions and some discrete and continuous distributions and should have developed skills to apply them to various real life situations.

Course Outcomes (CO)

On successful completion of this core paper, the students will be able to

CO Number	CO Statement	Knowledge level
CO1	Understand the concepts of random variables and probability distributions in two dimensional space.	K2
CO2	Compute expected value and variance of discrete and continuous random variables.	K3
CO3	Understand and analyze the discrete distributions such as Binomial and Poisson distributions.	K4
CO4	Analyze the continuous distributions such as normal, beta, gamma, exponential and rectangular distributions	K4
CO5	Use statistical tool effectively to analyze real life problems and to be an efficient statistician.	K4

Mapping

PO /PSO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2
CO1	H	H	H	H	M	H	M	H	H
CO2	H	H	H	H	H	H	M	H	H
CO3	H	H	H	H	H	H	H	H	H
CO4	H	H	H	H	H	H	H	H	H
CO5	H	H	H	H	H	H	H	H	H

H - HIGH; M - MEDIUM; L - LOW.

Programme Code:	B.Sc.	Programme Title :	Chemistry	
Course Code:	22UCY1A1	Title	Batch :	2022 - 2025
		ANCILLARY MATHEMATICS FOR CHEMISTRY-I	Semester	I
Hrs/Week	6		Credits :	4

Course Objective

This course provides a platform to understand the fundamental concepts of Matrices, Theory of Equations, Summation of series and some Special functions.

Course Outcomes

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

CO Number	CO Statement	Knowledge Level
CO1	Acquire knowledge about different types of matrices and finding characteristic roots and vectors of a matrix.	K2
CO2	Analyze the relation between roots and coefficients of the polynomial equations.	K3
CO3	Know the concept of Binomial, Exponential, Logarithmic series and their application to summation of series.	K2
CO4	Apply the numerical methods for approximating the solution to problems of algebraic linear equations.	K4
CO5	Solve the problems related to Beta and Gamma functions.	K3

Mapping

CO	PO/PSO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2
CO1		H	H	M	M	H	H	M	H	H
CO2		H	H	H	H	H	H	M	H	H
CO3		H	H	H	H	H	H	M	H	H
CO4		H	H	H	H	H	H	M	H	H
CO5		H	H	H	H	H	H	H	H	H

H - HIGH; M - MEDIUM; L - LOW.

Programme Code:	B.Sc.	Programme Title:	Physics	
Course Code:	22UPS1A1	Title	Batch :	2022 - 2025
		ANCILLARY MATHEMATICS FOR PHYSICS – I	Semester	I
Hrs/Week	6		Credits :	4

Course Objective

This course provides a platform to understand the fundamental concepts of Matrices, Theory of Equations, Summation of series and some Special functions.

Course Outcomes

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

CO Number	CO Statement	Knowledge Level
CO1	Acquire knowledge about different types of matrices and finding characteristic roots and vectors of a matrix.	K2
CO2	Analyze the relation between roots and coefficients of the polynomial equations.	K3
CO3	Know the concept of Binomial, Exponential, Logarithmic series and their application to summation of series.	K2
CO4	Apply the numerical methods for approximating the solution to problems of algebraic linear equations.	K4
CO5	Solve the problems related to Beta and Gamma functions.	K3

Mapping

CO	PO/PSO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2
CO1		H	H	M	M	H	H	M	H	H
CO2		H	H	H	H	H	H	M	H	H
CO3		H	H	H	H	H	H	M	H	H
CO4		H	H	H	H	H	H	M	H	H
CO5		H	H	H	H	H	H	H	H	H

H - HIGH; M - MEDIUM; L - LOW.

Programme Code:	B.Sc.	Programme Title:	Mathematics	
Course Code:	22UMS203	Title	Batch:	2022 - 2025
Lecture Hrs./Week or Practical Hrs./Week	5	TRIGONOMETRY, VECTORCALCUL US AND FOURIER SERIES	Semester:	II
			Credits:	4

Course Objective

This paper enables the students to provide basic knowledge of trigonometry, vector calculus and Fourier series.

Course Outcomes (CO)

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

CO Number	CO Statement	Knowledge Level
CO1	Recall the basic concepts of vector analysis, trigonometry, differentiation and integration.	K1
CO2	Apply the differential operator to solve vector differential equations.	K3
CO3	Solve the multiple integrals by applying Gauss divergence theorem, Stoke's theorem and Green's theorem.	K3
CO4	Compute the expansion of trigonometric function as multiple of θ and a series of powers of θ .	K3
CO5	Find Fourier series expansion for odd and even functions of a given period and can apply to solve problems in mathematical physics.	K3

Mapping

PO /PSO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2
CO1	H	M	M	M	H	M	M	H	H
CO2	H	M	H	H	H	H	M	H	H
CO3	H	H	H	H	H	H	M	H	H
CO4	H	H	H	H	H	H	M	H	H
CO5	H	H	H	H	H	H	H	H	H

H - HIGH; M - MEDIUM; L - LOW.

Programme Code:	B.Sc.	Programme Title:	Mathematics	
Course Code:	22UMS204	Title	Batch:	2022 - 2025
Lecture Hrs./Week or Practical Hrs./Week	5	ANALYTICAL GEOMETRY	Semester:	II
			Credits:	4

Course Objective

This paper enables the student to gain fundamental ideas about co-ordinate geometry and gives clear knowledge about regular geometrical aspects and their properties in two and three dimensions.

Course Outcomes (CO)

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

CO Number	CO Statement	Knowledge Level
CO1	Recollect the basic properties of circle, sphere, parabola and hyperbola and can able to gain a deep knowledge in it.	K1
CO2	Understand the ideas about the relation between polar and cartesian co-ordinates of geometric figures in solving simple problems.	K2
CO3	Compute the equations of a chord to a circle and common tangents to a circle.	K3
CO4	Solve problems relating to right circular cone, enveloping cone and general quadric cone.	K3
CO5	Apply in real life problems in physics, engineering and computer graphics.	K3

Mapping

PO /PSO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2
CO1	H	H	H	H	H	H	H	H	H
CO2	H	H	H	H	H	M	H	H	H
CO3	H	H	H	H	M	M	H	H	H
CO4	H	H	H	H	M	M	H	H	H
CO5	H	H	H	H	M	M	M	H	H

H - HIGH; M - MEDIUM; L - LOW.

Programme Code:	B.Sc.	Programme Title:	Mathematics	
Course Code:	22UMS2A2	Title	Batch:	2022 - 2025
		MATHEMATICAL STATISTICS – II	Semester:	II
Lecture Hrs./Week or Practical Hrs./Week	6		Credits:	5

Course Objective

The objective of this paper is to introduce the concepts about correlation, regression, sample theory, sampling distributions and theory of estimation.

Course Outcomes (CO)

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

CO Number	CO Statement	Knowledge Level
CO1	Understand the basics of regression line and the principles of least squares.	K2
CO2	Apply the concept of correlation and rank correlation in real life situations.	K3
CO3	Analyze the concepts of sampling techniques and procedure for testing of hypothesis for large samples.	K4
CO4	Apply chi square, t and F distributions for testing of attributes as well apply the Cramer Rao- inequality for estimation.	K3
CO5	Find good estimators for an unknown parameter using estimation theory	K3

Mapping

PO/PSO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2
CO1	H	H	H	M	H	H	H	H	H
CO2	H	H	H	H	H	H	H	H	H
CO3	H	H	H	H	H	H	H	H	H
CO4	H	H	H	H	H	H	H	H	H
CO5	H	H	H	H	H	H	H	H	H

H - HIGH; M - MEDIUM; L - LOW.

Programme Code:	B.Sc.	Programme Title :	Chemistry	
Course Code:	22UCY2A2	Title	Batch :	2022-2025
		ANCILLARY MATHEMATICS FOR CHEMISTRY-II	Semester	II
Hrs/Week	6		Credits :	4

Course Objective

This paper enables the students to acquire the ability in solving problems in hyperbolic functions, Laplace and Inverse Laplace transforms and vector calculus.

Course Outcomes (CO)

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

CO Number	CO Statement	Knowledge Level
CO1	Understand the concepts of circular functions and hyperbolic functions.	K2
CO2	Apply Laplace transform for solving differential equations.	K3
CO3	Apply the concepts of Gradient, Curl and Divergence in computing vector differentiation problems.	K3
CO4	Compute problems on line integral, surface integral and volume integral.	K4
CO5	Solve the multiple integrals by applying Gauss divergence theorem and Green's theorem.	K4

Mapping

PO / PSO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2
CO1	H	H	H	H	M	H	H	H	H
CO2	H	M	H	H	H	H	H	H	H
CO3	H	H	H	H	H	H	H	H	H
CO4	H	M	H	H	H	H	M	H	H
CO5	H	H	H	H	M	M	H	H	H

H - HIGH; M - MEDIUM; L - LOW.

Programme Code:	B.Sc.	Programme Title:	Chemistry	
Course Code:	22UCY2A3	Title	Batch:	2022 - 2025
Lecture Hrs./Week or Practical Hrs./Week	2	Programming Lab for Chemistry using MATLAB	Semester:	II
			Credits:	2

Course Objective

This course ensures a practical knowledge for computing the sub matrices from the existing matrix and finding the derivative of polynomials.

Course Outcomes (CO)

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

CO Number	CO Statement	Knowledge Level
CO1	Create a matrix using MATLAB	K3
CO2	Calculate eigen values and eigen vectors of the matrix using MATLAB.	K5
CO3	Solve a system of linear equations using MATLAB	K4
CO4	Calculate the first and second derivative of a polynomial using MATLAB	K5
CO5	Find the integral of a function using MATLAB	K3

Mapping

PO/PSO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2
CO1	H	H	H	H	M	H	M	M	H
CO2	H	H	H	H	M	H	H	M	H
CO3	H	H	H	H	M	H	H	M	H
CO4	H	H	H	H	M	H	H	M	H
CO5	H	H	H	H	M	H	H	M	H

H - HIGH; M - MEDIUM; L - LOW.

Programme Code:	B.Sc.	Programme Title :	Physics	
Course Code:	22UPS2A2	Title	Batch :	2022-2025
		ANCILLARY MATHEMATICS FOR PHYSICS-II	Semester	II
Hrs/Week	6		Credits :	4

Course Objective

This paper enables the students to acquire the ability in solving problems in hyperbolic functions, Laplace and Inverse Laplace transforms and vector calculus.

Course Outcomes (CO)

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

CO Number	CO Statement	Knowledge Level
CO1	Understand the concepts of circular functions and hyperbolic functions.	K2
CO2	Apply Laplace transform for solving differential equations.	K3
CO3	Apply the concepts of Gradient, Curl and Divergence in computing vector differentiation problems.	K3
CO4	Compute problems on line integral, surface integral and volume integral.	K4
CO5	Solve the multiple integrals by applying Gauss divergence theorem and Green's theorem.	K4

Mapping

PO / PSO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2
CO1	H	H	H	H	M	H	H	H	H
CO2	H	M	H	H	H	H	H	H	H
CO3	H	H	H	H	H	H	H	H	H
CO4	H	M	H	H	H	H	M	H	H
CO5	H	H	H	H	M	M	H	H	H

H - HIGH; M - MEDIUM; L - LOW.

Programme Code:	B.Sc.	Programme Title:	Physics	
Course Code:	22UPS2A3	Title	Batch:	2022 - 2025
Lecture Hrs./Week or Practical Hrs./Week	2	Programming Lab for Physics using MATLAB	Semester:	II
			Credits:	2

Course Objective

This course ensures a practical knowledge for computing the sub matrices from the existing matrix and finding the derivative of polynomials.

Course Outcomes (CO)

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

CO Number	CO Statement	Knowledge Level
CO1	Create a matrix using MATLAB	K3
CO2	Calculate eigen values and eigen vectors of the matrix using MATLAB.	K5
CO3	Solve a system of linear equations using MATLAB	K4
CO4	Calculate the first and second derivative of a polynomial using MATLAB	K5
CO5	Find the integral of a function using MATLAB	K3

Mapping

PO/PSO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2
CO1	H	H	H	H	M	H	M	M	H
CO2	H	H	H	H	M	H	H	M	H
CO3	H	H	H	H	M	H	H	M	H
CO4	H	H	H	H	M	H	H	M	H
CO5	H	H	H	H	M	H	H	M	H

H - HIGH; M - MEDIUM; L - LOW.

Programme Code:	B.Sc.	Programme Title:	Mathematics	
Course Code:	22UMS305	Title	Batch:	2022 - 2025
Lecture Hrs./Week or Practical Hrs./Week	5	DYNAMICS	Semester:	III
			Credits:	4

Course Objective

This course provides a thorough knowledge about the characteristics of Projectiles, Energies during impact and Collision. Each topic involves problems to solve which develops the application skills and thinking process of the students.

Course Outcomes (CO)

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

CO Number	CO Statement	Knowledge Level
CO1	Recall the notions of matter, velocity, acceleration , force, momentum , moment of inertia etc.,	K1
CO2	Understand the concept of projectile motion and solving some simple problems related to it.	K2
CO3	Calculate radial and transverse components of velocity and acceleration, areal velocity of central orbits, describe the differential equation and pedal equation of central orbits.	K3
CO4	Apply the concepts of composition of simple harmonic motion in two directions.	K3
CO5	Analyze the concept of impulse, impulsive forces, direct & oblique impact of elastic bodies under collision and solve simple problems.	K4

Mapping

PO /PSO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2
CO1	H	M	M	M	H	H	M	H	H
CO2	H	H	H	H	H	H	M	H	H
CO3	H	H	H	H	H	H	M	H	H
CO4	H	H	H	H	H	H	H	H	H
CO5	H	H	H	H	H	H	H	H	H

H - HIGH; M - MEDIUM; L - LOW.

Programme Code:	B.Sc.	Programme Title:	Mathematics	
Course Code:	22UMS306	Title	Batch:	2022 - 2025
Lecture Hrs./Week or Practical Hrs./Week	4	NUMERICAL TECHNIQUES	Semester:	III
			Credits:	3

Course Objective

This course helps the students to have an in-depth knowledge of various advanced methods in numerical analysis. The students to use numerical techniques to get numerical solutions of equations like transcendental and non-linear differential equations when ordinary analytical methods fail.

Course Outcomes (CO)

On successful completion of this core paper, the students will be able to

CO Number	CO Statement	Knowledge Level
CO1	Understand the need of numerical analysis techniques in the areas of Approximation theory, and recall some basic concepts.	K1
CO2	Apply the numerical methods for approximating the solution to problems of algebraic and transcendental equations, simultaneous linear equations.	K3
CO3	Estimating the value of a function for any intermediate value of the independent variable using Newton Forward and Backward interpolation Formula as well compute the derivatives using Newton's forward and backward difference formula and Sterling's formula.	K3
CO4	Solve the ordinary and partial differential equations by using Numerical method techniques like Taylor's method, Euler's method, Runge-Kutta method etc.	K4
CO5	Enrich the knowledge of numerical techniques and getting insight of algorithmic approach.	K4

Mapping

PO / PSO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2
CO1	H	H	H	M	M	M	M	H	M
CO2	H	H	H	H	M	M	M	H	M
CO3	H	H	H	H	H	H	H	H	M
CO4	H	H	H	H	H	H	H	H	M
CO5	H	H	H	H	H	H	H	H	H

H - HIGH; M - MEDIUM; L - LOW.

Programme Code:	B.Sc.	Programme Title:	Mathematics	
Course Code:	22UMS3N1	Title	Batch:	2022 - 2025
Lecture Hrs./Week or Practical Hrs./Week	1	NME: QUANTITATIVE APTITUDE – I	Semester:	III
			Credits:	2

Course Objective

The objective of this syllabus is to make the students to clear competitive examination like Banking recruitment, Postal recruitment, Railway recruitment and TNPSC exams.

Course Outcomes (CO)

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

CO Number	CO Statement	Knowledge Level
CO1	Recall the necessary fundamentals to take up the course	K2
CO2	Solve simple problems related to percentage , profit & loss, ratio & proportion.	K3
CO3	Apply the concepts of probability, permutations and combinations in solving real life problems.	K3
CO4	Develop logical thinking, problem solving skills and time management.	K4
CO5	Clear competitive exams in banking, postal and railway services, IT, etc..	K4

Mapping

PO /PSO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2
CO1	H	H	M	H	M	M	M	M	H
CO2	H	M	M	H	M	M	M	M	H
CO3	H	H	M	H	M	M	M	M	H
CO4	H	H	M	H	M	M	M	M	H
CO5	H	H	M	H	M	M	M	M	H

H - HIGH; M - MEDIUM; L - LOW.

Programme Code:	B.Sc.	Programme Title:	Mathematics	
Course Code:	22UMS3N2	Title	Batch:	2022 - 2025
Lecture Hrs./Week or Practical Hrs./Week	1	NME: ASTRONOMY- I	Semester:	III
			Credits:	2

Course Objective

This paper enables the learners to gain basic knowledge of the Solar System and the Milky Way.

Course Outcomes (CO)

On successful completion of this core paper, the students will be able to

CO Number	CO Statement	Knowledge Level
CO1	Understand the concept of the Solar System.	K2
CO2	Become familiar with the Double & Multiple stars.	K2
CO3	Acquire the knowledge in the Milky Way.	K3
CO4	Know the various constellations.	K4
CO5	Analyze the concepts of Seasonal changes	K4

Mapping

PO /PSO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2
CO1	H	M	M	H	M	M	M	M	M
CO2	M	M	M	M	M	M	M	M	M
CO3	M	M	M	H	M	M	M	M	M
CO4	M	M	M	H	M	M	M	M	M
CO5	M	M	M	H	M	M	M	M	M

H - HIGH; M - MEDIUM; L - LOW.

Programme Code:	B.Sc.	Programme Title:	Mathematics	
Course Code:	22UMS407	Title	Batch:	2022 - 2025
Lecture Hrs./Week or Practical Hrs./Week	4	STATICS	Semester:	IV
			Credits:	4

Course Objective

This course enables a deep knowledge about the concept of Forces, Moments, Friction, Gravity and resultant of more than one force acting on a surface. It also includes simple problems in each topic which develops the application skills of the students in solving them.

Course Outcomes(CO)

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

CO Number	CO Statement	Knowledge Level
CO1	Recall the basic concepts like friction, centre of gravity, moments.	K1
CO2	Apply the concepts of parallel forces and moments, use them to solve problems.	K3
CO3	Apply and solve the problems in coplanar forces, couples forces and resultant of more than one force acting on a surface.	K3
CO4	Analyse the concepts of friction and centre of gravity.	K4
CO5	Enrich the knowledge in this course to pursue higher degree and get employability.	K3

Mapping

PO /PSO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2
CO1	H	H	M	M	M	M	M	H	M
CO2	H	H	H	H	H	M	M	H	M
CO3	H	H	H	H	H	H	M	H	M
CO4	H	H	H	H	H	H	H	H	M
CO5	H	H	H	H	H	H	H	H	H

H - HIGH; M - MEDIUM; L - LOW.

Programme Code:	B.Sc.	Programme Title:	Mathematics	
Course Code:	22UMS408	Title	Batch:	2022 - 2025
Lecture Hrs./Week or Practical Hrs./Week	3	PROGRAMMING IN 'C'	Semester:	IV
			Credits:	3

Course Objective

C is a general- purpose structured programming language that is powerful, efficient and compact. The programming language C finds a wide variety of applications in the development of software. This course provides the students with all the fundamental concepts of the C language with some practical experience. Also helps the students to develop their programming skills and to build large programs.

Course Outcomes (CO)

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

CO Number	CO Statement	Knowledge Level
CO1	Understand the keywords, C-data types and variables.	K2
CO2	Apply the use of statements and looping structures.	K3
CO3	Analyze the concepts of user-defined functions, in-built functions and nesting of functions	K4
CO4	Acquire knowledge about use of multi-dimensional arrays & pointers.	K3
CO5	Sense the basic structure of C program and apply them to small projects.	K3

Mapping

PO /PSO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2
CO1	H	H	M	M	H	H	M	M	M
CO2	H	H	H	H	H	H	M	M	M
CO3	H	H	H	H	H	H	M	H	H
CO4	H	H	H	H	H	H	H	H	H
CO5	H	H	H	H	H	H	H	H	H

H - HIGH; M - MEDIUM; L - LOW.

Programme Code:	B.Sc.	Programme Title:	Mathematics	
Course Code:	22UMS409	Title	Batch:	2022 - 2025
Lecture Hrs./Week or Practical Hrs./Week	2	PROGRAMMING LAB IN 'C'	Semester:	IV
			Credits:	1

Course Objectives

The course is designed to provide a practical exposure to the students on 'C' language.

Course Outcomes (CO)

On completion of the course the students will be able to

CO Number	CO Statement	Knowledge Level
CO1	Write the programming code to understand the concepts of looping structure and conditional statements.	K3
CO2	Write the programming code for matrix operations to understand the array concepts	K3
CO3	Write the programming code using user-defined functions and nesting of functions	K3
CO4	Write the programming code using pointers	K4
CO5	Enrich the programming knowledge and debugging .	K3

Mapping

PO / PSO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2
CO1	H	M	M	H	M	H	M	M	H
CO2	H	H	H	H	M	H	H	M	H
CO3	H	M	H	H	M	H	H	M	H
CO4	H	M	H	H	M	H	H	M	H
CO5	H	M	H	H	M	H	H	M	H

H - HIGH; M - MEDIUM; L - LOW.

Programme Code:	B.Sc.	Programme Title:	Mathematics	
Course Code:	22UMS4N3	Title	Batch:	2022 - 2025
Lecture Hrs./Week or Practical Hrs./Week	1	NME: QUANTITATIVE APTITUDE – II	Semester:	IV
			Credits:	2

Course Objective

The objective of this syllabus is to make the students to clear competitive examination like Banking recruitment, Postal recruitment, Railway recruitment and TNPSC exams.

Course Outcomes (CO)

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

CO Number	CO Statement	Knowledge Level
CO1	Recall the necessary fundamentals to take up the course	K2
CO2	Solve simple problems related to problems on ages , problems on trains and boats and streams.	K3
CO3	Apply the concepts of time and work, time and distance in solving real life problems.	K3
CO4	Develop logical thinking, problem solving skills and time management.	K4
CO5	Clear competitive exams in banking, Postal and railway services, IT, etc..	K4

Mapping

PO /PSO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2
CO1	M	M	M	H	M	H	M	M	H
CO2	H	H	M	H	M	H	M	M	H
CO3	H	H	M	H	M	H	M	M	H
CO4	H	H	M	H	M	H	M	M	H
CO5	H	H	M	H	M	H	M	M	H

H - HIGH; M - MEDIUM; L - LOW.

Programme Code:	B.Sc.	Programme Title:	Mathematics	
Course Code:	22UMS4N4	Title	Batch:	2022 - 2025
Lecture Hrs./Week or Practical Hrs./Week	1	NME: ASTRONOMY – II	Semester:	IV
			Credits:	2

Course Objective

This paper enables the learners to learn about the Moon and Ellipses.

Course Outcomes (CO)

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

CO Number	CO Statement	Knowledge Level
CO1	Understand the basic knowledge of the Moon.	K2
CO2	Acquire the facts in Eclipses.	K2
CO3	Know the concept of planetary Phenomena.	K3
CO4	Find the application of Astronomical Instruments like sidereal clock and chronometer.	K4
CO5	Evaluate the Heliocentric motion of a planet	K4

Mapping

PO / PSO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2
CO1	H	M	M	H	M	H	M	M	M
CO2	M	M	H	H	M	H	M	M	M
CO3	M	M	H	H	M	H	M	M	M
CO4	M	M	M	H	M	H	M	M	M
CO5	M	H	M	H	M	H	M	M	M

H - HIGH; M - MEDIUM; L - LOW.

Programme Code:	B.Sc.	Programme Title:	Mathematics	
Course Code:	22UMS510	Title	Batch:	2022 - 2025
Lecture Hrs./Week or Practical Hrs./Week	6	MODERN ALGEBRA	Semester:	V
			Credits:	4

Course Objective

To promote a better understanding of algebra and provides an adequate foundation for further study in abstract algebra and its applications in various branches of Mathematics.

Course Outcomes (CO)

On successful completion of this core paper, the students will be able to

CO Number	CO Statement	Knowledge Level
CO1	Understand the algebraic structures such as sets, mappings, relations, groups, rings and field.	K2
CO2	Understand the properties of groups, subgroups and applying in simple proofs and solving problems.	K3
CO3	Apply the results from group theory to study the properties of rings and fields and to possess the ability to work within their algebraic structures.	K3
CO4	Understand and analyze the concepts of group homomorphism, isomorphism for groups, rings and Euclidian rings.	K4
CO5	Enrich the knowledge in algebra to pursue higher degree and choose a teaching career.	K4

Mapping

PO /PSO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2
CO1	H	H	H	M	H	M	M	H	H
CO2	H	H	H	H	H	M	M	H	H
CO3	H	H	H	H	H	H	M	H	H
CO4	H	H	H	H	H	H	H	H	H
CO5	H	H	H	H	H	H	H	H	H

H - HIGH; M - MEDIUM; L - LOW.

Programme Code:	B.Sc.	Programme Title:	B.Sc. Mathematics	
Course Code:	22UMS511	Title	Batch:	2022 - 2025
		REAL ANALYSIS - I	Semester:	V
Lecture Hrs./Week or Practical Hrs./Week	5		Credits:	4

Course Objective

To enable the learner to get into basic concepts of Real Analysis and obtain a foundation for further study in analysis.

Course Outcomes (CO)

On successful completion of the course student will be able to

CO Number	CO Statement	Knowledge Level
CO1	Demonstrate the fundamental properties of the real numbers which underpin the formal development of real analysis.	K2
CO2	Apply the concepts of closure and interior of sets, continuity, convergence to effectively communicate mathematics.	K3
CO3	Calculate the limits of various types of sequences, discuss the nature of continuity and analyze their properties.	K3
CO4	Analyze the applications of intersection theorem, covering theorems and Bolzano-Weierstrass theorem.	K4
CO5	Understand the structure of a metric space and deal with the notions of continuity, completeness and connectedness.	K2

Mapping

PO / PSO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2
CO1	H	M	M	M	H	H	M	H	H
CO2	H	H	H	H	H	H	M	H	H
CO3	H	H	H	H	H	H	H	H	H
CO4	H	H	H	H	H	H	H	H	H
CO5	H	H	H	H	H	H	H	H	H

H - HIGH; M - MEDIUM; L - LOW.

Programme Code:	B.Sc.	Programme Title:	Mathematics	
Course Code:	22UMS512	Title	Batch:	2022 - 2025
Lecture Hrs./Week or Practical Hrs./Week	5	SKILL ENHANCED COURSE: OPERATIONS RESEARCH - I	Semester:	V
			Credits:	4

Course Objective

The prime objective of this paper is to introduce certain OR techniques such as LPP, Transportation problems, Assignment problems, Sequencing and Replacing models to help the students to develop logical reasoning for applying mathematical tools to managerial and real life oriented problems.

Course Outcomes (CO)

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

CO Number	CO Statement	Knowledge Level
CO1	Formulate real world problems as an LP model and explain the relationship between a linear program and its dual.	K2
CO2	Solve linear programming problems using appropriate techniques and interpret the results.	K3
CO3	Understand and solve replacement problems, build and solve specialized linear programming problems like transportation and assignment problems.	K3
CO4	Effectively communicate ideas, explain procedures, devise optimum allocations, interpret results and make firm decisions.	K4
CO5	Identify and develop operational research models from the verbal description of the real system in the areas of management science, industry, engineering fields and transportation.	K4

Mapping

PO / PSO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2
CO1	H	H	H	H	H	H	M	H	H
CO2	H	H	H	H	H	H	M	H	H
CO3	H	H	H	H	H	H	H	H	H
CO4	H	H	H	H	H	H	H	H	H
CO5	H	H	H	H	H	H	H	H	H

H - HIGH; M - MEDIUM; L - LOW.

Programme Code:	B.Sc.	Programme Title:	Mathematics	
Course Code:	22UMS513	Title	Batch:	2022 - 2025
Lecture Hrs./Week or Practical Hrs./Week	5	COMPLEX ANALYSIS	Semester:	V
			Credits:	4

Course Objective

This course help the students to have an in depth knowledge of limits and continuity, analytic functions, uniform convergence, conformal mapping and Singularities.

Course Outcomes (CO)

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

CO Number	CO Statement	Knowledge Level
CO1	Understand the fundamental ideas of the functions of complex variables and complex integrals.	K2
CO2	Analyze the concepts of sequences and series of complex functions to generate Taylor series and Laurent series.	K3
CO3	Analyze integrals along a path in the complex plane by applying Cauchy integral formula and its various versions.	K3
CO4	Apply the concept of line integrals in fundamental theorems like Cauchy theorem for rectangle and Cauchy theorem for disc.	K3
CO5	Determine zeros and poles of simple functions, find the nature of the singularities and hence to calculate residues.	K3

Mapping

PO / PSO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2
CO1	H	H	H	H	H	H	H	H	H
CO2	H	H	H	H	M	M	H	H	H
CO3	H	H	H	H	M	M	H	H	H
CO4	H	H	H	H	M	M	H	H	H
CO5	H	H	H	H	M	H	H	H	H

H - HIGH; M - MEDIUM; L - LOW.

Programme Code:	B.Sc.	Programme Title:	Mathematics	
Course Code:	22UMS5E1	Title	Batch:	2022 - 2025
Lecture Hrs./Week or Practical Hrs./Week	3	OOP with C++	Semester:	V
			Credits:	3

Course Objective

The aim of this course is to know all needed about C++ and object oriented programming and also to meet the global requirements in software industries.

Course Outcomes (CO)

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

CO Number	CO Statement	Knowledge Level
CO1	Understand the basics of tokens, expressions and control structures.	K2
CO2	Understand and apply the concepts of functions, classes, objects.	K3
CO3	Analyze the concepts of single inheritance, multiple inheritance, call by function, call by reference of a function and polymorphism.	K4
CO4	Analyze the use of operator overloading and type conversions.	K4
CO5	Develop program codes effectively using OOPS.	K5

Mapping

PO / PSO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2
CO1	M	M	H	H	M	H	M	M	H
CO2	M	M	H	H	M	H	M	M	H
CO3	H	H	H	H	H	H	H	M	H
CO4	H	H	H	H	H	H	H	M	H
CO5	H	H	H	H	H	H	H	M	H

H - HIGH; M - MEDIUM; L - LOW.

Programme Code:	B.Sc.	Programme Title:	Mathematics	
Course Code:	22UMS5E2	Title	Batch:	2022 - 2025
Lecture Hrs./Week or Practical Hrs./Week	3	ARTIFICIAL INTELLIGENCE AND MACHINE LEARNING	Semester:	V
			Credits:	3

Course Objective

On successful completion of the course the students are able to understand the concepts of problem solving logics, reasoning knowledge, Decision making, Learning with searches and algorithms.

Course Outcomes (CO)

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

CO Number	CO Statement	Knowledge Level
CO1	Recall the basic logical searches, learning algorithms and improve decision making systems.	K1
CO2	Summarize the idea about knowledge representation and reasoning	K2
CO3	Illustrate new knowledge with probabilistic reasoning solutions	K3
CO4	Analyze Decision making system and its different process	K4
CO5	Evaluate the learning skills with many observations and machine learning algorithms	K5

Mapping

PO /PSO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2
CO1	H	H	H	H	M	H	H	H	H
CO2	H	M	H	H	H	H	H	H	H
CO3	H	H	H	H	H	H	H	H	H
CO4	H	M	H	H	H	H	M	H	H
CO5	H	H	H	H	M	M	H	H	H

H - HIGH; M - MEDIUM; L - LOW.

Programme Code:	B.Sc.	Programme Title:	Mathematics	
Course Code:	22UMS5E3	Title	Batch:	2022 - 2025
Lecture Hrs./Week or Practical Hrs./Week	2	Programming Lab in OOP with C++	Semester:	V
			Credits:	1

Course Objective

This course is designed to provide a practical knowledge to the students on C++.

Course Outcomes (CO)

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

CO Number	CO Statement	Knowledge Level
CO1	Develop the OOPS program to understand the concepts of multi dimensional arrays.	K3
CO2	Develop the program to understand the concepts of constructors, destructors and overloading constructors.	K4
CO3	Develop the program for single and multilevel inheritance.	K4
CO4	Develop the program for understanding the concepts of pointer object and polymorphism.	K4
CO5	Competent in developing the programming code and debugging.	K5

Mapping

PO / PSO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2
CO1	H	M	H	H	M	M	M	M	H
CO2	H	M	H	H	M	M	M	M	H
CO3	H	M	H	H	M	H	M	M	H
CO4	H	M	H	H	M	H	M	M	H
CO5	H	M	H	H	H	H	H	H	H

H - HIGH; M - MEDIUM; L - LOW.

Programme Code:	B.Sc.	Programme Title:	Mathematics	
Course Code:	22UMS5AL	Title	Batch:	2022 - 2025
		ADVANCED LEARNER COURSE (OPTIONAL): ADVANCED OPERATIONS RESEARCH - I	Semester:	V
Lecture Hrs./Week or Practical Hrs./Week	-		Credits:	3*

Course Objective

The course aims to introduce some OR techniques like Integer programming, Goal programming, dynamic programming etc. to build capabilities in students for analyzing different business situations involving limited resources and obtained logical solutions.

Course Outcomes (CO)

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

CO Number	CO Statement	KnowledgeLevel
CO1	Recall Linear programming techniques, understand and apply advanced techniques in linear programming and duality to real life problems	K2 & K3
CO2	Understand and solve variety of problems such as replacement problems, transportation problem etc.	K2 & K3
CO3	Sketch the theoretical workings of Integer programming, Goal programming, Dynamic programming problems and their solution procedures.	K3
CO4	Analyze any real system and formulate Mathematical models.	K4
CO5	Make effective decisions under various business situations by applying appropriate optimization techniques.	K4

Mapping

PO / PSO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2
CO1	H	H	H	H	H	M	M	H	H
CO2	H	M	H	H	H	H	M	H	H
CO3	H	H	H	H	M	M	M	H	H
CO4	H	H	H	H	H	H	H	H	H
CO5	H	H	H	H	H	H	H	H	H

H - HIGH; M - MEDIUM; L - LOW.

Programme Code:	B.Sc.	Programme Title:	Mathematics	
Course Code:	22UMS5S1	Title	Batch:	2022 - 2025
Lecture Hrs./Week or Practical Hrs./Week	3	SBE-I: FINANCIAL MATHEMATICS-I	Semester:	V
			Credits:	3

Course Objective

This course provides an introduction to the basic mathematical concepts and techniques used in finance and business, highlighting the inter-relationships of the mathematics and developing problem solving solutions with a particular emphasis on financial and business applications

Course Outcomes (CO)

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

CO Number	CO Statement	Knowledge Level
CO1	Demonstrate an understanding of the term structure of interest rates.	K2
CO2	Define and describe in detail, the use of simple and compound rates of interest and distinguish between nominal and effective rates of interest	K3
CO3	Demonstrate an understanding of concepts relating to annuities	K3
CO4	Describe in detail the various types of annuities and perpetuities and use them to solve financial transaction problems	K3
CO5	Demonstrate their ability to apply the technical solutions related to the course in a practical context.	K3

Mapping

PO /PSO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2
CO1	H	H	M	H	H	M	M	M	M
CO2	H	H	M	H	H	M	M	H	M
CO3	H	H	M	M	M	M	M	M	M
CO4	H	H	M	H	H	H	M	M	M
CO5	H	H	H	H	H	H	M	M	M

H - HIGH; M - MEDIUM; L - LOW.

Programme Code:	B.Sc.	Programme Title:	Mathematics	
Course Code:	22UMS5S2	Title	Batch:	2022 - 2025
Lecture Hrs./Week or Practical Hrs./Week	3	SBE-I: NETWORK AND INFORMATION SECURITY	Semester:	V
			Credits:	3

Course Objective

To impart knowledge of Network security, Wi-Fi security, hackers, secure networking and password managers.

Course Outcomes (CO)

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

CO Number	CO Statement	Knowledge Level
CO1	Remember the basic concepts of network	K1
CO2	Understand the network hacking techniques	K2
CO3	Deploy information and network security	K3
CO4	Interpret the common threats today in computer network	K3
CO5	Analyze the details about Internet connection	K4

Mapping

PO / PSO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2
CO1	H	H	M	H	H	M	M	M	M
CO2	H	H	M	H	H	M	M	H	M
CO3	H	H	M	M	M	M	M	M	M
CO4	H	H	M	H	H	H	M	M	M
CO5	H	H	H	H	H	H	M	M	M

H - HIGH; M - MEDIUM; L - LOW.

Programme Code:	B.Sc.	Programme Title:	Mathematics	
Course Code:	22UMS614	Title	Batch:	2022 - 2025
Lecture Hrs./Week or Practical Hrs./Week	6	LINEAR ALGEBRA	Semester:	VI
			Credits:	4

Course Objective

To enable the students to study how to solve system of linear algebraic equations, basic concepts of an algebraic structure namely vector space and its properties of linear transformations on vector spaces and their relation between matrices.

Course Outcomes (CO)

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

CO Number	CO Statement	Knowledge Level
CO1	Solve systems of linear equations and to reduce the augmented matrix to echelon form or to row reduced echelon form.	K3
CO2	Understand the basic ideas of vector spaces and the concepts of span, linear independence, basis, dimension and to apply these concepts to vector spaces and subspaces.	K2
CO3	Find row space, column space, null space, rank and nullity of a matrix and to understand the relationship of these concepts to associated systems of linear equations.	K3
CO4	Apply the principles of matrix algebra to linear transformations and analyze the competence with the basic ideas in Vector spaces, Dual spaces and linear transformation.	K4
CO5	Enrich the knowledge in Linear Algebra to pursue higher degree in Mathematics and other discipline, as well to get employability in education field and IT sectors.	K4

Mapping

PO /PSO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2
CO1	H	H	H	H	M	M	M	H	H
CO2	H	H	H	H	M	H	M	H	H
CO3	H	H	H	H	H	H	M	H	H
CO4	H	H	H	H	H	H	H	H	H
CO5	H	H	H	H	H	H	H	H	H

H - HIGH; M - MEDIUM; L - LOW.

Programme Code:	B.Sc.	Programme Title:	Mathematics	
Course Code:	22UMS615	Title	Batch:	2022 - 2025
Lecture Hrs./Week or Practical Hrs./Week	5	REAL ANALYSIS – II	Semester:	VI
			Credits:	4

Course Objective

To equip the students for study in Real analysis by introducing further some of advanced topics in Real Analysis.

Course Outcomes (CO)

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

CO Number	CO Statement	Knowledge Level
CO1	Understand and use abstract mathematical concepts of derivatives and functions of bounded variation.	K2
CO2	Apply the properties of monotonic functions and continuous functions of bounded variation in the context of real analysis.	K3
CO3	Apply the ideas of total variation and step into the theory of Riemann Stieltjes Integral.	K3
CO4	Analyze the Riemann Integral and Riemann-Stieltjes integral in detail and write complete, correct and coherent proofs.	K4
CO5	Enhance higher order learning and demonstrate how abstract ideas in real analysis can be applied to practical problems.	K4

Mapping

PO / PSO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2
CO1	H	H	H	H	H	H	M	H	H
CO2	H	H	H	H	H	H	M	H	H
CO3	H	H	H	H	H	H	M	H	H
CO4	H	H	H	H	H	H	H	H	H
CO5	H	H	H	H	H	H	H	H	H

H - HIGH; M - MEDIUM; L - LOW.

Programme Code:	B.Sc.	Programme Title:	Mathematics	
Course Code:	22UMS616	Title	Batch:	2022 - 2025
Lecture Hrs./Week or Practical Hrs./Week	5	SKILL ENHANCED COURSE: OPERATIONS RESEARCH -II	Semester:	VI
			Credits:	4

Course Objective

The prime objective of this paper is to introduce certain OR techniques such as game theory, sequencing and networking models to help the students to develop logical reasoning for applying mathematical tools to managerial and other life oriented problems.

Course Outcomes (CO)

On successful completion of the course student will be able to

CO Number	CO Statement	Knowledge Level
CO1	Recall and apply linear programming techniques to develop and solve simple models of Game theory.	K2
CO2	Determine the optimal sequence of allocation of jobs to machines in a production line by minimizing the idle time.	K3
CO3	Comprehend several queuing system models and extend the same to practical situations, develop network models and analyze a project with deterministic and probabilistic activity times.	K4
CO4	Identify the importance of stocks, need for holding stocks and determine the optimum order quantity based on the available constraints.	K4
CO5	Make constructive decisions and use the resources (labor, capital, materials, machinery) more effectively by analyzing & applying the techniques of operations research to problems in engineering, industry, management or any business environment.	K4

Mapping

PO /PSO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2
CO1	H	H	H	H	H	M	H	H	H
CO2	H	H	H	H	H	H	H	H	H
CO3	H	H	H	H	H	H	H	H	H
CO4	H	H	H	H	H	H	M	H	H
CO5	H	H	H	H	H	H	H	H	H

H - HIGH; M - MEDIUM; L - LOW.

Programme Code:	B.Sc.	Programme Title:	Mathematics	
Course Code:	22UMS6E4	Title	Batch:	2022 - 2025
Lecture Hrs./Week or Practical Hrs./Week	5	THEORY OF NUMBERS	Semester:	VI
			Credits:	5

Course Objective

This course exposes the elementary basic theory of numbers and several famous functions, related theorems and some unsolved problems about primes to the students in order to enable them to deeper their understanding of the subject.

Course Outcomes (CO)

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

CO Number	CO Statement	Knowledge Level
CO1	Understand the concepts of divisibility, congruence, greatest common divisor and prime-factorization.	K2
CO2	Apply the properties of multiplicative functions such as the Euler phi-function and quadratic residues to solve the problems of number theory.	K3
CO3	Demonstrate the concepts of linear congruence and polynomial congruence using Fermat's Theorem and Wilson's Theorem.	K3
CO4	Analyze and solve linear Diophantine equations, congruences of various types and evaluate the unsolved problems about primes.	K4
CO5	Clear competitive exams in banking, insurance, TNPSC and UPSC.	K3

Mapping

PO / PSO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2
CO									
CO1	H	H	M	H	H	H	M	H	H
CO2	H	H	H	H	H	H	M	H	H
CO3	H	H	H	H	H	H	M	H	H
CO4	H	H	H	H	H	H	H	H	H
CO5	H	H	H	H	H	H	H	H	H

H - HIGH; M - MEDIUM; L - LOW.

Programme Code:	B.Sc.	Programme Title:	Mathematics	
Course Code:	22UMS6E5	Title	Batch:	2022 - 2025
Lecture Hrs./Week or Practical Hrs./Week	5	FUZZY SET THEORY	Semester:	VI
			Credits:	5

Course Objective

To enable the learners to obtain basic knowledge in fuzzy set theory.

Course Outcomes (CO)

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

CO Number	CO Statement	Knowledge Level
CO1	Recall the concepts of crisp sets and fuzzy sets.	K2
CO2	Understand the types and concept of fuzzy sets.	K2
CO3	Analyze the difference between crisp sets and fuzzy sets.	K4
CO4	Understand the concepts of operations on fuzzy sets.	K2
CO5	Apply the concept of fuzzy sets in research and real life problems.	K3

Mapping

PO / PSO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2
CO1	M	H	M	H	H	H	M	H	H
CO2	M	H	H	M	H	M	M	H	H
CO3	H	H	H	H	H	H	M	H	H
CO4	M	H	M	M	H	H	H	H	H
CO5	H	H	H	H	H	H	H	H	H

H - HIGH; M - MEDIUM; L - LOW.

Programme Code:	B.Sc.	Programme Title:	Mathematics	
Course Code:	22UMS6E6	Title	Batch:	2022 - 2025
Lecture Hrs./Week or Practical Hrs./Week	5	DISCRETE MATHEMATICS	Semester:	VI
			Credits:	5

Course Objective

In this course a set of topics that are of genuine use in computer science and elsewhere are identified and combined together in a logically coherent fashion, to enable the students to get a good training in these topics which will inevitably lead the students in the direction of clear thinking, sound reasoning and a proper attitude towards the applications of Mathematics in computer science and other related fields.

Course Outcomes (CO)

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

CO Number	CO Statement	Knowledge Level
CO1	Understand the basic definitions of logic, lattice theory, graph theory and automata theory.	K2
CO2	Acquire knowledge about discrete structures which include sets, relations, functions, graphs and recurrence relations.	K3
CO3	Analyze how lattices and Boolean algebra are used as tools and mathematical models in the study of networks.	K4
CO4	Apply logically valid forms of arguments to avoid logical errors and to construct mathematical arguments using logical connectives and quantifiers.	K4
CO5	Apply the concepts to the field of computer science, information technology, cryptography and software engineering.	K3

Mapping

PO / PSO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2
CO1	H	H	H	M	H	H	M	H	H
CO2	H	H	H	M	H	H	M	H	H
CO3	H	H	H	H	H	H	H	H	H
CO4	H	H	H	H	H	H	H	H	H
CO5	H	H	H	H	H	H	H	H	H

H - HIGH; M - MEDIUM; L - LOW.

Programme Code:	B.Sc.	Programme Title:	Mathematics	
Course Code:	22UMS6E7	Title	Batch:	2022 - 2025
Lecture Hrs./Week or Practical Hrs./Week	5	GRAPH THEORY	Semester:	VI
			Credits:	5

Course Objective

Graph theory is a major area of Combinatorics. In this Course we introduce the learners to some basic topics in graph theory.

Course Outcomes (CO)

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

CO Number	CO Statement	Knowledge Level
CO1	Recall the basic concepts and definitions of graphs along with types and their examples.	K1
CO2	Demonstrate the concepts of connectivity and line connectivity.	K3
CO3	Compare the features of Eulerian graphs and Hamiltonian graphs.	K4
CO4	Apply the concept of directed graphs to solve network flow problems.	K3
CO5	Relate the graph theory to the real world problems.	K4

Mapping

PO / PSO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2
CO1	H	H	H	M	H	H	H	H	H
CO2	H	M	H	M	H	H	M	H	H
CO3	H	M	M	M	M	H	M	H	H
CO4	H	H	H	H	H	H	H	H	H
CO5	H	H	H	H	H	H	H	H	H

H – HIGH; M – MEDIUM; L – LOW.

Programme Code:	B.Sc.	Programme Title:	Mathematics	
Course Code:	22UMS6P1	Title	Batch:	2022 - 2025
Lecture Hrs./Week or Practical Hrs./Week	-	PROJECT	Semester:	VI
			Credits:	2

Components of the Project may be included the following

Review No.	Activity
I	Problem Identification and Related Literature collection
II	Analyzing or solving problems by applying different methodology
III	Giving conclusion

Programme Code:	B.Sc.	Programme Title:	Mathematics	
Course Code:	22UMS6AL	Title	Batch:	2022 - 2025
Lecture Hrs./Week or Practical Hrs./Week	-	ADVANCED LEARNER COURSE (OPTIONAL): ADVANCED OPERATIONS RESEARCH - II	Semester:	VI
			Credits:	3*

Course Objective

The course aims to expose non-linear programming and simulation. Further it helps the student to understand different computational algorithms used in solving non-linear programming problems. The course also enables to schedule projects and build mathematical models to study the real world system.

Course Outcomes (CO)

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

CO Number	CO Statement	Knowledge Level
CO1	Understand non-linear programming problems and familiarize different solving procedures	K2& K3
CO2	Formulate and solve non-linear programming problems using appropriate techniques and interpret the results.	K3
CO3	Simulate Various real life probabilistic situations using methods like Monte Carlo simulation	K4
CO4	Analyze the resources efficiently under various constrains and estimate the probability of completing a project on time.	K4
CO5	Develop critical and analytical skills that enable to apply optimization techniques constructively to any business environment and draw wise decisions.	K4

Mapping

PO /PSO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2
CO1	H	H	H	H	H	M	M	H	H
CO2	H	H	H	H	M	H	M	H	H
CO3	H	M	H	H	H	M	H	H	H
CO4	H	H	H	H	H	H	H	H	H
CO5	H	H	H	H	H	H	H	H	H

H - HIGH; M - MEDIUM; L - LOW.

Programme Code:	B.Sc.	Programme Title:	Mathematics	
Course Code:	22UMS6S3	Title	Batch:	2022 - 2025
Lecture Hrs./Week or Practical Hrs./Week	3	SBE-II: FINANCIAL MATHEMATICS -II	Semester:	VI
			Credits:	3

Course Objective

The course on financial mathematics focuses on the mathematical properties and relations between concepts of financial and currency markets in investment and other economic activities.

Course Outcomes (CO)

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

CO Number	CO Statement	Knowledge Level
CO1	Use a generalized cash-flow model to describe financial transactions.	K2
CO2	Describe how a loan may be repaid by regular instalments of interest and capital.	K3
CO3	Analyze straightforward compound interest problems and solve resulting equations of value, including for the implied rate of return.	K4
CO4	Apply discounted cash flow techniques to investment project appraisal.	K3
CO5	Communicate the difference in capital budgeting decision tools like Net Present Values, Interval Rates of Return and Discounted Payback Periods.	K3

Mapping

PO /PSO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2
CO									
CO1	H	H	M	H	M	M	M	M	M
CO2	H	H	H	H	M	M	M	M	M
CO3	H	H	M	H	M	M	M	M	M
CO4	H	H	H	H	M	M	M	M	M
CO5	H	H	M	H	M	M	M	M	M

H - HIGH; M - MEDIUM; L - LOW.

Programme Code:	B.Sc.	Programme Title:	Mathematics	
Course Code:	22UMS6S4	Title	Batch:	2022 - 2025
Lecture Hrs./Week or Practical Hrs./Week	3	SBE-II: CRYPTOGRAPY	Semester:	VI
			Credits:	3

Course Objective

To enable the learners to explore the basic techniques of modern cryptography and to re-visit some mathematical results which are foundations for several modern cryptographic algorithms.

Course Outcomes (CO)

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

CO Number	CO Statement	Knowledge Level
CO1	Understand the fundamentals of cryptography including data and advanced encryption standards.	K2
CO2	Learn to encrypt and decrypt messages using block ciphers.	K2
CO3	Acquire knowledge about the uses of RSA crypto system.	K3
CO4	Learn about how to maintain the confidentiality, Integrity and availability of a data.	K4
CO5	Analyze and apply the concepts of public number generation and public key encryption in real life situations.	K4

Mapping

PO / PSO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2
CO1	H	H	H	H	H	H	H	H	H
CO2	H	H	M	H	H	H	M	H	H
CO3	H	M	M	H	M	M	M	H	H
CO4	H	H	H	H	H	H	H	H	H
CO5	H	M	H	H	H	H	M	H	H

H – HIGH; M – MEDIUM; L – LOW.



Dr. R. MUTHUKUMARAN,
M.A., M.Phil., B.Ed., Ph.D.
PRINCIPAL
N.G.M. College, Pollachi - 642 001
Coimbatore District