NGM COLLEGE

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Vision

Our dream is to make the college an institution of excellence at the national level by imparting quality education of global standards to make students academically superior, socially committed, ethically strong, spiritually evolved and culturally rich citizens to contribute to the holistic development of the self and society.

Mission

Training students to become role models in academic arena by strengthening infrastructure, upgrading curriculum, developing faculty, augmenting extension services and imparting quality education through an enlightened management and committed faculty who ensure knowledge transfer, instill research aptitude and infuse ethical and cultural values to transform students into disciplined citizens in order to improve quality of life.

Department of Mathematics (SF)

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- Ensure knowledge transfer.
- Awareness on leaner-centric method.
- To identify their talents and character to choose their future in the field of Government competitive examinations or Post graduation or Private sector job opportunities.
- Ensure cultural value to improve their life
- Make our students into socially responsible and culturally strong citizens to uplift themselves and the society.

Programme Objectives:

1. To qualify the students to become successful professionals by demonstrating logical and analytical thinking abilities.

2. To provide knowledge in the breadth and depth of mathematics, including the connections between different areas of mathematics.

Programme Outcomes:

PO 1: To develop important analytical skills and problem-solving strategies to assess a broad range of issues in real life.

PO 2: To expose a wide range of modern mathematical ideas from pure and applied mathematics to graduate with both technical and quantitative skills that are in demand in the modern world.

PO 3: To formulate and develop mathematical arguments in a logical manner.

PO 4: To acquire a core of mathematical knowledge and understanding in advanced areas of mathematics from the given courses that provides a solid foundation for future learning.

PO 5: To meet the global challenges and accomplish various rewarding positions in the society.

Programme Code:	B.Sc.	**Programme Title:**	Mathematics	
Course Code:	20UMA101	**Title**	**Batch:**	2020-2023
		CLASSICAL ALGEBRA	**Semester**	I
Hrs./Week	5		**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 (CO)

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

K1	CO1	understand the basic concepts of algebra and matrices.
K2	CO2	formulate and solve the mathematical equations and analyze the nature of the roots.
K3	CO3	effectively apply the Binomial theorem, Exponential theorem to summation of series.
K4	CO4	evaluate the system of equations using matrices.

Programme Code:	B.Sc.	**Programme Title:**	Mathematics	
Course Code:	20UMA102	**Title**	**Batch:**	2020-2023
		CALCULUS	**Semester**	I
Hrs./Week	6		**Credits:**	5

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 completion of this course, the students will be able to

K1	CO1	acquire knowledge in solving the double integrals on both Cartesian and polar co-ordinates.
K2	CO2	apply the concepts of Beta and Gamma functions on multiple integrals and demonstrate the different integrals of partial differential equations and Lagrange's equations.
K3	CO3	use the special methods of finding the particular integral of several linear differential equations with constant and variable co-efficients.

K4	CO4	understand the concept of Laplace transforms and inverse Laplace transforms and using it to solve ordinary differential equations with constant co-efficients.

Programme Code:	B.Sc.	**Programme Title:**	Mathematics	
Course Code:	20UMA1A1	**Title**	**Batch:**	2020-2023
		MATHEMATICAL STATISTICS - I	**Semester**	I
Hrs./Week	6		**Credits:**	5

Course Objective

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 the course, the students will be able to

K1	CO1	understand random variables and probability distributions.
K2	CO2	know the difference between discrete and continuous random variables.
K3	CO3	compute expected value and variance of discrete and continuous random variables.
K4	CO4	acquire the knowledge by using Binomial distribution, Poisson distribution etc.

Programme Code:	B.Sc.	**Programme Title:**	Mathematics	
Course Code:	20UMA203	**Title**	**Batch:**	2020-2023
		TRIGONOMETRY, VECTOR CALCULUS AND FOURIER SERIES	**Semester**	II
Hrs./Week	5		**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 the course, the students will be able to

K1	CO1	understand the expansions of trigonometric functions, the nature of hyperbolic functions, Fourier Series, Vector point functions.
K2	CO2	find the Fourier co-efficient for Periodic functions and its applications.
K3	CO3	apply the concepts of Gradient, Divergence and Curl in solving vector differentiation problems.
K4	CO4	solve the multiple integrals by applying Gauss divergence theorem, Stokes's theorem and Green's theorem.

Programme Code:	B.Sc.	**Programme Title:**	Mathematics	
Course Code:	20UMA204	**Title**	**Batch:**	2020-2023
		ANALYTICAL GEOMETRY	**Semester**	II
Hrs./Week	5		**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-dimensional and three-dimensional analytical geometry.

Course Outcomes (CO)

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

K1	CO1	recollect the properties of circle, sphere and can able to gain a deep knowledge in it.
K2	CO2	get the clear idea about the relation between polar and cartesian co-ordinates.
K3	CO3	compute the equation of a circle on a sphere.
K4	CO4	analyze the concepts of right circular cone, enveloping cone, General quadric cone and their properties.

Programme Code:	B.Sc.	**Programme Title:**	Mathematics	
Course Code:	20UMA2A2	**Title**	**Batch:**	2020-2023
		MATHEMATICAL STATISTICS – II	**Semester**	II
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 completion of this course, the students will be able to

K1	CO1	understand the meaning of correlation, regression and its properties.
K2	CO2	analyse the concepts of sampling techniques and procedure for testing of hypothesis for large samples.
K3	CO3	demonstrate the use of chi-square distribution
K4	CO4	apply the concepts of t, F, z-distributions and its applications.

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Programme Code:	B.Sc.	**Programme Title :**	Mathematics	
Course Code:	19UMA305	**Title**	**Batch :**	2019-2022
		DYNAMICS	**Semester**	III
Hrs/Week	5		**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 completion of this course, the students will be able to:

K1	CO1	remember the notions which were studied under Simple harmonic motion.
K2	CO2	clearly understand the concept of projectiles and its properties by solving some simple problems related to it.
K3	CO3	evaluate the law of forces in central orbit by applying the action of central forces.
K4	CO4	analyze the concept of impulse, impulsive forces and the collision of elastic bodies and able to solve the simple problems regarding it.

Programme Code:	B.Sc.	**Programme Title :**	Mathematics	
Course Code:	19UMA306	**Title**	**Batch :**	2019-2022
		NUMERICAL TECHNIQUES	**Semester**	III
Hrs/Week	4		**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 the course the students will be able to

K1	CO1	derive numerical methods for approximating the solution of the problems of algebraic and transcendental equations, ordinary and partial differential equations.
K2	CO2	implement a variety of numerical algorithms using appropriate technology
K3	CO3	get practical knowledge of polynomial interpolation. Also numerical algorithms are used in C++ for solving scientific problems.
K4	CO4	solve the ordinary differential equations by using the methods like Euler's, Runge Kutta, Modified Euler and Improved Euler.

Programme Code:	B.Sc.	**Programme Title :**	Mathematics	
Course Code:	19UMA3N1	**Title**	**Batch :**	2019-2022
		NME: QUANTITATIVE APTITUDE - I	**Semester**	III
Hrs/Week	1		**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 the course, the students will be able to

K1	CO1	remember the meaning of HCF and LCM of numbers.
K2	CO2	understand the concepts of odd man out & series.
K3	CO3	analyze the concepts of ratio & proportion.
K4	CO4	apply the concepts of profit & loss in real life problems.

Programme Code:	B.Sc.	**Programme Title :**	Mathematics	
Course Code:	19UMA3N2	**Title**	**Batch :**	2019-2022
		NME ASTRONOMY- I	**Semester**	III
Hrs/Week	1		**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 the course, the students will be able to

K1	CO1	understand the concept of the Solar System.
K2	CO2	become familiar with the Double & Multiple stars.
K3	CO3	acquire the knowledge in the Milky Way.
K4	CO4	know the various constellations.

Programme Code:	B.Sc.	**Programme Title :**	Mathematics	
Course Code:	19UMA407	**Title**	**Batch :**	2019-2022
		STATICS	**Semester**	IV
Hrs/Week	4		**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 completion of this course, the students will be able to:

K1	CO1	recollect the notions of friction and centre of gravity and deploy them in solving the respective problems.
K2	CO2	get a clear idea about the concepts of forces and moments.
K3	CO3	apply the concepts of forces in finding the resultant of more than one force acting on a surface.
K4	CO4	analyze the basics of coplanar forces and equilibrium of three forces acting on a rigid body and can solve the simple problems related to it.

Programme Code:	B.Sc.	**Programme Title :**	Mathematics	
Course Code:	19UMA408	**Title**	**Batch :**	2019-2022
		OPERATIONS RESEARCH - I	**Semester**	IV

Hrs/Week	5		**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 successful completion of the course, the students will able to

K1	CO1	solve linear programming problem using Simplex Method.
K2	CO2	apply the notions of linear programming in solving transportation problems.
K3	CO3	acquire knowledge in formulating Assignment problem
K4	CO4	become familiar with some of the Queuing models.

Programme Code:	B.Sc.	**Programme Title :**	Mathematics	
Course Code:	19UMA4N3	**Title**	**Batch :**	2019-2022
		NME: QUANTITATIVE APTITUDE - II	**Semester**	IV
Hrs/Week	1		**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 the course, the students will be able to

K1	CO1	remember the meaning of BODMAS rule.
K2	CO2	understand the concept of percentage on simple problems.
K3	CO3	analyze the problem on trains with solved examples.
K4	CO4	apply the concept of time and work on real life problems.

Programme Code:	B.Sc.	**Programme Title :**	Mathematics	
Course Code:	19UMA4N4	**Title**	**Batch :**	2019-2022
		NME: ASTRONOMY - II	**Semester**	IV

Hrs/Week	1		**Credits :**	2

Course Objective

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

Course Outcomes (CO)

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

K1	CO1	gain basic knowledge of the Moon.
K2	CO2	acquire the facts in Ellipses.
K3	CO3	know the concept of planetary Phenomena.
K4	CO4	find the application of Astronomical Instruments like sidereal clock and chronometer.

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Programme Code:	B.Sc.	**Programme Title :**	Mathematics	
Course Code:	18UMA509	**Title**	**Batch :**	2018-2021
		MODERN ALGEBRA	**Semester**	V
Hrs/Week	6		**Credits :**	4

Course Objective

This course promotes 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 the course the students will be able to

K1	CO1	recollect the concepts of sets, mappings, relations and work on several examples.
K2	CO2	understand and use the basic definitions and properties of groups, subgroups and find simple proofs for results in group theory.
K3	CO3	extend the results from group theory to study the properties of rings and fields and to possess the ability to work within their algebraic structures.
K4	CO4	apply the concepts of homomorphism and isomorphism for groups and rings.

Programme	B.Sc.	**Programme Title :**	Mathematics

Code:				
Course Code:	18UMA510	**Title**	**Batch :**	2018-2021
		REAL ANALYSIS - I	**Semester**	V
Hrs/Week	6		**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 the students will be able to

K1	CO1	understand basic concepts of Real Analysis
K2	CO2	apply the concepts of continuity, convergent sequences and metric space.
K3	CO3	apply the limit to various function
K4	CO4	analyze the concepts of intersection theorem and covering theorems.

Programme Code:	B.Sc	**Programme Title :**	Mathematics	
Course Code:	18UMA511	**Title**	**Batch :**	2018-2021
		OPERATIONS RESEARCH -II	**Semester**	V
Hrs/Week	5		**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 the students will be able to

K1	CO1	understand the theory of games for solving simple games.
K2	CO2	explore various techniques to solve real life problems.
K3	CO3	apply the fundamental concept of inventory control.
K4	CO4	know distinction between PERT & CPM

Programme	B. Sc	**Programme Title :**	Mathematics

Code:				
Course Code:	18UMA512	**Title**	**Batch :**	2018-2021
		THEORY OF NUMBERS	**Semester**	V
Hrs/Week	5		**Credits :**	4

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

K1	CO1	understand the concepts of divisibility, congruence, greatest common divisor, prime and prime-factorization.
K2	CO2	analyze and solve linear Diophantine equations and congruences of various types and use the theory of congruences in applications.
K3	CO3	apply the properties of multiplicative functions such as the Euler phi-function and quadratic residues.
K4	CO4	Evaluate the unsolved problems about primes.

Programme Code:	B.Sc.	**Programme Title :**	Mathematics	
Course Code:	18UMA513	**Title**	**Batch :**	2018-2021
		PROGRAMMING IN 'C'	**Semester**	V
Hrs/Week	4		**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 successful completion of the course, the students will be able to

K1	CO1	understand the use of structured program development in C as applied to small programming projects.
K2	CO2	analyze the use of decision making statement and loop structures.
K3	CO3	gain a high level understanding of the structure of 'C' functions.
K4	CO4	acquire knowledge about arrays & pointers.

Programme Code:	B. Sc	**Programme Title :**	Mathematics	
Course Code:	18UMA514	**Title**	**Batch :**	2018-2021
		PROGRAMMING LAB IN 'C'	**Semester**	V
Hrs/Week	2		**Credits :**	2

Course Objective

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

K3	CO1	build the logic and develop a solution for a problem statement in C- language.
K4	CO2	design algorithms for difficult problems
K5	CO3	implement the algorithms in practice.

Programme Code:	B. Sc	**Programme Title :**	Mathematics	
Course Code:	18UMA5S1	**Title**	**Batch :**	2018-2021
		MATHEMATICS IN FINANCE-I	**Semester**	V
Hrs/Week	1		**Credits :**	2

Course Objective

The objective of this paper is to introduce the concepts of financial statement analysis which help the students to develop their financial skills.

Course Outcomes (CO)

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

K1	CO1	recollect the concept of ratio analysis.
K2	CO2	get the idea of liquidity ratio and capital structure ratio.
K3	CO3	implement the concepts of return on investments.
K4	CO4	analyze the basic concept of financial statement analysis.

Programme Code:	B.Sc.	**Programme Title :**	Mathematics	
Course Code:	18UMA5C2	**Title**	**Batch :**	2018-2021

		ACTUARIAL MATHEMATICS-I	**Semester**	V
Hrs/Week	1		**Credits :**	2

Course Objective

The objective of this syllabus is to make the students to get the idea of interest and force of mortality.

Course Outcomes (CO)

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

K1	CO1	remember basics of probability.
K2	CO2	understand the concept of theory of interest.
K3	CO3	implement computational illustration in splus.
K4	CO4	analyze the comparison of forces of morality.

Programme Code:	B.Sc.	**Programme Title :**	Mathematics	
Course Code:	18UMA615	**Title**	**Batch :**	2018-2021
		LINEAR ALGEBRA	**Semester**	VI
Hrs/Week	6		**Credits :**	4

Course Objective

This course will 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 successful completion of the course, the students will able to

K1	CO1	solve systems of linear equations and to reduce the augmented matrix to echelon form or to row reduced echelon form.
K2	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.
K3	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.
K4	CO4	apply the principles of matrix algebra to linear transformations.

Programme Code:	B.Sc	**Programme Title :**	Mathematics	
Course Code:	18UMA616	**Title**	**Batch :**	2018-2021
		REAL ANALYSIS - II	**Semester**	VI
Hrs/Week	6		**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 successful completion of the course the students will be able to

K1	CO1	Understand the concept of derivatives, bounded variation.
K2	CO2	Get visualize bounded variation and rectifiable curves.
K3	CO3	Apply the total variation and step into Riemann Stieltjes Integral.
K4	CO4	Analyze the Riemann Integral in detail.

Programme Code:	B.Sc.	**Programme Title :**	Mathematics	
Course Code:	18UMA617	**Title**	**Batch :**	2018-2021
		COMPLEX ANALYSIS	**Semester**	VI
Hrs/Week	5		**Credits :**	4

Course Objective

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

Course Outcomes (CO)

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

K1	CO1	Perform basic algebraic manipulation with complex numbers.
K2	CO2	Get a chance to explore the concept of uniform convergence, conformal mapping.
K3	CO3	Evaluate integrals along a path in the complex plane and understand the concept of Cauchy's theorem.
K4	CO4	Compute the Taylor and Laurent expansions of simple functions, determining the nature of the singularities and calculating residues.

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

Course Code:	18UMA618	**Title**	**Batch :**	2018-2021
		DISCRETE MATHEMATICS	**Semester**	VI
Hrs/Week	5		**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 successful completion of this paper, the students will be able to

K1	CO1	acquire knowledge about the basic concepts of Discrete Mathematics and its applications.
K2	CO2	apply logically valid forms of arguments to avoid logical errors by studying mathematical logic.
K3	CO3	understand abstract algebra, posets, lattices, Boolean algebra and their applications in the field of engineering and computer science.
K4	CO4	define the basic definitions of graph theory and a knowledge about types of graphs including isomorphic graphs , homeomorphic graphs, Eulerian graphs and Hamiltonian graphs.

Programme Code:	B.Sc.	**Programme Title :**	Mathematics	
Course Code:	18UMA619	**Title**	**Batch :**	2018-2021
		OBJECT ORIENTED PROGRAMMING WITH C++	**Semester**	VI
Hrs/Week	2		**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 successful completion of the course, the students will able to

K1	CO1	gain the knowledge of classes and objects.
K2	CO2	analyze the use of operator overloading and type conversions.
K3	CO3	understand the practice of object oriented programming in the construction of robust maintainable programs which satisfy the requirements.

K4	CO4	give students experience in C++ programming and program development within an integrated development environment.

Programme Code:	B.Sc.	**Programme Title :**	Mathematics	
Course Code:	18UMA620	**Title**	**Batch :**	2018-2021
		PROGRAMMING LAB IN OOP WITH C++	**Semester**	VI
Hrs/Week	2		**Credits :**	2

Course Objective

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

Course Outcomes (CO)

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

K3	CO2	gain the knowledge about array of object and object as argument.
K4	CO3	access various types of inheritance.
K5	CO4	implement the runtime polymorphism by using objects.

Programme Code:	B.Sc.	**Programme Title :**	Mathematics	
Course Code:	18UMA6S2	**Title**	**Batch :**	2018-2021
		MATHEMATICS IN FINANCE-II	**Semester**	VI
Hrs/Week	1		**Credits :**	2

Course Objective

The main objective of this paper is to introduce the concepts of capital budgeting.

Course Outcomes (CO)

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

K1	CO1	gain the basic knowledge of the meaning of capital budgeting.
K2	CO2	understand the basic knowledge of cash flows.
K3	CO3	execute average rate of return method and payback method.
K4	CO4	analyze the concept of net present value method.

Programme Code:	B. Sc	**Programme Title :**	Mathematics	
Course Code:	18UMA6C2	**Title**	**Batch :**	2018-2021
		ACTUARIAL MATHEMATICS -II	**Semester**	VI
Hrs/Week	1		**Credits :**	2

Course Objective

This paper enables the learners to gain basic knowledge of life table statistics.

Course Outcomes (CO)

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

K1	CO1	know the knowledge of binomial variables
K2	CO2	get the idea of expectation of discrete random variables.
K3	CO3	implement the rules for manipulating expectations.
K4	CO4	acquire the knowledge of some special integrals.