PEOs for the Institution-UG

PEO1. The graduates will apply appropriate theory and scientific knowledge to participate in activities that support humanity and economic development nationally and globally, developing as leaders in their fields of expertise.

PEO2. The graduates pursue lifelong learning and continuous improvement of the knowledge and skills with the highest professional and ethical standards.

PEOs for the UG Departments

Mathematics:

PEO3:The graduates will demonstrate the ability to utilize effectively the variety of teaching techniques and class room strategies and develop confidence to appear for competitive examinations and occupy higher levels of academic and administrative fields.

B.Sc. Mathematics (PO)

PO No.	Upon completion of the B.Sc. Degree Programme, the graduates will be able to:
PO - 1	equip students with hands on training through various courses to enhance entrepreneurship skills.
PO - 2	impart communicative skills and ethical values.
PO - 3	face challenging competitive examinations that offer rewarding careers in science and education.
PO - 4	apply the acquired scientific knowledge to face day to day needs and reflect upon green initiatives to build a sustainable environment.

B.Sc. Mathematics (PSO)

PSO No.	Upon completion of the B.Sc. Degree Programme, the graduates will be able to:	PO addressed
PSO - 1	acquire a strong foundation in various branches of mathematics to formulate real life problems into mathematical models	PO 4
PSO - 2	apply the mathematical knowledge and skills to develop problem solving skills cultivating logical thinking and face competitive examinations with confidence.	PO 3, 4
PSO - 3	develop entrepreneurial skills based on ethical values, become empowered and self dependent in society.	PO 1,2
PSO - 4	enhance numerical ability and address problems in interdisciplinary areas which would help in project and field works.	PO 1
PSO - 5	pursue scientific research and develop new findings with global impact using latest technologies.	PO 4

Course Outcome

Semester : I Major Core I

Name of the Course : Differential Calculus and Trigonometry

Course Code : MC2011

CO	Upon completion of this course the students will be able to :	PSO addressed	CL
CO - 1	recall the idea of derivative, rules of differentiation and understand the concept of p-r equation.	PSO - 1	R
CO - 2	learn the concepts of curvature, circle of curvature, evolute and apply the concepts to solve problems.	PSO - 2	U, Ap
CO - 3	recognize the rules of identifying asymptotes and employ the same to different curves.	PSO - 3	Ap, U
CO - 4	acquire the knowledge about hyperbolic functions and compare it with circular functions, trigonometric functions, inverse trigonometric functions and their properties.	PSO - 5	U, E
CO - 5	categorize the methods of finding the sum of trigonometric series.	PSO - 4	An

Semester : I Allied I

Name of the Course : Algebra and Calculus (Allied for Physics & Chemistry)
Course Code : MA2011

CO	Upon completion of this course the students will be able to:	PSO addressed	CL
CO - 1	recall the fundamentals of algebraic equations, matrices and rules of integration.	PSO - 1	R
CO - 2	practice the formation of equations and compute symmetric functions of roots in terms of coefficients.	PSO – 2, 3	Ap
CO - 3	revise the properties of eigen values of the matrices.	PSO - 1	E
CO - 4	learn Beta, Gamma functions and evaluate integrals using them.	PSO - 4	E, U
CO - 5	practice the expansion of Fourier series and utilize the same for higher studies.	PSO - 4	Ap

Semester : **I**

Name of the Course : **Quantitative Aptitude - I (NMEC)**
Course Code : **MNM201**

CO	Upon completion of this course the students will be able to :	PSO addressed	CL
CO - 1	apply BODMAS rule for simplification and determine missing numbers in a sequence	PSO - 1	R
CO - 2	express numbers in the base of a fraction of 100.	PSO - 2	U
CO - 3	employ the problems related to the division of profit and loss of a business.	PSO - 4	Ap
CO - 4	measure the relative magnitude of two quantities in an effective way.	PSO - 2	C
CO - 5	construct and develop mathematical solutions to simple real life problems.	PSO - 1	Ap
CO - 6	learn ratio and proportion and practice duplication and triplication of ratios	PSO - 4	U, Ap

Semester : **II** **Major Core II**

Name of the Course : **Classical Algebra and Integral Calculus**

Course Code : **MC2021**

CO	Upon completion of this course the students will be able to:	PSO addressed	CL
CO - 1	recall the fundamentals of algebraic equations and rules of integration.	PSO - 1	R
CO - 2	apply fundamental theorem of algebra in framing and solving equations	PSO - 5	U
CO - 3	choose appropriate method for transformation of equations	PSO - 2	Ap
CO - 4	develop the skill of evaluation of double and triple integrals over different regions	PSO - 3	Ap
CO - 5	identify Beta, Gamma functions and utilize them for the evaluation of definite integrals	PSO - 5	Ap,E
CO - 6	develop the Fourier Series expansion in any interval and apply the same for solving technical and physical problems	PSO - 4	Ap, An

Semester : II **Allied II**

Name of the Course:Vector Calculus and Differential Equations(for Physics and Chemistry)

Subject code :MA2021

CO	Upon completion of this course the students will be able to :	PSO addressed	CL
CO - 1	explain the physical meaning and properties of curl and divergence	PSO - 1	U
CO - 2	practice the computation of line integrals, surface integrals	PSO - 2	Ap
CO - 3	use computational tools to solve problems and applications of partial differential equations of first order.	PSO - 2	Ap
CO - 4	find the complementary function and particular integral of a differential equation by using appropriate methods.	PSO - 5	U
CO - 5	use Laplace transform and their inverse to solve differential equations.	PSO - 3	Ap

Semester : II
Name of the Course : Quantitative Aptitude - II (NMEC)
Course Code : MNM202

CO	Upon completion of this course the students will be ableto:	PSO addressed	CL
CO - 1	frame equations and solve problems involving ratios and fractions.	PSO - 2	Ap
CO - 2	calculate the area and compare the objects on the basis of their size and area.	PSO - 1	Ap
CO - 3	change the form of the number using logarithm and make tedious and confusing calculations simple.	PSO - 4	An
CO - 4	have sufficient knowledge about the basis of calculation.	PSO - 2	U, Ap
CO - 5	study the concept related to time, speed and distance.	PSO - 4	Ap

Semester : III **Major Core III**

Name of the course : Differential Equations and Vector Calculus

Course Code : MC2031

CO	Upon completion of this course the students will be able to :	PSO addressed	CL
CO - 1	distinguish linear, nonlinear, ordinary and partial differential equations	PSO - 4	An
CO - 2	solve linear differential equations with constant and variable coefficients	PSO - 5	U
CO - 3	explain the basic properties of Laplace Transforms and Inverse Laplace Transforms.	PSO - 1	U
CO - 4	use the Laplace transform to find the solution of linear differential equations	PSO - 2	Ap
CO - 5	learn methods of forming and solving partial differential equations	PSO - 3	U
CO - 6	learn differentiation and integration of vector valued functions	PSO - 4	U

Semester : III **Major Core IV**

Name of the Course :Real Analysis I

Course Code : MC2032

CO	Upon completion of this course the students will be able to:	PSO addressed	CL
CO- 1	explain the primary concepts of sequences and series of real numbers	PSO - 1	U
CO- 2	define convergence and divergence of sequences and series	PSO - 1	R
CO- 3	distinguish between convergence and divergence of sequences and series	PSO - 2	U
CO- 4	relate the behavior of monotonic and geometric sequences and series	PSO - 5	Ap
CO- 5	calculate the limit and peak point of sequences	PSO - 3	An
CO- 6	analyze the importance of Cauchy's general principle of convergence of sequences and series	PSO - 4	An

Semester : III

Name of the Course : Probability Theory and Distributions (Allied)

Course Code : MA2031

CO	Upon completion of this course the students will be able to:	PSO addressed	CL
CO - 1	recall the definition of probability and set functions	PSO - 1	R
CO - 2	differentiate between probability and conditional probability and compute according to the requirement	PSO - 4	An
CO - 3	understand the definition of random variables, their types and related concepts	PSO - 1	U
CO - 4	detect the different probability distributions which are widely used	PSO - 4	An
CO - 5	apply the techniques to prove the properties of probability and related distributions	PSO - 5	Ap
CO - 6	choose the suitable probability distribution corresponding to a given data	PSO - 5	E

Semester : IV **Major Core V**
Name of the Course : Groups and Rings
Subject code : MC2041

CO	Upon completion of this course the students will be able to:	PSO addressed	CL
CO – 1	recall the definitions of groups ,rings, functions and also examples of groups and rings	PSO - 1	R
CO – 2	explain the properties of groups, rings and different types of groups and rings	PSO - 1	U
CO – 3	develop proofs of results on Permutation groups ,Cyclic groups, Quotient group, Subgroups, subrings , quotient rings	PSO - 5	C
CO – 4	examine the properties of Ideals-Maximal and Prime ideals-Cosets-order of an element	PSO - 5	E
CO – 5	test the homomorphic and isomorphic properties of groups and rings	PSO - 4	An
CO – 6	develop the concepts of ordered integral domains and Unique Factorisation Domains	PSO - 5	E

Semester : IV **Major Core VI**
Name of the Course : Analytical Geometry - 3 Dimensions
Subject code : MC2042

CO	Upon completion of this course the students will be able to:	PSO addressed	CL
CO – 1	recall the basic definitions and concepts of planes and lines	PSO - 1	R
CO – 2	demonstrate the Projection of the line joining two points, Cosines of the line joining two points and will be able to solve problems	PSO - 3	Ap
CO – 3	analyze the characteristics of a cone and the condition for a plane to touch the quadric cone	PSO - 2	An
CO – 4	draw three dimensional surfaces from the given information	PSO - 4	An
CO – 5	discuss the characteristics and properties of 3 - dimensional objects like sphere,cubeetc	PSO - 1	U
CO – 6	develop the skill in 3 - dimensional geometry to gain mastery in related courses	PSO - 2	C

SEMESTER :IV

Name of the Course :Applied Statistics (Allied)

Course Code : MA2041

CO	Upon completion of this course the students will be able to:	PSO addressed	CL
CO – 1	identify and demonstrate appropriate sampling processes	PSO –2	Ap
CO – 2	recall the methods of classifying and analyzing data relative to single variable	PSO –4	R
CO - 3	describe the χ^2 distribution in statistics	PSO –3	U
CO - 4	distinguish between the practical purposes of a large and a small sample	PSO –1	An
CO - 5	understand that correlation coefficient is independent of the change of origin and scale	PSO –5	U

Semester : V **Major Core VII**
Name of the Course :Linear Algebra
Course Code : MC2051

CO	Upon completion of this course the students will be able to:	PSO addressed	CL
CO - 1	recall and define Groups ,Fields and their properties	PSO - 1	R
CO - 2	cite examples of vector spaces ,subspaces and linear transformations	PSO - 1	U
CO - 3	determine the concepts of linear independence, linear dependence , basis and dimension of vector spaces	PSO - 1	U
CO - 4	correlate rank and nullity ,Linear transformation and matrix of a Linear transformation	PSO - 2	Ap
CO - 5	examine whether a given space is an inner product space and the orthonormality of sets	PSO - 3	Ap

Semester : V **Major Core VIII**
Name of the Course : Real Analysis II
Course Code : MC2052

CO	Upon completion of this course the students will be able to:	PSO addressed	CL
CO - 1	understand the concepts of completeness, continuity and discontinuity of metric spaces	PSO - 1	U
CO - 2	apply the metric space theorems to real life situations	PSO - 4	Ap
CO - 3	distinguish between continuous functions and uniform continuous functions	PSO - 5	An
CO - 4	use basic concepts in the development of real analysis results	PSO - 1	C
CO - 5	Understand the concepts of metric space, connectedness and compactness of metric spaces	PSO - 3	U
CO- 6	Develop the ability to reflect on problems that are quite significant in the field of analysis	PSO -2	Ap

Semester : V **Major Core IX**
Name of the Course : Computer Oriented Numerical Methods
Course Code : MC2053

CO	Upon completion of this course the students will be able to:	PSO addressed	CL
CO - 1	understand the elementary programming language and its structure	PSO - 4	U
CO - 2	develop computer programmes for the solution of various numerical problems	PSO - 5	C
CO - 3	apply numerical methods to obtain approximate solutions to mathematical problems	PSO - 3	Ap
CO - 4	employ different methods of constructing a polynomial using various methods	PSO - 2	A
CO - 5	compare the rate of convergence of different numerical formula	PSO - 4	An
CO - 6	distinguish the advantages and disadvantages of various numerical methods	PSO - 4	An

Semester : V **Elective I**
Name of the Course : Graph Theory
Course Code : MC2055

CO	Upon completion of this course the students will be able to:	PSO addressed	CL
CO - 1	understand the basic definitions to write the proofs of simple theorems	PSO - 1	U
CO - 2	employ the definitions to write the proofs of simple theorems	PSO - 2	Ap
CO - 3	relate real life situations with mathematical graphs	PSO - 3	Ap
CO - 4	develop the ability to solve problems in graph theory	PSO - 4	An
CO - 5	analyze real life problems using graph theory both quantitatively and qualitatively	PSO - 4	An

Semester : V **Ability Enhancement Course**
Name of the Course : Environmental Studies
Course Code : AEC201

CO	Upon completion of this course the students will be able to:	CL
CO - 1	understand the multidisciplinary nature of environmental studies	U
CO - 2	recall the components of different ecosystems	R
CO - 3	interpret the levels of diversity and its conservation	A
CO - 4	analyze the impact of population, pollution and disasters	An

Semester : VI **Major Core X**
Name of the Course : Complex Analysis
Course Code : MC2061

CO	Upon completion of this course the students will be able to:	PSO addressed	CL
CO - 1	understand the geometric representation of mappings	PSO - 1	U
CO - 2	use differentiation rules to compute derivatives and express complex- differentiable functions as power series	PSO - 4	E
CO - 3	compute line integrals by using Cauchy's integral theorem and formula	PSO - 3	E
CO - 4	identify the isolated singularities of a function and determine whether they are removable, poles or essential	PSO - 1	U
CO - 5	evaluate definite integrals by using residues theorem	PSO - 5	C

Semester : VI **Major Core XI**
Name of the Course : Mechanics
Course Code : MC2062

CO	Upon completion of this course the students will be able to:	PSO addressed	CL
CO - 1	calculate the reactions necessary to ensure static equilibrium	PSO - 2	U
CO - 2	apply the principles of static equilibrium to particles and rigid bodies	PSO - 4	Ap
CO - 3	understand the ways of distributing loads	PSO - 5	C
CO - 4	identify internal forces and moments of a rigid body	PSO - 3	Ap
CO - 5	apply the basic principles of projectiles into real world problems	PSO - 2	Ap
CO - 6	classify the laws of friction	PSO - 4	An

Semester : VI **Major Core XII**
Name of the Course : Number Theory
Course Code : MC2063

CO	Upon completion of this course the students will be able to:	PSO addressed	CL
CO - 1	express the concepts and results of divisibility of integers effectively	PSO - 1	U
CO - 2	construct mathematical proofs of theorems and find counter examples for false statements	PSO - 2	Ap
CO - 3	collect and use numerical data to form conjectures about the integers	PSO - 5	Ap
CO - 4	understand the logic and methods behind the major proofs in Number Theory	PSO - 4	An
CO - 5	solve challenging problems related to Chinese remainder theorem effectively	PSO - 3	E
CO - 6	build up the basic theory of the integers from a list of axioms	PSO - 1	U

Semester : **VI** **Major Core XIII**

Name of the Course : **Operations Research**

Course Code : **MC2064**

CO	**Upon completion of this course the students will be able to:**	**PSOs addressed**	**CL**
CO - 1	understand the methods of optimization and to solve the problems	PSO - 1	U
CO - 2	explain what is an LPP	PSO - 1	U
CO - 3	define how to formulate an LPP with linear constraints	PSO - 1	R
CO - 4	maximize the profit, minimize the cost, minimize the time in transportation problem , Travelling salesman problem, Assignment problem	PSO - 3	Ap
CO - 5	identify a problem in your locality, formulate it as an LPP and solve	PSO - 4	C

Semester : **VI** **Elective II**

Name of the Course : **Astronomy**

Course Code : **MC2065**

CO	**Upon completion of this course the students will be able to:**	**PSO addressed**	**CL**
CO - 1	define the spherical trigonometry of the celestial sphere	PSO - 1	U
CO - 2	discuss the Kepler's laws	PSO - 1	U
CO - 3	calculate the motion of two particles relative to the common mass centre	PSO - 2	Ap
CO - 4	interpret latitude and longitude and apply this to find the latitude and longitude of a particular place	PSO - 4	E
CO - 5	distinguish between Geometric Parallax and Horizontal Parallax	PSO - 4	An

Semester : VI **Skill Enhancement Course**

Name of the Course : **Mathematics for competitive Examinations**

Course Code : **MSK206**

CO	Upon completion of this course the students will be able to:	PSOs addressed	CL
CO - 1	recall the problems on percentage	PSO - 1	R
CO - 2	discuss the problems on population and depreciation	PSO - 1	U
CO - 3	conversion of decimal into percentage and vice versa	PSO - 2	Ap
CO - 4	use percentage concept to solve applied technical problems	PSO - 3	Ap
CO - 5	analyze the problems related to inlet and outlet of the tank	PSO - 4	An
CO - 6	evaluate time and distance related problems	PSO - 4	E