Department of Mathematics
Course Outcomes

B.Sc. MATHEMATICS

Course Name: Differential Calculus and Trigonometry	Course Code: 16SCCMM1
Upon Completion of the course students would be able to	

CO 1	Solve problems on successive differentiation and Leibnitz theorem.
CO2	Understand and apply the concepts on envelopes using Cartesian formula for radius of curvature.
CO3	Find partial derivative of a function of two functions and realize the maxima and minima of function of two variables.
CO4	Expand $\cos_n\theta, \sin_n\theta, \cos_m\theta\sin_n\theta$ for different values of n and m .
CO5	Obtain and use Hyperbolic function identities.

Course Name: Integral Calculus	Course Code: 16SCCMM2
Upon Completion of the course students would be able to	

CO 1	Recognize and relate successive differentiation of various functions and illustrate how to compose equations
CO2	Demonstrate and calculate maxima and minima, radius of curvature evolute and Involute.
CO3	Recognize and sketch partial differentiation , application of Euler's theorem and Jacobians.
CO4	Calculate integration of irrational functions of specific type
CO5	Recall the properties of definite integrals and interpret reduction formula

Course Name: Mathematical Statistics -I	Course Code: 16SACMS1
Upon Completion of the course students would be able to	

CO 1	Calculate and apply measures of location and measures of dispersion for grouped & ungrouped data.
CO2	Calculate and apply the measures of Averages and Dispersion.
CO3	Calculate mathematical expectation and derive the Moment Generating Function.
CO4	Derive mathematical expectation, binomial, poisson distribution.
CO5	Analyse various measures of central tendency.

Course Name: Mathematical Statistics –II (AP)	Course Code: 16SACMS1P
Upon Completion of the course students would be able to	

CO 1	Analyze statistical data using measures of central tendency, dispersion and location.
CO2	Analyze statistical data using frequency distributions and cumulative frequency distributions.
CO3	Calculate and interpret the correlation between two variables.
CO4	Know the association between the attributes.

CO5	Interpret results of analysis of variance tests.

Course Name: Differential Equations and Laplace Transforms	**Course Code: 16SCCMM3**
Upon Completion of the course students would be able to	
CO 1	Extract the solution of differential of first order ODE by Homogeneous methods.
CO2	Solve the second order ODE by using special method.
CO3	Apply the Laplace Transform to solve ODE with constant coefficients.
CO4	Form partial differential equations.
CO5	Use Differential equations as a powerful tool in solving problems in physical and social science.

Course Name: Analytical Geometry 3D	**Course Code: 16SCCMM4**
Upon Completion of the course students would be able to	
CO 1	Apply the fundamental concepts of two and three dimensional.
CO2	Recall and relate equation of line, co planarity of lines, skew lines and shortest distance between them.
CO3	Explain and describe sphere and section of sphere by a plane.
CO4	Recognize and compute direction cosines and direction ratios, the plane and its standard forms.
CO5	Make the students familiar with the basic concepts of three dimensional geometry

Course Name: Mathematical Statistics -III	**Course Code: 16SACMS2**
Upon Completion of the course students would be able to	
CO 1	Recognize and discuss probability, conditional probability and its axiom, Theorems .
CO2	Recognize binomial distribution, Poisson distribution and describe their properties.
CO3	Compute Correlation coefficients and to estimate Regression Analysis.
CO4	Understand the concepts of testing of hypothesis. Explain Large sample and evaluate testing the hypothesis
CO5	Deals with consistency of data and independence of Attributes.

Course Name: Sequences and Series	**Course Code:16SCCMM5**
Upon Completion of the course students would be able to	
CO 1	Know the properties of convergent and divergent sequence.
CO2	Understand and apply test for convergency of series.
CO3	Understand and to apply the method of difference to sum the finite series and to extend its use to infinite series.
CO4	Know how to use Binomial, Exponential and Logarithmic series.
CO5	Acquire the knowledge of the generating function.

Course Name: Classical Algebra and Theory of Numbers	**Course Code: 16SCCMM6**
Upon Completion of the course students would be able to	
CO 1	Recognize and discuss Relation between roots & coefficients of Polynomial Equations
CO2	Understand and to apply Newton's theorem on the sum of the power of the roots
CO3	To form of an equation whose roots are any power
CO4	Know the properties of Inequalities, Geometric & Arithmetic means, Weirstrass inequalities, Cauchy inequality, Applications to Maxima & Minima.
CO5	Acquire the knowledge of Theory of Numbers, Fermat's, Wilson's & Lagrange's Theorems.

Course Name: Vector Calculus and Fourier Series	**Course Code: 16SCCMM7**
Upon Completion of the course students would be able to	
CO 1	Acquire the knowledge of Vector Differentiation and Integration.

CO2	Find the line integral, surface integral and volume integrals.
CO3	Evaluate integrals by using Green's, Gauss's &Stoke's theorem.
CO4	Fourier Series expansion of periodic functions with Period 2π and period 2a , Use of odd & even functions in Fourier Series.
CO5	Half-range Fourier Series, Development in Cosine series & in Sine series Change of interval.

Course Name: Linear Algebra	Course Code: 16SCCMM8

Upon Completion of the course students would be able to	
CO 1	Know and recall core knowledge of Vector Spaces
CO2	Understand basic concepts in linear independence of vectors, subspaces bases and dimension of vector spaces.
CO3	Deals with Matrix of a linear transformation, Inner product examples, Gram Schmidt orthogonalisation process.
CO4	Explain and describe Types of Matrices
CO5	Extract the solution Characteristic equation and Cayley -Hamilton theorem, Eigen values and Eigen vectors

Course Name: Numerical Methods With MATLAB Programming	Course Code: 16SCCMM9

Upon Completion of the course students would be able to	
CO 1	Express programming & solve numerical problems.
CO2	Find importance of this software for lab experimentation.
CO3	Determine better and more accurate solution.
CO4	Develop program skills for various methods of Numerical Problems.
CO5	Acquire knowledge on MATLAB Software.

Course Name: Real Analysis	Course Code: 16SCCMM10

Upon Completion of the course students would be able to	
CO 1	Emphasize the proofs development defines the counting of a function and uniform continuity of a function.
CO2	Understand the knowledge of types of discontinuities.
CO3	Acquire the knowledge of Daurboux's theorem on derivative.
CO4	Use results and techniques involving mean value theorems to solve a variety of problems.
CO5	Understand the concepts of fundamental theorem of integral calculus.

Course Name: Statics	Course Code: 16SCCMM11

Upon Completion of the course students would be able to	
CO 1	Understand the knowledge of equilibrium of a particle.
CO2	Study the Parallel forces and Moments.
CO3	Understand the Equilibrium of three forces acting on a rigid body.
CO4	Study the concept Equilibrium of a particle on a rough inclined plane.
CO5	Acquire the knowledge of Equilibrium of strings.

Course Name: Operations Research	Course Code: 16SMBEMM1:1

Upon Completion of the course students would be able to	
CO 1	Acquire the basic concepts of the Operations Research. Graphical solution method Canonical and standard forms of Linear Programming Problem, Simplex method.
CO2	Understand and solve the LPP. Use of Artificial Variables (Big M method - Two phase method), Formulating a Dual problem

CO3	Apply the Transportation Problem in marketing. Solution methods of assignment Problem.
CO4	Understand the concepts of Queuing theory and Games and Strategies.
CO5	Analyze and apply the PERT and CPM Network Problems.

Course Name: Abstract Algebra	**Course Code: 16SCCMM12**
Upon Completion of the course students would be able to	
CO 1	Recognize technical terms groups, permutation groups.
CO2	Acquire the knowledge of subgroups and cyclic groups.
CO3	Acquire the knowledge of normal subgroups and Quotient Groups.
CO4	Understand the elementary properties of rings.
CO5	Formulate and develop unique factorization domain.

Course Name: Complex Analysis	**Course Code: 16SCCMM13**
Upon Completion of the course students would be able to	
CO 1	Give an account of the concepts of Analytic functions and Harmonic functions with the role of the C-R equations.
CO2	Learn about elementary transformations concepts in complex variables.
CO3	Acquire the knowledge of Cauchy's theorems on Derivatives.
CO4	Represent the functions as Taylor's and Laurent Power series method.
CO5	Understand the singularity concepts and Residues, Solving definite integrals using the Residue concepts.

Course Name: Dynamics	**Course Code: 16SCCMM14**
Upon Completion of the course students would be able to	
CO 1	Acquire the knowledge of Kinematics.
CO2	Understand the concepts of Projectile.
CO3	Acquire the basic concepts of Collision of Elastic Bodies.
CO4	Study the concept Simple Harmonic Motion.
CO5	Deals with Motion Under the Action of Central Forces.

Course Name: Graph Theory	**Course Code: 16SMBEMM2:1**
Upon Completion of the course students would be able to	
CO 1	Acquire the knowledge of graph theory and its applications.
CO2	Understand the techniques of Operations on Graphs
CO3	Study the Hamiltonian Graphs
CO4	Analyze the concepts of Planarity
CO5	Acquire the knowledge of Directed Graphs.

Course Name: Number Theory	**Course Code: 16SMBEMM3:2**
Upon Completion of the course students would be able to	
CO 1	Recognize the basic concepts of Divisibility involving Euclid's Division Lemma and Linear Diophantine Equation.
CO2	Recognize the basic principles on Permutations and Combinations using Fermat's Little Theorem and Wilson's Theorem.
CO3	Recognize the basic Properties of Congruences Residue Systems by using the theorems of Fermat and Wilson Revisited.
CO4	Recognize the concepts of Polynomial Congruences using Chinese Remainder theorem.
CO5	Recall the concepts the concepts of Arithmetic functions using Mobius Inversion formula.