BSC (CS)

	Program Outcome(PO)
PO	After completing the three year degree program, students will be able to: Attain a strong base to pursue higher education in the field of Computer Science and skill to use modern computing tools and techniques for learning and developing software solutions**.**
	Program Specific Outcome(PSO)
PSO	After Completing Bachelor of Computer Science, the student will be able to demonstrate a deep and analytical understanding of the Mathematics, Computer science and Physics subjects. The student can pursue studies in any of the above subjects too.

I Year Semester I	
Course: CSC-101 Computer & Programming Fundamental	
CSC-101	Understand the complete fundamentals of Computer System
Course: CSC-102 PC Software	
CSC-102	Explain Windows and its Features including Windows Accessories and completeknowledge of Ms- Office.
Course:BM-111 Algebra	
C0-111	Understand Matrices, Polynomial equations and solutions of cubic equations.
Course: BM-112 Calculus	
C0-112	Understand concepts like Successive differentiation, Cartesian cures andquadrature.
Course: BM-113 Solid Geometry	
C0-113	Understand and apply second degree equations, sphere, central conicoids, andparabola.

Course:PH-101 Classical Mechanics & Theory of relativity

C0-101	Apply transformation equations, generalized notations, applications of theory ofrelativity.
Course: PH-102 Electricity, Magnetism & Electromagnetic Theory	
CO-102	Use of Vector basic and electric field, electromagnetism and circuit analysis.
Course: Eng-101 English (BSc)-I	
C0-101	ImproveLSRW-listening, speaking, reading and writing skills and their latedsub-skills.
I Year Semester II	
Course: CSC- 201 Programming in C	
CO-201	Knowledge of Operators, Data types, Array, Functions and can develop programs in C language
Course: CSC- 202 Logical Organization of Computer	
CO-202	Understand Number System, Logic Gates and various Combinational circuits.
Course: BM-121 Number Theory & Trigonometry	
CO-121	Expansion of trigonometric functions, various theorems of Gauss.
Course: BM-122 Ordinary Differential Equation	
CO-122	Explain the concept of Orthogonal trajectories and linear differential equationsof second order.
Course: BM-123 Vector Calculus	
C0-123	Applications of Vector integration, Vector divergence.
Course:PH-201 Properties of Matter & Kinetic Theory of Gases	
CO-201	Understand and apply moment of Inertia, kinetic theory of Gases.
Course: PH-202 Semiconductor Devices	
CO-202	Discuss the applications of transistors, amplifiers and oscillators.
Course: Eng-201 English (BSc)-II	
C0-201	Writing Official letters/applications and Accuracy in using English in situations(for example: greetings, in the post office, catching at rain, at a bank, making a telephone call, buying vegetables, at the hospital,on the bus etc.

Course: BM-352 Groups & Rings	
CO-352	Identify various types of Groups, Polynomial Rings and permutation groups.
Course: BM-353 Numerical Analysis	
CO-353	Understand and perform Computer Arithmetic: Floating-point representation ofnumbers, arithmetic operations with normalized floating-point numbers and their consequences, significant figures. Error in number representation-inherenterror, truncation, absolute, relative, percentage and round-off error and apply Iterative Methods.
Course: PH-501 Quantum & Laser Physics	
CO-501	Applications of Schrodinger wave equation, absorption and emission ofradiation, threshold
Course: PH-502 Nuclear Physics	
CO-502	Applications of Alpha disintegration and its theory, interaction & absorption ofGamma ray.
Course: ST-501 Applied Statistics	
CO-501	Understand and analyze time series, various demographic methods & indexnumbers
Course: ST-502 Numerical Methods & Fundamental of Computer	
CO-502	Understand various numerical methods like Interpolation, Extrapolation ,Newton's formula ,Trapezoidal rule &Simpson rule
III YEAR SEMESTER VI	
Course: CSC-601 Relational Database Management System	
CO-601	Understand and describe Functional Dependencies and Normalization andUnderstand SQL, PL/SQL.
Course: CSC- 602 Computer Networks	
CO-602	Describe how computer networks are organized with the concept of layeredApproach and Explain various transmission media.
Course: BM-361 Real & Complex Analysis	
CO-361	Discuss mapping by elementary functions, Extended stereographic projection ofComplex numbers & Fourier series
Course: BM-362 Linear Algebra	
CO-362	Understand Vector space, Isomorphism of Vector space, Algebra of lineartransformation & Eigen vectors of linear transformations
Course: BM-363 Dynamics	
CO-362	Calculate & Apply velocity, Acceleration, Mass , Momentum and Force &Motion
Course: PH-601 Solid States & Nano Physics	

CO-601	Discuss Crystal structure, X-Ray diffraction, Super conducting system &Importance of nano scale & nano technology.
Course: PH-602 Atomic & Molecular Spectroscopy	
CO-602	Various quantization laws Orbital magnetic dipole, Penetrating & non Penetrating orbits
Course: ST-601 Statistical Quality Control	
CO-601	Describe Various statistical quality control uses, Acceptance sampling & variouslaws of demand & supply
Course: ST-602 Operational Research	
CO-602	Meaning & necessity of various OR Models, Graphical solutions of LPP &various artificial variable techniques

B.A/B.Sc.
Maths Course Outcomes

Semester I		
Course Code	**Course Name**	**COs: After successfully completing this course, students will be able to**
Paper-I	Algebra	○ Symmetric, Skew symmetric, Hermitian and skew Hermitian matrices. Elementary Operations on matrices. Cayley Hamilton theorem and its use in finding the inverse of a matrix. ○ Applications of matrices to a system of linear (both homogeneous and non– homogeneous) equations. ○ Relations between the roots and coefficients of general polynomial equation in one variable. Transformation of equations. ○ Nature of the roots of an equation Descarte's rule of signs. Solutions of cubic equations (Cardon's method). Biquadratic equations and their solutions.
Paper-II	Calculus	○ Definition of the limit of a function. Basic properties of limits, Continuous functions and classification of discontinuities. Maclaurin and Taylor series expansions. ○ Asymptotes in Cartesian coordinates, intersection of curve and its asymptotes, asymptotes in polar coordinates. Curvature, radius of curvature for Cartesian curves, parametric curves, polar curves. ○ Tracing of curves in Cartesian, parametric and polar co-ordinates. Reduction formulae, Rectification, intrinsic equations of curve. ○ Quadrature (area) Sectorial area. Area bounded by closed curves. Volumes and surfaces of solids of revolution.
Paper-III	Solid Geometry	○ General equation of second degree. Tracing of conics. Tangent at any point to the conic, chord of contact, pole of line to the conic, director circle of conic. ○ Sphere: Plane section of a sphere. Sphere through a given circle. Intersection of two spheres, radical plane of two spheres. Co-axial system of spheres ○ Central Conicoids: Equation of tangent plane. Director sphere. Normal to the conicoid, Polar plane of a point. Enveloping cone of a conicoid. Enveloping cylinder of a conicoid. ○ Paraboloids: Circular section, Plane sections of conicoid, Generating lines. Confocal conicoid. Reduction of second-degree equations.

Semester II		
Course Code	**Course Name**	**COs: After successfully completing this course,students will be able to**
Paper-I	Number Theory and Trigonometry	o Divisibility G.C.D. (greatest common divisors) L.C.M. (least common multiple) Primes, Complete residue system and reduced residue system modulo m. Euler function, Euler's generalization of Fermat's theorem. Chinese Remainder Theorem. o De Moivre's Theorem and its Applications. Expansion of trigonometrical functions, Direct circular and hyperbolic functions and their properties. Inverse circular and hyperbolic functions and their properties. Logarithm for complex quantity
Paper-II	Ordinary Differential Equations	o Geometrical meaning of a differential equation. Exact differential equations, integrating factors. Orthogonal trajectories: in Cartesian coordinates and polar coordinates. Self-orthogonal family of curves. o Linear differential equations of second order: Reduction to normal form. Solution of simultaneous differential equations involving predator (dt/dx) (dy/dt) etc. Method of auxiliary equations.
Paper-III	**Vector Calculus**	o Scalar and vector product of three vectors, product of four vectors. Divergence and curl of vector point function, cylindrical co-ordinates and Spherical coordinates. Vector integration; Line integral, Surface integral, Volume integral, Theorems of Gauss, Green & Stokes and problems based on these theorems.
Semester III		
Course Code	**Course Name**	**COs: After successfully completing this course, students will be able to**
Paper-I	Advanced Calculus	o Continuity, Sequential Continuity, properties of continuous functions, Uniform continuity, chain rule of differentiability. Taylor's theorem for functions of two variables. Lagrange's method of multipliers. Surfaces: Tangent planes, one parameter family of surfaces, Envelopes.
Paper-II	Partial Differential Equations	o Partial differential equations: Formation, order and degree, Equations reducible to linear equations with constant co-efficients. Solution of linear hyperbolic equations, Monge's method for partial differential equations of second order. Cauchy's problem for second order partial differential equations.
Paper-III	Statics	o Composition and resolution of forces. Parallel forces. Moments and Couples. Analytical conditions of equilibrium of coplanar forces. Friction. Centre of Gravity. Virtual work. Forces in three dimensions. Point sets central axis, Wrenches.

Semester IV		
Course Code	**Course Name**	**COs: After successfully completing this course, students will be able to**
Paper-I	Sequences and Series	o Boundedness of the set of real numbers; least upper bound, greatest lower bound of a set, Neighborhoods. Infinite series: Convergence and divergence of Infinite Series, Infinite series: D-Alembert's ratio test, Raabe's test, Convergence and absolute convergence of infinite products.
Paper-II	Special Functions and Integral Transforms	o Series solution of differential equations – Power series method, Definitions of Beta and Gamma functions. Bessel equation and its solution: Bessel functions and their properties Convergence, recurrence, Relations and generating functions, Orthogonality of Bessel functions.
Paper-III	Programming In C & Numerical Methods	o Programmer's model of a computer, Algorithms, Flow charts, Data types, Operators and expressions, Input / outputs functions. Decisions control structure: Decision statements, Logical and conditional statements, Implementation of Loops. Differential equations involving predator (dt/dx) (dy/dt) etc. Method of auxiliary equations.
Paper-III	Vector Calculus	o Scalar and vector product of three vectors, product of four vectors. Divergence and curl of vector point function, cylindrical co-ordinates and Spherical coordinates. Vector integration; Line integral, Surface integral, Volume integral, Theorems of Gauss, Green & Stokes and problems based on these theorems.
Semester V		
Course Code	**Course Name**	**COs: After successfully completing this course, students will be able to**
Paper-I	Real Analysis	o Riemann integral, Integrability of continuous and monotonic functions, The Fundamental theorem of integral calculus. Mean value theorems of integral calculus. Improper integrals and their convergence, Comparison tests, Abel's and Dirichlet's tests, Frullani's integral.
Paper-II	Groups And Rings	o Definition of a group with example and simple properties of groups, Subgroups and Subgroup criteria, Rings, Subrings, Polynomial rings over commutative rings, Unique factorization domain.
Paper-III	Numerical Analysis	o Finite Differences operators and their relations. Finding the missing terms and effect of error in a difference tabular value, Central Differences: Gauss forward and Gauss's backward interpolation formulae, Numerical Differentiation, Eigen Value Problems: Power method, Jacobi's method, given's method, House- Holder's method, QR method, Lanczos method.

Semester VI		
Course Code	**Course Name**	**COs: After successfully completing this course, students will be able to**
Paper-I	Real And Complex Analysis	o Jacobians, Beta and Gama functions, Double and Triple integrals, Dirichlet's integrals, change of order of integration in double integrals. Fourier's series: Fourier expansion of piecewise monotonic functions, Properties of Fourier Co-efficients, Dirichlet's conditions.
Paper-II	Linear Algebra	o Vector spaces, subspaces, Sum and Direct sum of subspaces, Linear span, Linearly Independent and dependent subsets of a vector space. Finitely generated vector space, Homomorphism and isomorphism of vector spaces, Linear transformations and linear forms on vector spaces, Vector space of all the linear transformations Dual Spaces,
Paper-III	Dynamics	o Velocity and acceleration along radial, transverse, tangential and normal directions. Relative velocity and acceleration. Simple harmonic motion. Elastic strings. Mass, Momentum and Force. Newton's laws of motion. Work, Power and Energy. Definitions of Conservative forces and Impulsive forces.