Class: BCA(1st Semester)	**Semester: Odd**
Subject: Computer & Programming Fundamentals	**Paper(UG): BCA-111**
S.No.	Course Outcomes
After reading this course, the students will be able to:	
CO1	Understanding of the meaning and basic components of a computer system.
CO2	Define and distinguish hardware and software components of a computer.
CO3	Explain the functions of a computer.
CO4	Identify the various input and output units & explain their purposes.
CO5	Understand the concepts and needs of primary and secondary memory.
CO6	Understand the classification of the computer.
CO7	Concept of assembly, high level languages.
CO8	Concept of algorithm, flow chart, decision table and decision tree.

Class: BCA-Ist Sem **Semester: Odd**
Subject: Windows and PC Software
Paper (UG): BCA-112

Course Outcomes

Basic knowledge of Windows Operating System was given which includes Desktop Settings, Copy data to and from Cd, Pen Drive etc.
They learnt how to install Hardware, Software, Create User Accounts and Passwords.
Students become enable to work in Microsoft Excel, how to compute calculations, creation of charts including advance features of Microsoft Excel

Class: BCA (I Semester) **Semester: Odd**
Subject: Programming in C **Paper (UG): BCA-116**

S. No.	Course Outcomes
1.	In this unit the importance and the history of C language will be discussed. The different formatted and unformatted I/O operations will also be implemented.
2.	This unit explains the different types of operators and their hierarchy and associativity. Different program will be designed using IF-Else, nested IF and Else-If ladder.
3.	In this unit different types of control statements will be implemented. The use of function prototype and recursion will be discussed.
4.	The use of different types of storage classes in C will be discussed. The use of derived data types specially array will be implemented using programming techniques.

Class: BCA (II Semester)
Semester: EVEN
Subject: Advanced Programming in C **Paper (UG): BCA-121**

S. No.	Course Outcomes
1.	This unit explains about string handling technique in C language. The use and difference of structure and union will be discussed.
2.	This unit explained that how to declare and define pointers in C. what the use of pointers in function is will also be discussed.
3.	File is the best source to handle huge amount of data. In this unit the different types of operations will be implemented on file.

4.	In this unit the use of preprocessor directives will be discussed. The use of command line arguments will also be discussed

Class: BCA-I SEM **Semester: Odd**
Subject: Logical Organisation of Computers-I **Paper (UG/P.G): BCA-114**

S. No.	Course Outcomes
1	In this subject, students learnt about number system of computer i.e the bit system on which an instruction of a computer executed.
2	Also learnt about binary logic, implementation of digital circuits and design procedures of combinational circuits.

Class: BCA-II SEM **Semester: EVEN**
Subject: Logical Organisation of Computers-II **Paper (UG/P.G): BCA-122**

S. No.	Course Outcomes
1	Students will learn about sequential logic via flip-flops and state diagrams.
2	Knowledge of sequential circuits, designing of registers and counters given to the students.
3	Basic knowledge of types of memory and how to control the input output devices will be given.
4	Organization of computer with the help of instruction design and instruction set will be taught.

Class: BCA-2nd Sem **Semester: Even**
Subject: Office Automation Tools
Paper (UG): BCA-124

Course Outcomes
Students will get the knowledge of DTP, Various Packages in DTP including Page Maker, Photoshop.
Students will be able to work in Microsoft Word including advance features of Mail Merge, Macro, Autocorrect, Auto text, Object Linking and Embedding and Table.
Students can create attractive PowerPoint presentations by giving animations.

Class: BCA(2nd Semester) Semester: Even
Subject: Structured System Analysis & Design Paper(UG): BCA-125

S.No.	Course Outcomes
Upon completion of this course, the students will be able to:	
CO1	Describe the concepts of system analysis and information systems development.
CO2	Define and describe the phases of the system development life cycle.
CO3	Describe how system analysts interact with users, management and other information systems.
CO4	Develop data flow diagrams and decision tables.
CO5	Perform a feasibility study.
CO6	Design system components and environment.
CO7	Build general and detailed models that assist programmers in implementing a system.
CO8	Evaluate systems development alternatives.

Class: BCA-3rd Sem	**Semester: Odd**
Subject: Software Engineering	**Paper (UG): BCA-234**

S. No.	**Course Outcomes**
01	Students understood about the concepts of Systems with their types and SDLC with various tools used in it
02	By using the concept of DFD and Flowcharts students were capable for making the projects
03	With the help of Structural analysis tools the students were capable to design the software.
04	Testing concepts provide the platform to test the softwares and also to check the validations with various models of Software Engineering

Class: BCA(3rd Semester)	Semester: Odd
Subject: Data Structure	Paper(UG):BCA-232

S.No.	Course Outcomes
By the end of the course, the students will be able to:	
CO1	Understanding of the basic data structures.
CO2	Understanding of the basic search and sort algorithm.
CO3	The appropriate use of a particular data structure and algorithm to solve a problem.
CO4	Define basic static & dynamic data structures and relevant standard algorithms for them: Stack, Queue, Linked list, Tree, Graph.
CO5	Demonstrate advantages & disadvantages of specific algorithms and data structure.
CO6	Evaluate algorithms and data structures in terms of time & memory complexity of basic operations.

Class: BCA-3rd Sem	**Semester: Even/ Odd**
Subject:object oriented programming in c++Paper (UG):BCA-231	

S. No.	**Course Outcomes**
1	IN “OBJECT ORIENTED PROGRAMING IN C++” THE STUDENTS KNEW ABOUT THE EXTENSION VERSION OF C LANGAUGE AND THE FEATURES OF C++.
2	THEY LEARNT THE PROCESS TO MAKE THE PROGRAMMS IN C++ USING CONSTRUCTOS AND DESTRUCTORS.
3	STUDENTS UNDERSTOOD HOW THE POINTERS ARE INTILIZED AND DECLARE IN C++ PASSING PARAMETRS TO FUNCTIONS BY REFRENCE.
4	TAUGHT THEM THE TOPIC ON FUNCTION OVERLOADING AND CREATION OF OPERATORS.

Class: BCA-3RD SEM	**Semester: Odd**
Subject: Computer Architecture	**Paper (UG/P.G): BCA-233**

S. No.	**Course Outcomes**

1	Students came to know about basic computer organization, instruction code, instruction cycle and design of accumulator logic.
2	They studied about the micro operations used in computer architecture and register transfer, design and working of control unit.
3	How the data is to be transferred and manipulated by central processing unit and how various types of interrupts be handled by it.
4	At last, they grabbed the Knowledge about memory organization and input output organization of computer hardware.

Class: BCA-3RD SEM	**Semester: Odd**
Subject: DBMS	**Paper (UG/P.G): BCA-233**

S. No.	**Course Outcomes**
1	This subject tells student about Database objects their Terminologies, procedures and triggers. Students learn about three Classes of SQL and various commands under these classes of SQL. They also learn about application of Oracle in business.

Class: BCA(4th Semester)	**Semester: Even**
Subject: Advanced Data Structure	**Paper(UG):BCA-241**

S.No.	Course Outcomes
On successful completion of this course, student should be able to:	
CO1	Understanding of the data structures algorithm.
CO2	Select appropriate searching and/or sorting techniques for application development.
CO3	The appropriate use of a particular data structure and algorithm to solve a problem.
CO4	Understand different algorithms design techniques (Brute - force, divide and conquer, warshall's algorithm etc.).
CO5	Ability to apply & implement learned algorithm design techniques and data structures to solve problems.

Class: BCA-IVrdsem	**Semester: Even/ Odd**
Subject:Advanced object oriented programming in c++	
Paper (UG):BCA-242	

S. No.	**Course Outcomes**
1	As they already knew about the topics of function overloading in c++ so easily can understood about the next topic function overriding and virtual functions.

2	In upcoming days they will learn the topics inheritance in which they garb the knowledge that how the access specifier are used and what are their areas.
3	They will study the temlates and use of file operation i.e how to open the file ,delete the file,close the file.

Class: BCA-4th Sem	**Semester: Even**
Subject: E-commerce	**Paper (UG): BCA-243**
S. No.	**Course Outcomes**
01	Students will get the concept of Various E-Commerce terms that includes E-Cash, E- Cheque, E-Transactions etc.
02	Concepts of B2B,B2C,B2G,G2G makes awareness in students to develop the Online procedure of sale and purchase.
03	E-Auctions and E- booking gives an opportunity to students to aware how to book and bid the various online data transactions .
04	With the help of the e-commerce they will gain the deep knowledge of electronic payment system which are very useful in now a days .

Class: BCA-Vth Sem	**Semester: Odd**
Subject: Web Designing Fundamentals	**Paper (UG): BCA-351**
S. No.	**Course Outcomes**
01	Students grab the knowledge about the concept of Internet, Websites ,& how to host a webpage.
02	After explain the particular topics Students were capable for designing the webpage using HTML as a coding platform.
03	They gain the outcome of the various tags used in HTML for designing the form.
Class: BCA-5th Sem	**Semester: Odd**
Subject: Artificial Intelligence	**Paper (UG): BCA-353**
S. No.	**Course Outcomes**
01	Students learn about the concepts of AI & its applications, concept of Problem solving techniques which is very useful in Turing as well as revised Turing test.
02	They knew how the expert system are used in AI and what are their phases.
03	They gain the knowledge about how to create the algorithms with different technologies.
04	Students deeply learn the PROLOG ,Concept of NLP and Robotics that enhanced their knowledge in the field of AI .
Class: BCA-5th Sem	**Semester: Odd**
Subject: Multimedia Tools	**Paper (UG): BCA 356**
S. No.	**Course Outcomes**
01	Students understood the Concepts of Multimedia , Multimedia Tools, Types of VRML .
02	Concepts of Images Digital videos signals enhance the students knowledge in the field of multimedia.

03	Students got the concepts of digital audio, transmission medias concept of modulation in detail.
04	Students familiar about the compression techniques video techniques in detail with MPEG Concepts .

Class: BCA(5th Semester)		Semester: Odd
Subject: Computer Networks		Paper(UG): BCA-354
S.No.	Course Outcomes	
After completing this course the student must demonstrate the knowledge and ability to:		
CO1	Independently understand basic computer network techmology.	
CO2	Understand and explain data communication system and its components.	
CO3	Identify the different types of network topologies and protocols.	
CO4	Identify the different types of network devices and their functions within a network.	
CO5	Enumerate the layers of the OSI model and TCP/IP. Explain the function of each layer.	
CO6	Understand the algorithms of routing.	
CO7	Familiar with contemporary issues in networking technologies.	
CO8	Familiar with wireless networking concepts.	

Class: BCA-6TH Sem		**Semester: Even**
Subject: Advanced Web Design Tools		**Paper (UG): BCA-361**
S. No.	**Course Outcomes**	
01	Students came to know about the Concept of JavaScript. How interactive web pages designed in JavaScript	
02	Students will capable of designing the web pages using PHP, Flash and Macromedia Photoshop.	
03	With the help of DHTML Tags the various Events and methods are used to develop the interactive dynamic websites .	
04	By using Front page software students will familiar with the concept of marquee, hover button various events like mouse up down wave spiral hop etc .	
05	Concept of XML XSL and CSS also would give the students a platform to understand the connectivity of websites with database.	

Class: BCA-6TH Sem		**Semester: Even**
Subject: Internet Technology		**Paper (UG): BCA-364**
S. No.	**Course Outcomes**	
01	Students understood the concept of Internet Mail IP address in detail.	
02	They will learn IPv4 & IPv6 in details with various structural protocol addresses which is further use in process of routers.	
03	Protocols like FTP, TCPIP, SMTP, UDP, PPP etc. By using these protocols students understand the working of data transmission over the network	
04	Students will understand the concept of E-mail architecture with POP and SMTP protocols with routing of internet which is helpful in e-mail security.	

Class: BCA-6th Sem	**Semester: Even**
Subject: Core Java	**Paper (UG): BCA-366**
S. No.	**Course Outcomes**
01	As students already knew the object oriented programming so they got the knowledge of different sysntax in core java.
02	Students will gain with deep knowledge of exceptional handling as they already knew it in basic in c++.
03	By using inheritance concept students capable for making hybrid programs .
04	Students design programs using Applets, AWT Controls etc.

Class: BCA-VIrdsem	**Semester: Even/ Odd**
Subject:Operating System-ii	
Paper (UG):BCA-362	
Course Outcomes	
The students already knew the topics how the deadlocks occur and know they will understand how problems occure in deadlock	
They will learn about the remote login which is very useful in wide range and secure process.	
Students will understand the architecture of linux.	
They will learn about how all the linux commands are performed.	

Class: BCA-VIrdsem	**Semester: Even/ Odd**
Subject:Operating System-ii	
Paper (UG):BCA-352	
S. No.	**Course Outcomes**
1	The students already knew the topics how the deadlocks occur and know they will understand how problems occure in deadlock
2	They will learn about the remote login which is very useful in wide range and secure process.
3	Students will understand the architecture of linux.
4	They will learn about how all the linux commands are performed.

Class: BCA-5th Sem	**Semester: Odd**
Subject: Programming with Visual Basic	
Paper (UG): BCA- 355	
S. No.	**Course Outcomes**

01	Students came to know about Visual Programming Environment.
02	Students got the knowledge about basic constructs like variables, operators, decision statements
03	Students were able to create programs in Visual Basic.

Class: BCA-6TH Sem **Semester: Even**
Subject: Advanced Programming with Visual Basic
Paper (UG): BCA- 365

S. No.	Course Outcomes
01	Students will be able to create a project in Visual basic where they can perform working on forms such as adding/ deleting/ hiding / showing forms as well as adding / removing items in collection.
02	Students can enhance the appearance of projects by designing Menu as well as applying advance controls in VB.
03	Students can develop the projects in Visual Basic using the concept of Files and Graphics.
04	Students can develop the Programs in VB with the help of Database.

Class: BCA-VIrdsem **Semester: Even/ Odd**
Subject:Visual Basic
Paper (UG):BCA-355

S. No.	Course Outcomes
1	The students already knew the topics how the deadlocks occur and know they will understand how problems occure in deadlock
2	They will learn about the remote login which is very useful in wide range and secure process.
3	Students will understand the architecture of linux.
4	They will learn about how all the linux commands are performed.

MATHEMATICS

Course:-BA/BSc

ALGEBRA

CO1: 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.

CO2: Applications of matrices to a system of linear (both homogeneous and non–homogeneous) equations.

CO3: Relations between the roots and coefficients of general polynomial equation in one variable. Transformation of equations.

CO4: Nature of the roots of an equation Descarte's rule of signs. Solutions of cubic equations (Cardon's method). Biquadratic equations and their solutions.

CALCULUS

CO5: Definition of the limit of a function. Basic properties of limits, Continuous functions and classification of discontinuities. Maclaurin and Taylor series expansions.

CO6: 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.

CO7: Tracing of curves in Cartesian, parametric and polar co-ordinates. Reduction formulae, Rectification, intrinsic equations of curve.

CO8: Quardrature (area)Sectorial area. Area bounded by closed curves. Volumes and surfaces of solids of revolution.

SOLID GEOMETRY

CO9: 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.

CO10: Sphere: Plane section of a sphere. Sphere through a given circle. Intersection of two spheres, radical plane of two spheres. Co-oxal system of spheres

CO11: Central Conicoids: Equation of tangent plane. Director sphere. Normal to the conicoids, Polar plane of a point. Enveloping cone of a coincoid. Enveloping cylinder of a coincoid.

CO12: Paraboloids: Circular section, Plane sections of conicoids, Generating lines. Confocal conicoid. Reduction of second degree equations.

NUMBER THEORY AND TRIGNOMETRY

CO13: 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.

CO14: 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 of a complex quantity.

ORDINARY DIFFERENTIAL EQUATIONS

CO15: Geometrical meaning of a differential equation. Exact differential equations, integrating factors. Orthogonal trajectories: in Cartesian coordinates and polar coordinates. Self orthogonal family of curves.

CO16: Linear differential equations of second order: Reduction to normal form. Solution of simultaneous differential equations involving operators x (d/dx) or t (d/dt) etc. Method of auxiliary equations.

VECTOR CALCULUS

CO17: 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.

ADVANCED CALCULUS

CO18: 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.

PARTIAL DIFFERENTIAL EQUATIONS

CO19: 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.

STATICS

CO20: 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. Poinsots central axis, Wrenches.

SEQUENCES and SERIES

CO21: 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.

SPECIAL FUNCTIONS AND INTEGRAL TRANSFORMS

CO22: Series solution of differential equations – Power series method, Definitions of Beta and Gamma functions. Bessel equation and its solution: Bessel functions and their propertiesConvergence, recurrence, Relations and generating functions, Orthogonality of Bessel functions.

PROGRAMMING IN C & NUMERICAL METHODS

CO23: 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.

REAL ANALYSIS

CO24: Riemann integral, Integrabililty 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.

GROUPS AND RINGS

CO25: 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.

NUMERICAL ANALYSIS

CO26: Finite Differences operators and their relations. Finding the missing terms and effect of error in a difference tabular values, Central Differences: Gauss forward and Gauss's backward interpolation formulae, Numerical Differentiation, Eigen Value Problems: Power method, Jacobi's method, Given's method, HouseHolder's method, QR method, Lanczos method.

REAL AND COMPLEX ANALYSIS

CO27: Jacobians, Beta and Gama functions, Double and Triple integrals, Dirichlets 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.

LINEAR ALGEBRA

CO28: 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 vactor spaces, Vactor space of all the linear transformations Dual Spaces,

DYNAMICS

CO29: 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.

BCom

BUSINESS MATHEMATICS I

CO30: Logarithms, Anti-logarithms , Sequences and Series: Arithmetic & Geometric Progressions. Differentiation, Matrices and Determinants: concept of matrix, types, and algebra of matrices; properties of determinants; Compound Interest and Annuities.

BUSINESS MATHEMATICS II

CO31: Permutations and Combinations, Binomial Theorem, Linear inequalities: graphical solution of linear equalities in two variables, solution of system of linear inequalities in two variables. Linear programming-formulation of equation, pie chart, pictographs, graphs of time series or line graphs; graphs of frequency distribution: histogram, frequency polygon, ogives or cumulative frequency curves, limitations of diagrams and graphs.

BCA

MATHEMATICAL FOUNDATIONS – I

CO32: Set, subsets and operations on sets, Venn diagram of sets. Power set of a set, Equivalence relation on a set and partition of a set, Permutation and combinations, Epsilon and delta definition of the continuity of a function of a single variable, Basic properties of limits, Continuous functions and classifications of discontinuities, Derivative of a function, Applications of differential equations to geometry.

MATHEMATICAL FOUNDATIONS – II

CO33: Propositions and logical operators, Truth tables and propositions generated by a set,Equivalence and implications, Laws of logic, Characteristic equations of a square matrix, Cayley-Hamilton Theorem.

MATHEMATICAL FOUNDATIONS – III

CO34: Derivative of functions of defined parametrically, Derivative of Logarithmic exponential, trigonometric, inverse trigonometric and hyperbola functions, Tangents and Normals: Length of tangent, suntangent, normal and subnormal, Polar subtangent, polar subnormal, pedal equations, Taylor's theorem and Maclaurin's theorem, Asymptotes, Curvature.

MATHEMATICAL FOUNDATIONS – IV

CO35: Partial derivatives of first and second order. Eluer's theorem on homogeneous functions, differentiation of composite and implicit functions, Reduction formula, rectification of curve represented in Cartesian, Quadrature, Beta and Gama functions, their properties and relationships. Differentiation under integral sign.

PRACTICALS:

CO36: Implementation of numerical methods, studied in the theory paper, in 'C' Programming language.

Credits:

(i)Four periods each of 40 minute per week in each semester of BA/BSc.

(ii)Six periods each of 40 minute per week in first and second semester of BCom.

(iii)Six periods each of 40 minute per week in first to fourth semesters of BCA.

(iv) Practical of two hour per student per week in fourth and fifth semester of BA/BSc.