Programme and Course Outcome

Department of Computer Science

Programme: BCA

Programme Outcome	The curriculum in the subject of Computer Science (six semester course) prepares students for positions as: • Computer Scientists/Engineers in business, industry and government. • Programmers or the software engineers with the sound knowledge of practical and theoretical concepts for developing software. • Hardware Designers/Engineers with the knowledge of Networking concepts. • System Engineers and System integrators serve as the System Administrators with thorough knowledge of DBMS. • IT officers in Banks and cooperative societies • Web designers with latest web development technologies.
Programme Specific Outcome	The curriculum's main objectives are to impart students with an understanding of the basics of computer science and its applications, to develop proficiency in the practice of computing, and to prepare them for continued professional development. Upon completion of Course in Computer Science, students will be able to: • Apply algorithmic, mathematical and scientific reasoning to a variety of computational problems • Design, correctly implement and document solutions to significant computational problems • Analyse and compare alternative solutions to computing problems • Implement software systems that meet specified design and performance requirements • Work successfully in teams to design and implement solutions to computational problems. • Communicate efficiently, both orally and in writing. • Recognize the social and ethical responsibilities of a professional working in the discipline

Course Outcomes

Course	**Outcomes**
Environmental Study	On completion of this course, students will be able to acquire skills to understand environment and its various components, related issues and problems, identifying and solving them, participate and be actively involved at all levels in working towards the benefits of environment, gain a variety of experiences and acquire knowledge to save the environment for future generations, acquire an awareness of the environment as a whole, its allied problems and sensitivity.
Computer and Programming Fundamentals	On successful completion of this course the students will be able to understand Evolution of Computers, Basic Computer Organization, Word Processing, Spread Sheets, Power Point Presentations, Basics of Operating Systems types, Internet and Cloud Computing Basics.
PC Software	1. Understand basic computer hardware architecture and be able to design fundamental logic circuits. 2. Convert between different number systems and describe some different codes. 3. Understand the functions of basic digital combinatorial circuits and sequential circuits. 4. Understand the fundamental hardware components that make up a computer's hardware and the role of each of these components. 5. Understand the role of CPU and its components. 6. Learn essential IT support skills including installing, configuring, securing and troubleshooting operating systems and hardware. 7. Gain hands-on experience of working in Microsoft products such as: MS Word, MS Excel and MS PowerPoint.
Computer Oriented Numerical Methods	1. Skill to choose and apply appropriate numerical methods to obtain approximate solutions to difficult mathematical problems. 2. Ability to apply various statistical techniques such as Measures of Central Tendency and Dispersion. 3. Understanding of relationship between variables using the method of Correlation and Trend Fit Analysis. 4. Skill to execute programs of various Numerical Methods and Statistical Techniques for solving mathematical problems.

Logical organization of Computer–I	On successful completion of this course the students will be able to design combinational circuits using basic building blocks. Represent data in binary form, convert numeric data between different number systems and perform arithmetic operations in binary. Simplify these circuits using Boolean Algebra and Karnaugh maps. Differentiate between combinational circuits and sequential circuits. Determine various stages of instruction cycle, various instruction formats and instruction set. Explain how CPU communicates with I/O devices.
Mathematical Foundations-I	1. Apply knowledge of computing and mathematics appropriate to the discipline. 2. Analyze a problem and identify and define the computing requirements to solution. 3. Understand some aspects of computer programming. 4. Understand the concepts of algorithms. 5. Apply knowledge of computing, mathematics, science, and engineering appropriate to the modeling and design of software. 6. Implement the numerical methods using computer software and apply them in examples
Communication Skills	On completion of this course, students will be able to Communicate efficiently, both orally and in writing. Writing letters, applications, resume, notes etc. using Word editor, carry out business correspondence effectively. Communicate efficiently, both orally and in writing.
'C Programming	Upon successful completion of the course, a student will be able to: 1. Appreciate and understand the working of a digital computer 2. Analyse a given problem and develop an algorithm to solve the problem 3. Improve upon a solution to a problem 4. Use the 'C' language constructs in the right way 5. Design, develop and test programs written in 'C'
Computer Architecture-I	On completion of this course, students will be able to understand theory of Digital Design and Computer Organisation to provide an insight of how basic computer components are specified. An ability to understand the functions of various hardware components and their building blocks. An ability to understand and appreciate Boolean algebraic expressions to digital design. An in depth understanding of sequential! Combinational circuits. An in depth understanding of realisation of different combinational/sequential circuits. An ability to understand computer buses and input/output peripherals. An ability to understand memory hierarchy and design of primary memory.
Computer Oriented Statistical Methods	The student will be able: 1. To learn statistical and optimization methods, in particular, with reference to frequency distribution and measures of central tendency, measures of dispersion, skew ness and kurtosis, 2. To learn theory of probability, linear programming problems, transportation, assignment and game problems. 3. To learn important theorems, different formulae and practical applications of these statistical and optimization methods in the field of Computer Sciences and Applications.
Mathematical Foundations-II	On completion of this course, Students would be able to understand the theories and principles of linear algebra. Students would be able apply their knowledge by solving mathematical problems.
Accounting & Financial Management	On successful completion of this course the students will be able to define fundamental accounting concepts, Conventions & terminologies. Describe the importance, functions & objectives of books of entry, subsidiary books, bank reconciliation statement and Final accounts. Explain how computing systems improve productivity, reliability & transparency of business, governance, education & research organisations. Articulate the relevance of latest computing technologies in shaping the life.
Personality Development	Recognize the social and ethical responsibilities of a professional working in the discipline.
Object Oriented Programming in C++	Describe the procedural and object oriented paradigm with concepts of streams, classes, functions, data and objects. Understand dynamic memory management techniques using pointers, constructors, destructors, etc Describe the concept of function overloading, operator overloading, virtual functions and polymorphism. Classify inheritance with the understanding of early and late binding, usage of exception handling, generic programming. Demonstrate the use of various OOPs concepts with the help of programs.
Data Structures-I	On successful completion of this course the students will be able to demonstrate a thorough understanding of the behaviour of basic data structures. Have a comprehensive knowledge of the data structures and algorithms on which file structures and data bases are based, understand the importance of data and be able to identify the data requirements for an application, have an understanding and practical experience of algorithmic design and implementation, have practical experience of developing applications that utilize databases, understand the issues involved in algorithm complexity and performance.

Computer Architecture-II	Explain the organization of basic computer, its design and the design of control unit. Demonstrate the working of central processing unit and RISC and CISC Architecture. Describe the operations and language f the register transfer, micro operations and input-output organization. Understand the organization of memory and memory management hardware. Elaborate advanced concepts of computer architecture, Parallel Processing, inter-processor communication and synchronization.
Introduction to Data Base System	On successful completion of the course, students will be able to use database management system to manage data. Create entity relationship diagrams for modeling real-life situations and design the database schema. Use the concept of functional dependencies to remove data anomalies and arrive at normalized database design. Write queries using SQL.
Structured System Analysis & Design	The course has been designed to provide a solid foundation of systems principles and an understanding of how business functions, while heighten students may understand the issues and responsibility of analysts.
Web Designing-I	On successful completion of the course the student should able to: Understand fundamental concepts of Internet, Internet technologies, Differentiate the features of different browsers, .Develop the colorful web pages using tags, Use bullets and alignment on texts, Understand the table handling tags, Frames and Frameset for designing web pages
Data Structures-II	Upon successful completion of the course student should be able to: 1. Analyse data structure impact on algorithms, program design and program performance. 2. Understand and apply amortised analysis on data structures, including binary search trees, heaps, and disjoint sets. 3. Explain & describe the applications of static and dynamic trees. 4. Design, implement, and use advanced ADTs.
Operating System	Student will be able to : 1. Analyse the concepts of processes in operating system and illustration of the scheduling of processor for a given problem instance. 2. Identify the dead lock situation and provide appropriate solution so that protection and security of the operating system is also maintained. 3. Analyse memory management techniques, concepts of virtual memory and disk scheduling. 4. Understand the implementation of file systems and directories along with the interfacing of IO devices with the operating system.
Relational Data Base Management System	1. Able to master the basic concepts and understand the applications of database systems. 2. Able to construct an Entity-Relationship (E-R) model from specifications and to transform to relational model. 3. Able to construct unary/binary/set/aggregate queries in Relational Algebra. 4. Understand and apply database normalisation principles. 5. Able to construct SQL queries to perform CRUD operations on database. (Create, Retrieve, Update, Delete) 6. Understand principles of database transaction management, database recovery, security.
Management Information system	1. Explain complex software within the context of business user needs through training presentations and written documentation. 2. Distinguish relationships between programming languages and information systems. 3. Analyze existing systems and design technology solutions appropriate to the goals of an organization. 4. Determine factors influencing the strengths and weaknesses of the most common computer operating systems and determine how one would be preferred over others. 5. Effectively utilize database and database management systems to organize, store and retrieve data. 6. Support and defend an original proposal for the operation and maintenance of an enterprise-level database system, including policies for audits, security, backup, repair and replication. 7. Perform basic and moderate system configuration and server administration tasks to a network operating system. 8. Identify current and emerging technologies and apply them to today's organizations. 9. Identify fundamental processes and functional business units in contemporary and emerging business technology models
Micro Processor	1. Assess and solve basic binary math operations using the microprocessor and explain the microprocessor's and Microcontroller's internal architecture and its operation within the area of manufacturing and performance. 2. Apply knowledge and demonstrate programming proficiency using the various addressing modes and data transfer instructions of the target microprocessor and microcontroller. 3. Compare accepted standards and guidelines to select appropriate Microprocessor (8085&8086) and Microcontroller to meet specified performance requirements. 4. Analyze assembly language programs; select appropriate assemble into machine macros assembler utility of a microprocessor and microcontroller. 5. Design electrical circuitry to Microprocessor I/O ports in order to interface the processor to

	external devices. 6. Evaluate assembly language programs and download the machine code that will provide solutions real-world control problems.
Software Engineering	On successful completion of the course students will be enabling to get sufficient knowledge on Engineering paradigms, Software Crisis, Software Development Process, Software Requirement Analysis, Software Requirement Analysis and Psychology of testing.
Computer Networks	On successful completion of the course, students will be able to understand the basics of data communication, Understand the difference between the OSI and TCP/IP protocol suit, Analog and Digital Communications Concepts, Data Link Layer, Network Layer and Routing Concepts. Practical features: Study of different types of Network cables, Network Devices, basic network command and Network configuration commands. Connect the computers in Local Area Network. Configure a Network using packet tracer software
Computer Graphics	1. Understand the real graphics programming. 2. Knowledge of working of display systems. 3. Skill to execute various Scan Conversion algorithms in laboratory so as to draw Graphics primitives. 4. Understand the mathematics basics, mainly linear algebra and implemented by OpenGL and programming language like C. 5. Develop creativity to create 2D objects.
Web Designing-II	1. Ability to develop web pages using HTML and Cascading Style Sheets. 2. Skill to create XML documents and Schemas. 3. Knowledge of client-side (JavaScript) and server-side scripting (PHP, ASP.NET) languages to build dynamic web pages. 4. Familiarisation with Web Application Terminologies, Internet Tools, E – Commerce and other web services. 5. Ability to develop database applications with MySQL.
Introduction to Linux	1. To understand Unix Operating System 2. To explore the Basic Shell Commands 3. Work with the file System, such as Describe hierarchical file systems.-Create and delete directorie 4. Understand how shells are started and view/modify the shell configurati on files. -Create, modify and delete aliases.-Create and execute simple shell scripts 5. Perform System Administration tasks
Internet Technology	1. Ability to use internet for searching information on web, sending e-mails and many other tasks. 2. Skill to work with MS-Word, Excel and PowerPoint. 3. Initiation into the process of writing business letters or job applications, tabulating data, 4. preparing PPTs etc using MS-Office.
Visual Basic	1. Demonstrate knowledge of programming terminology and how applied using Visual Basic (e.g., variables, selection statements, repetition statements, etc.) 2. Develop a Graphical User Interface (GUI) based on problem description 3. Develop an Event Planning Chart based on problem description so as to define the processing that is to occur based on specific events 4. Develop an Algorithm to verify processing is accurate 5. Develop and debug applications using Visual Basic that runs under Windows operating system 6. Develop programs that retrieve input from a file as opposed to input only provided by user
Multimedia Technology	1. To understand importance of visual representation. 2. To emphasize basic theoretical tools to engage the various forms of visual culture that are increasingly prevalent in society 3. understand and program multimedia data and be able to design and implement media applications
Introduction to .NET	Upon completion of this course, students will be able to: 1. Understand .NET Framework and describe some of the major enhancements to the new 2. Version of C#. 3. Learn to create applications using Microsoft Windows Forms. 4. Learn to create applications with the use of ADO. NET. 5. Learn how to work with XML Documents. 6. Use Crystal Reports that may help in creating reports related to the project.