

**Department of Computer Science**  
**Program Outcomes, Program Specific Outcomes**  
**Programme Outcomes:**

<b>B.Sc.Computer Science</b>	
<b>Programme Outcomes</b>	<p><b>PO1:</b> Understand basic principles of science</p> <p><b>PO2:</b> Analyse and predict conclusion from data/information</p> <p><b>PO3:</b> Perform necessary arithmetic calculations</p> <p><b>PO4:</b> Understand various units and its conversions</p> <p><b>PO5:</b> Correlate various principles in science to generate new approaches</p> <p><b>PO6:</b> Understand steps in the operations of various equipment and instruments</p> <p><b>PO7:</b> Perform qualitative, quantitative analyses in science specific areas</p> <p><b>PO8:</b> Understand mechanism of various scientific processes</p>
<b>Programme Specific Outcomes</b>	<p>At the time of graduation, the students will be able to-</p> <p><b>PSO1:</b> Understand basics of Software</p> <p><b>PSO2:</b> Analyze Software system</p> <p><b>PSO3:</b> Develop software programs in the areas related to system software</p> <p><b>PSO4:</b> Develop software programs in the areas related to multimedia</p> <p><b>PSO5:</b> Develop software programs in the areas related to web designing</p> <p><b>PSO6:</b> Handle application program like databases, graphics</p> <p><b>PSO7:</b> Develop networking for efficient design of technology of varying reduce complexity</p>
<b>B.Sc. I Year</b>	
<b>Course Details</b>	<b>Course Outcomes</b>
	Upon completion of the course, the students will be able to-
<b>Paper I Computer Fundamentals</b>	<p><b>CO1:</b> Discuss operating systems</p> <p><b>CO2:</b> Describe steps involved in high-level programming languages</p> <p><b>CO3:</b> Find solutions of complex problems</p> <p><b>CO4:</b> Discuss modern software engineering principles</p>
<b>Paper II Digital Electronics</b>	<p>Upon completion of the course, the students will be able to-</p> <p><b>CO1:</b> Describe logic gates and realization of OR, AND, NOT AND XOR Functions using universal gates</p> <p><b>CO2:</b> Design and implement combinational circuits like half adder/full adder, half subtract or /full subtract or, code converters, comparators, MUX/DEMUX</p> <p><b>CO3:</b> Design and implement sequential circuits like flip-flops, counters and shift registers</p>

<p style="text-align: center;"><b>Paper III C-programming</b></p>	<p>Upon completion of the course, the students will be able to-</p> <p><b>CO1:</b> Illustrate the flowchart and design an algorithm for a given problem and to develop ICprograms using operators</p> <p><b>CO2:</b> Develop conditional and iterative statements to write C programs</p> <p><b>CO3:</b> Exercise user defined functions to solve real time problems</p> <p><b>CO4:</b> Inscribe C programs that use Pointers toaccess arrays, strings and functions</p> <p><b>CO5:</b> Exercise user defined data types including structures and unions to solve problems</p>
<p style="text-align: center;"><b>Paper IV Operating Systems</b></p>	<p>Upon completion of the course, the students will be able to-</p> <p><b>CO1:</b> Discuss main components of an OS and their functions</p> <p><b>CO2:</b> Explain process management and scheduling</p> <p><b>CO3:</b> Discuss various issues in Inter Process Communication (IPC) and role of OS in IPC</p> <p><b>CO4:</b> Explain concept and describe implementation Memory management policies andvirtual memory</p>
<p><b>B.Sc. II Year</b></p>	
<p style="text-align: center;"><b>Paper I Data Structure</b></p>	<p>Upon completion of the course, the students will be able to-</p> <p><b>CO1:</b> Explain concept of Dynamic memory management, data types, algorithms, Big Onotation</p> <p><b>CO2:</b> Elaborate basic data structures such as arrays, linked lists, stacks and queues</p> <p><b>CO3:</b> Describe hash function and concepts of collision and its resolution methods</p> <p><b>CO4:</b> Solve problem involving graphs, trees and heaps</p> <p><b>CO5:</b> Apply Algorithm for solving problems like sorting, searching, insertion and deletion ofdata.</p>

<p style="text-align: center;"><b>Paper II</b> <b>Advance C Programming</b></p>	<p>Upon completion of the course, the students will be able to-</p> <p><b>CO1:</b> Explain flowchart and design algorithm for a given problem and to develop ICprograms using operators</p> <p><b>CO2:</b> Define conditional and iterative statements to write C programs</p> <p><b>CO3:</b> Classify user defined functions to solve real time problems</p> <p><b>CO4:</b> Describe C programs that use Pointers to access arrays, strings and functions</p> <p><b>CO5:</b> Explain user defined data types including structures and unions to solve problems.</p>
<p style="text-align: center;"><b>Paper III</b> <b>Programming in CPP</b></p>	<p>Upon completion of the course, the students will be able to-</p> <p><b>CO1:</b> Describe procedural and object oriented paradigm with concepts of streams, classes,functions, data and objects</p> <p><b>CO2:</b> Explain dynamic memory management techniques using pointers, constructors,destructors, etc</p> <p><b>CO3:</b> Describe concept of function overloading, operator overloading, virtual functions andpolymorphism</p> <p><b>CO4:</b> Classify inheritance with the understanding of early and late binding, usage ofexception handling, generic programming</p>
<p style="text-align: center;"><b>Paper IV</b> <b>DBMS</b></p>	<p>Upon completion of the course, the students will be able to-</p> <p><b>CO1:</b> Discuss various issues involved in design and implementation of a database system</p> <p><b>CO2:</b> Describe physical and logical database designs, database modeling, relational, hierarchical, and network models</p> <p><b>CO3:</b> Use data manipulation language to query, update, and management of database</p> <p><b>CO4:</b> Describe DBMS concepts such as: database security, integrity, concurrency</p>

<b>B.Sc. III Year</b>	
<b>Paper I Software Engineering</b>	<p>Upon completion of the course, the students will be able to-</p> <p><b>CO1:</b> Discuss applications of software engineering</p> <p><b>CO2:</b> Utilize and exhibit strong communication and interpersonal skills, as well as professional and ethical principles when functioning as members and leaders of multi- disciplinary teams</p> <p><b>CO3:</b> Apply skills in software engineering to adapt changing environments using appropriate theory, principles and processes</p>
<b>Paper II Data Communication and Networking</b>	<p>Upon completion of the course, the students will be able to-</p> <p><b>CO1:</b> Define OSI reference model, TCP-IP reference model, network interface, and</p> <p><b>CO2:</b> Discuss design/performance issues in local area networks and wide area networks</p> <p><b>CO3:</b> Describe wireless networking</p> <p><b>CO4:</b> Discuss contemporary issues in networking technologies, network tools and networkprogramming</p>
<b>Paper III Web Designing</b>	<p>Upon completion of the course, the students will be able to-</p> <p><b>CO1:</b> Describe history of internet and related internet concepts that are vital in understandingweb development</p> <p><b>CO2:</b> Discuss insight of internet programming and implement complete application over theweb</p> <p><b>CO3:</b> Demonstrate the important HTML tags for designing static pages and separate designfrom content using Cascading Style sheet.</p> <p><b>CO4:</b> Utilize concept of JavaScript's</p>
<b>Paper III Ethics and Cyber law</b>	<p>Upon completion of the course, the students will be able to-</p> <p><b>CO1:</b> Discuss Ethics and Cyber law</p> <p><b>CO2:</b> Elaborate insight of cyber rules and regulations</p>

## B.Sc. (CS)

<b>Programme Outcomes</b>	<p><b>PO1:</b> Understand basic principles of science</p> <p><b>PO2:</b> Analyze and predict conclusion from data/information</p> <p><b>PO3:</b> Perform necessary arithmetic calculations</p> <p><b>PO4:</b> Understand various units and its conversions</p> <p><b>PO5:</b> Correlate various principles in science to generate new approaches</p> <p><b>PO6:</b> Understand steps in the operations of various equipment and instruments</p> <p><b>PO7:</b> Perform qualitative, quantitative analyses in science specific areas</p> <p><b>PO8:</b> Understand mechanism of various scientific processes</p>
<b>Programme Specific Outcomes</b>	<p>At the time of graduation, the students will be able to-</p> <p><b>PSO1:</b> Understand basics of software systems</p> <p><b>PSO2:</b> Design, implement and document solutions to significant computational problems</p> <p><b>PSO3:</b> Demonstrate understanding of principles and working of hardware and software systems of computer systems</p> <p><b>PSO4:</b> Apply fundamental principles and methods of Computer Science to a wide range of applications</p> <p><b>PSO5:</b> Design, implement, test, and evaluate computer system, component, or algorithm to meet desired needs and to solve computational problems</p> <p><b>PSO6:</b> Develop proficiency in the practice of computing</p> <p><b>PSO7:</b> Apply problem-solving skills and knowledge of Computer Science to solve real problems</p> <p><b>PSO8:</b> Enhance programming skills and adapt new computing technologies for attaining professional excellence and carrying research</p>
<b>B.Sc (CS) I year</b>	
<b>Course Details</b>	<b>Course Outcomes</b>
Paper I <b>Computer Fundamentals</b>	<p>Upon completion of the course, the students will be able to-</p> <p><b>CO1:</b> Explain various steps involved in problem solving techniques</p>

	<p><b>CO2:</b> Classify 7-8 high-level programming languages and two operating systems</p> <p><b>CO3:</b> Analyze complex problems and the synthesis of solutions to those problems</p> <p><b>CO4:</b> Explain software engineering principles</p>
<p>Paper II</p> <p><b>Digital Electronics</b></p>	<p>Upon completion of the course, the students will be able to-</p> <p><b>CO1:</b> Define digital components and devices</p> <p><b>CO2:</b> Explain logic gates and realization of OR, AND, NOT AND XOR Functions using universal gates</p> <p><b>CO3:</b> Explain combinational circuits like half adder/full adder, half subtractor/full subtractor, code converters, comparators, MUX/DEMUX</p> <p><b>CO4:</b> Evaluate sequential circuits like flip-flops, counters and shift registers</p>
<p>Paper III</p> <p><b>Microprocessor- I</b></p>	<p>Upon completion of the course, the students will be able to-</p> <p><b>CO1:</b> Define taxonomy of microprocessors and knowledge of contemporary microprocessors</p> <p><b>CO2:</b> Explain architecture, bus structure and memory organization of 8086 as well as higher order microprocessors</p> <p><b>CO3:</b> Explore techniques for interfacing I/O devices to the microprocessor 8086 including several specific standard I/O devices such as 8251 and 8255</p> <p><b>CO4:</b> Define programming using the various addressing modes and instruction set of 8086 microprocessor</p>
<p>Paper IV</p> <p><b>C-programming I</b></p>	<p>Upon completion of the course, the students will be able to-</p> <p><b>CO1:</b> Explain flowchart and design algorithm for a given problem and to develop IC programs using operators</p> <p><b>CO2:</b> Define conditional and iterative statements to write C programs</p> <p><b>CO3:</b> Classify user defined functions to solve real time problems</p> <p><b>CO4:</b> Describe C programs that use Pointers to access arrays, strings and functions</p> <p><b>CO5:</b> Explain user defined data types including structures and</p>

	unions to solve problems
<b>Paper V Communications Skill – I</b>	<p>Upon completion of the course, the students will be able to-</p> <p><b>CO1:</b> Describe importance of communication in daily life</p> <p><b>CO2:</b> Elaborate importance of grammar as an effective tool for accuracy in communication</p> <p><b>CO3:</b> Describe listening is the most important aspect of all communication skills</p> <p><b>CO4:</b> Develop body language is an important aspect of effective communication</p> <p><b>CO5:</b> Discuss how pronunciation of words is essential for better comprehension in communication</p>
<b>Paper VI Mathematical Foundation</b>	<p>Upon completion of the course, the students will be able to-</p> <p><b>CO1:</b> Define set and constructing proofs</p> <p><b>CO2:</b> Draw graphs on the basis of available data</p> <p><b>CO3:</b> Explain relations and determine their properties</p> <p><b>CO4:</b> Classify functions</p>
<b>Paper I Data Structure</b>	<p>Upon completion of the course, the students will be able to-</p> <p><b>CO1:</b> Define concept of Dynamic memory management, data types, algorithms</p> <p><b>CO2:</b> Give basic data structures such as arrays, linked lists, stacks and queues</p> <p><b>CO3:</b> Describe the hash function and concepts of collision and its resolution methods</p> <p><b>CO4:</b> Explain problem involving graphs, trees and heaps</p> <p><b>CO5:</b> Solve algorithm for sorting, searching, insertion and deletion of data</p>
<b>Paper II Operating Systems</b>	<p>Upon completion of the course, the students will be able to-</p> <p><b>CO1:</b> Define the main components of an OS &amp; their functions</p> <p><b>CO2:</b> Explain the process management and scheduling</p> <p><b>CO3:</b> Elaborate various issues in Inter Process Communication (IPC) and the role of OS in IPC</p> <p><b>CO4:</b> Describe the concepts and implementation</p>
<b>Paper III</b>	Upon completion of the course, the students will be able to-

<p><b>Microprocessor- II</b></p>	<p><b>CO1:</b> Define the taxonomy of microprocessors and knowledge of contemporary microprocessors</p> <p><b>CO2:</b> Explain architecture, bus structure and memory organization of 8086 as well as higher order microprocessors</p> <p><b>CO3:</b> Explore techniques for interfacing I/O devices to the microprocessor 8086 including several specific standard I/O devices such as 8251 and 8255</p> <p><b>CO4:</b> Classify programming using the various addressing modes and instruction set of 8086 microprocessor</p>
<p><b>Paper IV</b> <b>C-programming II</b></p>	<p>Upon completion of the course, the students will be able to-</p> <p><b>CO1:</b> Give flowchart and design algorithm for a given problem and to develop IC programs using operators</p> <p><b>CO2:</b> Develop conditional and iterative statements to write C programs</p> <p><b>CO3:</b> Exercise user defined functions to solve real time problems</p> <p><b>CO4:</b> Explain C programs that use Pointers to access arrays, strings and functions</p> <p><b>CO5:</b> Classify user defined data types including structures and unions to solve problems</p>
<p><b>Paper V</b> <b>Communications Skill – II</b></p>	<p>Upon completion of the course, the students will be able to-</p> <p><b>CO1:</b> Give importance of communication in daily life</p> <p><b>CO2:</b> Describe how grammar is an effective tool for accuracy in communication</p> <p><b>CO3:</b> Elaborate importance of all communication skills</p> <p><b>CO4:</b> Explain body language as an important aspect of effective communication</p> <p><b>CO5:</b> Give importance of pronunciation of words for better comprehension in communication</p>
<p><b>Paper VI</b> <b>Numerical Computational Method</b></p>	<p>Upon completion of the course, the students will be able to-</p> <p><b>CO1:</b> Describe error analysis for a given numerical method</p> <p><b>CO2:</b> Explain an algebraic or transcendental equation using an appropriate numerical method</p> <p><b>CO3:</b> Prove results for numerical root finding methods</p> <p><b>CO4:</b> Explain approximate a function using an appropriate numerical method</p>

<b>B.Sc ( CS ) Second Year</b>	
<b>Paper I Advance Data Structure</b>	<p>Upon completion of the course, the students will be able to-</p> <p><b>CO1:</b> Explain asymptotic notation, its properties and use in measuring algorithm behavior</p> <p><b>CO2:</b> Explain mathematical principles to solve various problems</p> <p><b>CO3:</b> Evaluate complexities of various algorithms and select the best</p> <p><b>CO4:</b> Describe different strategies that are known to be useful in finding efficient algorithms to solve problems and to be able to apply them</p> <p><b>CO5:</b> Use appropriate data structure and algorithms to solve a particular problem</p>
<b>Paper II UNIX Operating system</b>	<p>Upon completion of the course, the students will be able to-</p> <p><b>CO1:</b> Develop software for Linux/UNIX systems</p> <p><b>CO2:</b> Define C language and get experience programming in C</p> <p><b>CO3:</b> Explain important Linux/UNIX library functions and system calls</p> <p><b>CO4:</b> Verify the inner workings of UNIX-like operating systems</p> <p><b>CO5:</b> Define a foundation for an advanced course in operating systems</p>
<b>Paper III PC maintenance</b>	<p>Upon completion of the course, the students will be able to-</p> <p><b>CO1:</b> Describe electronic circuits with the knowledge of courses related circuits, networks, linear digital circuits and analog electronics</p> <p><b>CO2:</b> Explore the scientific theories, ideas, methodologies in operation and maintenance of communication systems to bridge the gap between academics and industries</p> <p><b>CO3:</b> describe work profession with new cutting edge Technologies in the fields of electronic design, communication and automation</p> <p><b>CO4:</b> Describe operating system and other application software</p>
<b>Paper IV Programming in CPP</b>	<p>Upon completion of the course, the students will be able to-</p>

	<p><b>CO1:</b> Explain the procedural and object oriented paradigm with concepts of streams, classes, functions, data and objects</p> <p><b>CO2:</b> Describe dynamic memory management techniques using pointers, constructors, destructors</p> <p><b>CO3:</b> Explain concept of function overloading, operator overloading, virtual functions and polymorphism</p> <p><b>CO4:</b> Describe inheritance with the understanding of early and late binding, usage of exception handling, generic programming</p>
<p><b>Paper V DBMS</b></p>	<p>Upon completion of the course, the students will be able to-</p> <p><b>CO1:</b> Describe different issues involved in the design and implementation of a database system</p> <p><b>CO2:</b> Explain physical and logical database designs, database modelling, relational, hierarchical, and network models</p> <p><b>CO3:</b> Explain data manipulation language to query, update, and manage a database</p> <p><b>CO4:</b> Describe DBMS concepts such as: database security, integrity, concurrency</p>
<p><b>Paper VI Statistical Method</b></p>	<p>Upon completion of the course, the students will be able to-</p> <p><b>CO1:</b> Explain inferential and descriptive statistics. Differentiate between a quantitative and a qualitative variable, Know the four levels of measurement: - nominal, ordinal, interval, and ratio</p> <p><b>CO2:</b> Define frequency distribution, determine the class midpoints, relative frequencies, and cumulative frequencies of a frequency distribution, Construct a Histogram, a Frequency Polygon, and a Pie Char.</p> <p><b>CO3:</b> Define mean, mode, and median. Explain the characteristics of the mean, mode, and median.</p> <p><b>CO4:</b> Calculate mean, mode and median for both grouped and ungrouped data</p>

<p style="text-align: center;"><b>Paper I</b> <b>Software Engineering</b></p>	<p>Upon completion of the course, the students will be able to-</p> <p><b>CO1:</b> Describe successful professionals in the field with solid fundamental knowledge of software engineering</p> <p><b>CO2:</b> Utilize and exhibit strong communication and interpersonal skills, as well as professional and ethical principles when functioning as members and leaders of multi-disciplinary teams</p> <p><b>CO3:</b> Explain foundations in software engineering to adapt to readily changing environments using the appropriate theory, principles and processes</p> <p><b>CO4:</b> Describe the issues affecting the organization, planning and control of software.</p>
<p style="text-align: center;"><b>Paper II</b> <b>Fedora</b></p>	<p>Upon completion of the course, the students will be able to-</p> <p><b>CO1:</b> Describe various contents of Linux</p> <p><b>CO2:</b> Give the requirements in Linux system installation</p> <p><b>CO3:</b> Describe the concept of handling Linux and performing operations using Linux commands and tools</p> <p><b>CO4:</b> Describe the basics of Linux, logical channels, advantages and limitations</p>
<p style="text-align: center;"><b>Paper III</b> <b>Basics of Networking</b></p>	<p>Upon completion of the course, the students will be able to-</p> <p><b>CO1:</b> Describe concepts of OSI reference model and the TCP/IP reference model</p> <p><b>CO2:</b> Describe concepts of protocols, network interfaces, and design/performance issues in local area networks and wide area networks</p> <p><b>CO3: Explain</b> wireless networking concepts</p> <p><b>CO4:</b> Explain contemporary issues in networking technologies</p> <p><b>CO5:</b> Explain network tools and network programming</p>
<p style="text-align: center;"><b>Paper IV</b> <b>Core Java</b></p>	<p>Upon completion of the course, the students will be able to-</p> <p><b>CO1:</b> Define structure and model of the Java programming language</p> <p><b>CO2:</b> Use the Java programming language for various programming technologies</p> <p><b>CO3:</b> Describe software in the Java programming language</p>

	<p><b>CO4:</b> Evaluate user requirements for software functionality required to decidewhether the Java programming language can meet user requirements</p>
<p><b>Paper V</b> <b>Adv. DBMS</b></p>	<p>Upon completion of the course, the students will be able to-</p> <p><b>CO1:</b> Explain elementary and advanced features of DBMS and RDBMS</p> <p><b>CO2:</b> Describe conceptual frameworks and definitions of specific terms that areintegral to the Relational Database Management Systems</p> <p><b>CO3:</b> Define basic concepts of Concurrency Control and database security</p> <p><b>CO4:</b> Prepare various database tables and joins them using SQL commands</p>
<p><b>Paper VI</b> <b>Web Fundamental</b></p>	<p>Upon completion of the course, the students will be able to-</p> <p><b>CO1:</b> Describe history of the internet and related internet concepts thatare vital in understanding web development</p> <p><b>CO2:</b> Discuss insights of internet programming and implement complete applicationover the web</p> <p><b>CO3:</b> Describe important HTML tags for designing static pages and separatedesign from content using Cascading Style sheet.</p> <p><b>CO4:</b> Define the concept of JavaScript's</p>

<b>B.Sc ( CS ) Third Year</b>	
<b>Paper I Software Cost Estimation</b>	<p>Upon completion of the course, the students will be able to-</p> <p><b>CO1:</b> Prepare SRS document, design document, test cases and software configuration management and risk management related document</p> <p><b>CO2:</b> Describe function oriented and object oriented software design using tools like rational rose</p> <p><b>CO3:</b> Describe unit testing and integration testing</p> <p><b>CO4:</b> Describe various white box and black box testing techniques</p>
<b>Paper II Android OS</b>	<p>Upon completion of the course, the students will be able to-</p> <p><b>CO1:</b> Explain android platform Architecture and features</p> <p><b>CO2:</b> Design User Interface and develop activity for Android Applications</p> <p><b>CO3:</b> Define Intent, Broadcast receivers and Internet services in Android Applications</p> <p><b>CO4:</b> Design database Application and Content providers</p>
<b>Paper III Core Java-II</b>	<p>Upon completion of the course, the students will be able to-</p> <p><b>CO1:</b> Describe fundamentals of programming such as variables, conditional and iterative execution, methods</p> <p><b>CO2:</b> Explain fundamentals of object-oriented programming in Java, including defining classes, invoking methods, using class libraries</p> <p><b>CO3:</b> Give important topics and principles of software development</p> <p><b>CO4:</b> Elaborate computer program to solve specified problems</p> <p><b>CO5:</b> Discuss Java SDK environment to create, debug and run simple Java programs</p>
<b>Paper IV Computer Graphics</b>	<p>Upon completion of the course, the students will be able to-</p> <p><b>CO1:</b> Elaborate basics of Computer Graphics, different graphics systems and applications of Computer Graphics</p>

	<p><b>CO2:</b> Summaries the working principle of Display devices</p> <p><b>CO3:</b> Explain various algorithms for scan conversion and filling of basics objects andtheir comparative analysis</p> <p><b>CO4:</b> Analyze line, Circle and Ellipse and Character generation algorithm</p> <p><b>CO5:</b> Describe Geometric transformations including Translation, Scaling, rotationand Shear for 2D objects</p> <p><b>CO6:</b> Describe Geometric transformations including Translation, Scaling, rotationandShear for 3D objects</p>
<p><b>Paper V</b> <b>Beginners Programming with PHP</b></p>	<p>Upon completion of the course, the students will be able to-</p> <p><b>CO1:</b> Describe client server architecture and able to develop a web application usingjava technologies to create fully functional website/web applications</p> <p><b>CO2:</b> Describe role of language PHP and workings of the web and web applications</p> <p><b>CO3:</b> Prepare web page and identify its elements and attributes</p> <p><b>CO4:</b> Create dynamic web pages</p>
<p><b>Paper VI</b> <b>Advanced Networking</b></p>	<p>Upon completion of the course, the students will be able to-</p> <p><b>CO1:</b> Describe state-of-the-art in network protocols, architectures and applications</p> <p><b>CO2:</b> Describe existing network protocols and networks</p> <p><b>CO3:</b> Define new protocols in networking</p> <p><b>CO4:</b> Evaluate research in networking</p> <p><b>CO5:</b> Investigate novel ideas in the area of networking via term-long research projects</p>
<p><b>Paper I</b> <b>Software Quality &amp; Testing</b></p>	<p>Upon completion of the course, the students will be able to-</p> <p><b>CO1:</b> Describe reason for bugs and analyze the principles in software testing toprevent and remove bugs</p> <p><b>CO2:</b> Classify various test processes for quality improvement</p> <p><b>CO3:</b> Define test planning</p> <p><b>CO4:</b> Discuss test process</p> <p><b>CO5:</b> Explain software testing techniques in commercial environment</p>

<p style="text-align: center;"><b>Paper II</b> <b>Android Application Development</b></p>	<p>Upon completion of the course, the students will be able to-</p> <p><b>CO1:</b> Install and configure Android application development tools</p> <p><b>CO2:</b> Design user Interfaces for the Android platform</p> <p><b>CO3:</b> Evaluate information across important operating system events</p> <p><b>CO4:</b> Explain Java programming concepts to Android application development</p>
<p style="text-align: center;"><b>Paper III</b> <b>Theory of Computation</b></p>	<p>Upon completion of the course, the students will be able to-</p> <p><b>CO1:</b> Explain finite state machines and the equivalent regular expressions</p> <p><b>CO2:</b> State and prove the equivalence of languages described by finite state machines and regular expressions</p> <p><b>CO3:</b> Classify pushdown automata and the equivalent context free grammars</p> <p><b>CO4:</b> Verify equivalence of languages described by pushdown automata and context free grammars</p>
<p style="text-align: center;"><b>Paper IV</b> <b>Advanced Computer Graphics</b></p>	<p>Upon completion of the course, the students will be able to-</p> <p><b>CO1:</b> Give importance of viewing and projections</p> <p><b>CO2:</b> Explain the fundamentals of animation, virtual reality and its related technologies</p> <p><b>CO3:</b> Describe typical graphics pipeline</p> <p><b>CO4:</b> Design an application with the principles of virtual reality</p>
<p style="text-align: center;"><b>Paper V</b> <b>Advanced Programming with PHP</b></p>	<p>Upon completion of the course, the students will be able to-</p> <p><b>CO1:</b> Explain general concept of PHP scripting language for the development of Internet websites</p> <p><b>CO2:</b> Define basic functions of My SQL database program</p> <p><b>CO3:</b> Give relationship between the client side and the server side scripts</p>

	<p><b>CO4:</b> Evaluate final project using the learned techniques</p>
<p><b>Paper VI</b> <b>Ethics and Cyber law</b></p>	<p>Upon completion of the course, the students will be able to-</p> <p><b>CO1:</b> Explain ethical way of using computer, computer networks and Internet <b>CO2:</b> Define the terms such as ethics, morals, character, ethical principles and ethical relativism</p> <p><b>CO3:</b> State laws and rules for using computer recourses and making them secure</p> <p><b>CO4:</b> State and explain laws concerning Cyber Space</p>

## Bachelor of Computer Application (B.C.A.)

<b>Programme Specific Outcomes</b>	<ul style="list-style-type: none"> <li>• Acquire skills and information not only about Computer and Information Technology but also in communication, organization and management.</li> <li>• They are well equipped with the skills of Engineering approach in software development. - Get to learn programming languages such as C, C++, HTML, SQL, DBMS, Networking etc.</li> <li>• Information about various computer applications and latest developments in IT and communication systems is also provided.</li> <li>• They develop an ability to acquire and apply new knowledge as needed, using appropriate learning strategies.</li> </ul>
<b>Programme Specific Outcomes</b>	<p>At the time of graduation, the students will be able to-</p> <p><b>PSO1:</b> Understand scope and areas of management and fundamentals of business administration and computer applications</p> <p><b>PSO2:</b> Gain knowledge about various specialized topics associated with business administration</p> <p><b>PSO3:</b> Develop skills for the execution of entrepreneurial practices and executive skills for the positioning of the businesses</p> <p><b>PSO4:</b> Increase awareness and level of knowledge about legal framework of businesses</p> <p><b>PSO5:</b> Develop practical skills of Accounting, Human Resource, Marketing, and Production Management and MIS</p> <p><b>PSO6:</b> Understand and develop the skills of forecasting the future</p> <p><b>PSO7:</b> Develop foundation for higher studies, Personality Development and Skills Capabilities</p>
<b>B.C.A First Year</b>	
<b>Paper I Accountancy I</b>	<p>Upon completion of the course, the student will be able to –</p> <p><b>CO1:</b> Describe concept of accounting and preparation of ledger</p>

	<p><b>CO2:</b> Prepare trading and non-trading organization</p> <p><b>CO3:</b> Classify accounts for the admitted and retired partners</p> <p><b>CO4:</b> Explain depreciation on fixed assets and computation of claim under loss of stock</p> <p><b>CO5:</b> Describe profit for small traders</p>
<p><b>Paper III</b> <b>Business Statistics</b></p>	<p>Upon completion of the course, the student will be able to -</p> <p><b>CO1:</b> Describe presentation and tabulation of data, methods of collecting Data and Summarizing the data using central tendency</p> <p><b>CO2:</b> Describe various measures of dispersion and the method of measuring it</p> <p><b>CO3:</b> Explain trend or variation existing in a Time Series data</p> <p><b>CO4:</b> Describe measuring fluctuation or changes in Price and quantity of goods and products using various index numbers</p> <p><b>CO5:</b> Identify research problem in hand and apply the appropriate tests suitable to the research problem</p>
<p><b>Paper IV</b> <b>Business Communication</b></p>	<p>Reading Skills:- Ability to read English with ability to read English with understanding and decipher paragraph patterns, writer techniques and conclusions.</p> <p>Writing Skills:- Skill to develop the ability to write English correctly and master the mechanics of writing the use of correct punctuation marks and capital letter.</p> <p>Listening Skills:- Ability to understand English when it is spoken in various contexts.</p> <p>Speaking Skills:- Develop the ability to speak intelligibly using appropriate word stress, sentence stress and elementary intonation patterns</p>
<p><b>Paper V</b> <b>Office automation tools</b></p>	<ul style="list-style-type: none"> <li>• Familiarization with the terms like Operating System, peripheral devices, networking, multimedia, internet etc.</li> <li>• Ability to use internet for searching information on web, sending e-mails and many other tasks.</li> </ul>

	<ul style="list-style-type: none"> <li>• Skill to work with MS-Word, Excel and PowerPoint.</li> <li>• Initiation into the process of writing business letters or job applications, tabulating data, preparing PPTs etc using MS-Office</li> </ul>
<p><b>Paper VI</b> <b>Operating System</b></p>	<p>Upon completion of the course, the students will be able to</p> <p><b>CO1:</b> Explain process control, threads, concurrency, memory management scheduling, I/O and files, distributed systems, security, networking</p> <p><b>CO2:</b> Describe important trends affecting performance issue, why performance monitoring and evaluation are needed, and performance measures</p> <p><b>CO3:</b> Describe process concept, systems programmer's view of processes; the operating system services for process management, scheduling algorithms</p> <p><b>CO4:</b> Explain I/O devices, devices controllers direct memory access</p> <p><b>CO5:</b> Describe principles of I/O Software: Goals interrupt handlers, device drivers, device independent I/O software, and User space I/O software</p>
<p><b>Paper I</b> <b>Accountancy II</b></p>	<ul style="list-style-type: none"> <li>• Upon completion of the course, the student will be able to -</li> <li>• <b>CO1:</b> Describe various sources of finance</li> <li>• <b>CO2:</b> Give factors affecting the capital and capital structure formation</li> <li>• <b>CO3:</b> Explain concept of cost of capital</li> <li>• <b>CO4:</b> Describe various dividend policies</li> <li>• <b>CO5:</b> Calculate working capital requirement</li> </ul>
<p><b>Paper II</b> <b>Industrial organization</b></p>	<p>Upon completion of the course, the students will be able to-</p> <p><b>CO1:</b> Discuss importance and role of Industries in Economic and social development</p> <p><b>CO2:</b> Know industrial organization, ownership</p>

	<p>structure <b>CO3:</b> Analyze location and dispersion of industries</p> <p><b>CO4:</b> Explain composition of industrial sector</p>
<p><b>Paper III</b></p> <p><b>Business Mathematics &amp; Statistics I</b></p>	<p>Upon completion of the course, the students will be able to-</p> <p><b>CO1:</b> Determine critical outcomes from collected data</p> <p><b>CO2:</b> Identify the P-value of current data</p> <p><b>CO3:</b> Identify the connection between theory and applications data analysis</p> <p><b>CO4:</b> Describe the results of collected data by using mathematical and statistical literacy</p>
<p><b>Paper IV</b></p> <p><b>Introduction to Programming C</b></p>	<ul style="list-style-type: none"> <li>• In-depth understanding of various concepts of C language.</li> <li>• Ability to read, understand and trace the execution of programs.</li> <li>• Skill to debug a program.</li> <li>• Skill to write program code in C to solve real world problems.</li> </ul>
<p><b>Paper V</b></p> <p><b>Principles of Management</b></p>	<ul style="list-style-type: none"> <li>• This will give you the opportunity to go beyond purely theoretical knowledge to gain a more practical understanding of real life management problems. It will also provide invaluable opportunities to engage in teamwork and problem solving strategies.</li> <li>• This will place strong emphasis on the practical skills essential to successful management careers. As well as core and option courses, students will participate in tutorials, workshops and management simulation exercises.</li> <li>• Demonstrate a general knowledge framework and understanding of key functions in management as applied in practice</li> <li>• Obtain through electives in-depth knowledge and understanding in more specific management related areas</li> <li>• Identify and appreciate the ethical issues in management decision areas</li> <li>• Obtain an understanding of how to undertake qualitative and quantitative research and apply this knowledge in the context of a major independent work (e.g. final dissertation)</li> </ul>
<p><b>Paper VI</b></p> <p><b>Operating System II</b></p>	<ol style="list-style-type: none"> <li>1. Identify the role of Operating System. To understand the design of control unit.</li> <li>2. Understanding CPU Scheduling, Synchronization, Deadlock</li> </ol>

	<p>Handling and Comparing CPU Scheduling Algorithms. Solve Deadlock Detection Problems.</p> <ol style="list-style-type: none"><li>3. Describe the role of paging, segmentation and virtual memory in operating systems.</li><li>4. Description of protection and security and also the Comparison of UNIX and Windows based OS.</li><li>5. Defining I/O systems, Device Management Policies and Secondary Storage Structure and Evaluation of various Disk Scheduling Algorithms. BSBC404 Database Management Systems 1. Describe fund</li></ol>
--	--

**B.C.A Second Year**

**Paper I  
Principal Of  
Management**

- This will give you the opportunity to go beyond purely theoretical knowledge to gain a more practical understanding of real life management problems. It will also provide invaluable opportunities to engage in teamwork and problem solving strategies.
  - This will strong emphasis on the practical skills essential to successful management careers. As well as core and option courses, students will participate in tutorials, workshops and management simulation exercises.
  - Demonstrate a general knowledge framework and understanding of key functions in management as applied in practice
  - Obtain through electives in-depth knowledge and understanding in more specific management related areas
  - Identify and appreciate the ethical issues in management decision areas
- Obtain an understanding of how to undertake qualitative and quantitative research and apply this knowledge in the context of a major independent work (e.g. final dissertation)

**Paper II  
Introduction to  
Programming- C++**

- Familiarization with a widely used programming concept – Object Oriented Programming.
- Develop logical thinking.
- Skill to write codes in C++ by applying concept of OOP, such as Objects, Classes, Constructors, Inheritance etc., to solve mathematical or real world problems .
- Ability to isolate and fix common errors in C++ programs.

<p><b>Paper III Business Law-1</b></p>	<p>Upon completion of the course, the student will be able to -</p> <p><b>CO1:</b> Determine legal constraints faced by business professional as well as finding legal options available to the business professional in responding to and resolving legal issues</p> <p><b>CO2:</b> Identify laws that affect contemporary businesses, agency, employment, securities regulation, and the organization of a business</p> <p><b>CO3:</b> Describe how governmental regulations affect contemporary business practices</p> <p><b>CO4:</b> Evaluate ethical problems integrally connected to the legal issues</p> <p><b>CO5:</b> Explain concepts of ethics and law with financial reality in implementing business decision</p>
<p><b>Paper Database Management System</b></p>	<ul style="list-style-type: none"> <li>• Familiarization with Database Management System.</li> <li>• Comprehensive knowledge of database models.</li> <li>• Ability to code database transactions using SQL.</li> <li>• Skill to write PL/SQL programs.</li> </ul>
<p><b>Data Structure and Algorithm</b></p>	<ul style="list-style-type: none"> <li>• Skill to analyze algorithms and to determine algorithm correctness and their time efficiency.</li> <li>• Knowledge of advanced abstract data type (ADT) and data structures and their implementations.</li> <li>• Ability to implement algorithms to perform various operations on data structures</li> </ul>
<p><b>Paper I Cost Accountancy</b></p>	<p>Upon completion of the course, the student will be able to –</p> <p><b>CO1:</b> Describe various source of finance</p> <p><b>CO2:</b> Give factors affecting the capital and capital structure Formation</p> <p><b>CO3:</b> Define concept of cost of capital</p> <p><b>CO4:</b> Identify various dividend policies</p> <p><b>CO5:</b> Calculate working capital requirement and operating cycle</p>

<p><b>Paper II</b> <b>Java Programming</b></p>	<p>Upon completion of the course, the students will be able to -</p> <p><b>CO1:</b> Describe the language Java: Phases of developing a running computer program in C++.</p> <p><b>CO2:</b> Describe Data concept in Java: Constants, Variables, Expressions, Operators, and operator precedence in Java</p> <p><b>CO3:</b> Describe the Statements- Declarations, Input-Output Statements, Compound statements, Selection Statements, Conditions, Logical operators, Precedence's, Repetitive statements, while construct, Do-while Construct, For construct</p> <p><b>CO4:</b> Discuss implementation of Data types, size and values; Char, Unsigned and Signed data types. Number systems and representations; Constants and Overflow</p> <p><b>CO5:</b> Describe Arrays. Strings. Multidimensional arrays and matrices</p>
<p><b>Paper III</b> <b>Management Information System &amp; DSS</b></p>	<p>Upon completion of the course, the students will be able to -</p> <p><b>CO1:</b> Describe application and uses of MSS</p> <p><b>CO2:</b> Explain role of DSS in business</p> <p><b>CO3:</b> Describe use of DSS in professional area</p> <p><b>CO4:</b> Describe application of artificial intelligence</p>
<p><b>Paper IV</b> <b>Business Law-II</b></p>	<p>Upon completion of the course, the student will be able to -</p> <p><b>CO1:</b> Determine legal constraints faced by business professional as well as finding legal options available to the business professional in responding to and resolving legal issues</p> <p><b>CO2:</b> Identify laws that affect contemporary businesses, agency, employment, securities regulation, and the organization of a business</p> <p><b>CO3:</b> Describe how governmental regulations affect contemporary business practices</p> <p><b>CO4:</b> Evaluate ethical problems integrally connected to the legal issues</p> <p><b>CO5:</b> Explain concepts of ethics and law with financial reality in implementing business decision</p>

<p><b>Paper V</b> <b>Entrepreneurship Development</b></p>	<p>Upon completion of the course, the students will able to-</p> <p><b>CO1:</b> Identify Entrepreneurship Development in twenty first century</p> <p><b>CO2:</b> Describe role of Entrepreneurs in Economic Development</p> <p><b>CO3:</b> Describe trends in Entrepreneurship</p> <p><b>CO4:</b> Classify life cycle of Project</p>
<p><b>Paper VI</b> <b>PC Maintenance</b></p>	<p><b>CO1:</b> Students will be able to identify the essential components of a computer;</p> <p><b>CO2:</b> Students will be able to describe the function of the essential components of a computer;</p> <p><b>CO3:</b> Students will be able to recommend hardware;</p> <p><b>CO4:</b> Students will be able to develop a computer system proposal/presentation for a client</p>
<p><b>Paper I</b> <b>Advanced Networking</b></p>	<p>Upon completion of the course, the students will be able to-</p> <p><b>CO1:</b> Describe state-of-the-art in network protocols, architectures and applications</p> <p><b>CO2:</b> Describe existing network protocols and networks</p> <p><b>CO3:</b> Define new protocols in networking</p> <p><b>CO4:</b> Evaluate research in networking</p> <p><b>CO5:</b> Investigate novel ideas in the area of networking via term-long research projects</p>
<p><b>Paper II</b> <b>Management Accounting</b></p>	<p>Upon completion of the course, the students will able to-</p> <p><b>CO1:</b> Calculate various methods of ratio analysis</p> <p><b>CO2:</b> Differentiate fund flow and Cash flow Statement</p> <p><b>CO3:</b> Prepare cash budget, flexible budget and different activities budget</p> <p><b>CO4:</b> Explain difference between Management Accounting and Financial Accounting</p>
<p><b>Paper III</b> <b>Organizational Behavior</b></p>	<p>Upon completion of the course, the students will able to-</p> <p><b>CO 1:</b> Describe the Concept of Organizational Behavior</p> <p><b>CO 2:</b> Demonstrate the role that individuals play collectively to perform inorganizations</p> <p><b>CO 3:</b> Develop awareness about Personality andAttitude</p> <p><b>CO 4:</b> Describe the Importance of Motivation in work setting</p>

	<p><b>CO 5:</b> Analyze the concept of Stress Management at work</p>
<p><b>Paper IV</b> <b>RDBMS</b></p>	<p>Upon completion of the course, the students will be able to-</p> <p><b>CO1:</b> Explain elementary and advanced features of DBMS and RDBMS</p> <p><b>CO2:</b> Describe conceptual frameworks and definitions of specific terms that are integral to the Relational Database Management Systems</p> <p><b>CO3:</b> Define basic concepts of Concurrency Control and database security</p> <p><b>CO4:</b> Prepare various database tables and joins them using SQL commands</p>
<p><b>Paper V</b> <b>Business Law III</b></p>	<p>Upon completion of the course, the students will be able to-</p> <p><b>CO 1:</b> Describe how the companies are formed; what are the various kinds of Companies; to understand the term "prospectus" and purpose of issuing prospectus</p> <p><b>CO 2:</b> Describe the various provisions related to Directors, Managers, Meeting under Companies Act 1956</p> <p><b>CO 3:</b> Interpret how Directors and Managers are appointed and how they can be removed</p>
<p><b>Elements of</b> <b>Commercial portals</b></p>	<p>Upon completion of the course, the students will be able to-</p> <p><b>CO1:</b> Describe history of the internet and related internet concepts that are vital in understanding web development</p> <p><b>CO2:</b> Discuss insights of internet programming and implement complete application over the web</p> <p><b>CO3:</b> Describe important HTML tags for designing static pages and separate design from content using Cascading Style sheet.</p> <p><b>CO4:</b> Define the concept of JavaScript's</p>
<p><b>System Programming</b></p>	<p>Upon completion of the course, the students will be able to -</p> <p><b>CO1:</b> Describe System Programming</p> <p><b>CO2:</b> Explain System programming in the Development</p>

cycle – Linkers / Loaders

**CO3:** Describe translations, libraries, Linkers as a part of language implementation

**CO4:** Explain Revocable / Non reloadable / self-relocating programmers; design of a linker, object files, searchable libraries. Shared libraries– dynamics linking and overlays

## M.Sc. (Computer Science)

<p><b>Program Outcome</b></p>	<ul style="list-style-type: none"> <li>• Provides technology-oriented students with the knowledge and ability to develop creative solutions.</li> <li>• Develop skills to learn new technology.</li> <li>• Apply computer science theory and software development concepts to construct computing-based solutions.</li> <li>• Design and develop computer programs/computer-based systems in the areas related to algorithms, networking, web design, cloud computing, Artificial Intelligence, Mobile applications.</li> </ul>
<p><b>Programme Specific Outcomes</b></p>	<p>At the time of post-graduation, the students will be able to:</p> <p><b>PSO1:</b> Understand Fundamentals of programming</p> <p><b>PSO2:</b> Gain knowledge of Digital Signal Processing</p> <p><b>PSO3:</b> Proficient in advanced operating systems</p> <p><b>PSO5:</b> Analyze algorithms using various methods</p> <p><b>PSO6:</b> Understand advanced software engineering</p>
<p><b>M.Sc. (Computer Science) First Year</b></p>	
<p><b>Course Details</b></p>	<p><b>Course Outcomes</b></p> <p>Upon completion of the course, the students will be able to-</p>
<p><b>Paper I Advanced Java</b></p>	<p><b>CO1:</b> Explain the concept of programming fundamentals</p> <p><b>CO2:</b> Explain problem analysis: Explain, formulate, review research literature, and analyze computer Programming problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and Programming sciences</p> <p><b>CO3:</b> Describe ethical principles and commit Explain professional ethics and responsibilities and norms of the Programming practice</p> <p><b>CO4:</b> Explain Logic and Algorithm principle, Describe model, design and implement software projects meet to' business objectives</p> <p><b>CO5:</b> Describe Modern Tool usage: Create, select, and apply appropriate techniques, resources, and modern Programming</p>

	<p>and IT tools including prediction and modeling tools complex Programming activities with an understanding of the limitations</p>
<p><b>Paper II</b> <b>Neural Network</b></p>	<p><b>CO1:</b> Explain how the neural networks provided significantly better results than the regression model in terms of variation and prediction of extreme outcomes</p> <p><b>CO2:</b> Explain how neural network computation continues Explain gain popularity as an information processing Tool and has been applied Explain several problems in medical decision-making that traditionally have been attacked using statistical methods</p> <p><b>CO3:</b> Describe that how the neural networks are also self-training and amenable and explain incremental training after being put in to use. On the negative side, neural networks operate as “black boxes” in that they fail Explain elucidate any “deep” knowledge about the process being modeled</p> <p><b>CO4:</b> Explain mathematical preliminaries</p> <p><b>CO5:</b> Describe the artificial neurons abstraction field of Computer Science</p>
<p><b>Paper III</b> <b>Digital Signal Processing</b></p>	<p><b>CO1:</b> Explain the signals and systems (SOA)</p> <p><b>CO2:</b> Describe the principles of discrete-time signal analysis Explain perform various signal operations (SO A, E)</p> <p><b>CO3:</b> Describe the principles of z-transforms and explain finite difference equations. (SO A, E)</p> <p><b>CO4:</b> Describe the principles of Fourier transform analysis Explain the frequency characteristics of discrete-time signals and systems (SO A, E)</p> <p><b>CO5:</b> Explain the principles of signal analysis and explain filtering (SO A, C, E)</p>
<p><b>Paper IV</b> <b>Advanced Operating System</b></p>	<p><b>CO1:</b> Explain Linux kernel mode with user mode and differentiate Kernel structuring methods</p> <p><b>CO2:</b> Explain file system structure with device drivers and file operations using system calls</p> <p><b>CO3:</b> Process management and Thread</p>

	<p>anagement strategies</p> <p><b>CO4:</b> Construct shell scripts with different programming syntax</p> <p><b>CO5:</b> Prepare for various OS case studies</p>
<p><b>Paper I</b></p> <p><b>Data Structure &amp; Analysis of Algorithms</b></p>	<p><b>CO1:</b> Explain the asymptotic performance of algorithms</p> <p><b>CO2:</b> Describe rigorous correctness proofs for algorithms</p> <p><b>CO3:</b> Explain a familiarity with major algorithms and data structures</p> <p><b>CO4:</b> Describe important algorithmic design paradigms and methods of analysis</p> <p><b>CO5:</b> Describe efficient algorithms in common engineering design situations</p>
<p><b>Paper II</b></p> <p><b>Advance Neural Network &amp; Fuzzy Systems</b></p>	<p><b>CO1:</b> Describe soft computing concepts and techniques and foster their abilities indesigning and implementing soft computing based solutions for real-world and engineering problems.</p> <p><b>CO2:</b> Explain fuzzy systems, fuzzy logic and its applications</p> <p>Explain the students about Artificial Neural Networks and various categories of ANN</p> <p><b>CO3:</b> Describe fuzzy systems, fuzzy logic and its applications, Artificial NeuralNetworks and various categories of AFNN</p>
<p><b>Paper III</b></p> <p><b>Image Processing</b></p>	<p><b>CO1:</b> Describe Conceptual understanding of the mathematics, numerical analysis, statistics, and computer and information sciences which underpin theengineering discipline</p> <p><b>CO2:</b> Explain In-depth understanding of specialist bodies of knowledgewithin the engineering discipline</p> <p><b>CO3:</b> Describe the knowledge development and research directions within theengineering discipline</p> <p><b>CO4:</b> Describe Application of established engineering methods Explain complexengineering problem solving</p> <p><b>CO5:</b> Explain fluent application of engineering techniques, Tools and resources.</p> <p><b>CO6:</b> Describe Application of systematic engineering synthesis and design processes</p>

<p><b>Paper IV</b> <b>Parallel Computing</b></p>	<p><b>CO1:</b> Describe foundation of mathematics, computer science and problem solving methodology for effective implementation in the area of software development</p> <p><b>CO2:</b> Explain knowledge about various sub-domains related Explain the field of computer science and applications</p> <p><b>CO3:</b> Describe about principles of system analysis, design, development and project management</p> <p><b>CO4:</b> Explain effective communication skills combined with professional &amp; ethical attitude</p>
<p><b>M.Sc. (computer Science ) Second Year</b></p>	
<p><b>Paper I</b> <b>Java Network Programming</b></p>	<p><b>CO1:</b> Describe the concept of programming with mathematics</p> <p><b>CO2:</b> Describe problem analysis: Explain, formulate, review research literature, and analyze computer Programming problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and Programming sciences</p> <p><b>CO3:</b> Describe ethical principles and commit Explain professional ethics and responsibilities and norms of the Programming practice</p> <p><b>CO4:</b> Describe Logic and Algorithm principles, explain model, design and implement software projects Explain meet customers' business objectives</p> <p><b>CO5:</b> Describe Modern Tool usage: Create, select, and apply appropriate techniques, resources, and modern Programming and IT Tools including prediction and modeling Explain complex Programming activities with an understanding of the limitations</p>
<p><b>Paper II</b> <b>Advanced Software Engineering &amp; Technology</b></p>	<p><b>CO1:</b> Describe ethics, professionalism, and cultural diversity in the work environment.</p> <p><b>CO2:</b> Explain basic software quality assurance practices Explain ensure that software designs, development, and maintenance meet or exceed applicable standards</p>

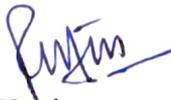
	<p><b>CO3:</b> Describe effective written and oral communication skills. Graduates can prepare and publish the necessary documents required throughout the project lifecycle</p> <p><b>CO4:</b> Describe effectively contribute Explain project discussions, presentations, and reviews.</p> <p><b>CO5:</b> Explain the need for lifelong learning and can readily adapt and explain new software engineering environments</p>
<p><b>Paper III</b> <b>Computer Vision</b></p>	<p><b>CO1:</b> Describe theory of computer vision</p> <p><b>CO2:</b> Describe the basics of pattern recognition concepts with applications Explain computer vision</p> <p><b>CO3:</b> Describe necessary theory and skills for automatic analysis of digital images, and thereby to construct representations of physical objects and scenes, and Explain make useful decisions based on them</p> <p><b>CO4:</b> Explain the ability to evaluate the computing systems from view point of quality, security, privacy, cost effectiveness, utility and ethics</p> <p><b>CO5:</b> Describe inculcate lifelong learning by introducing principles of group dynamics, public policies, environmental and societal context</p> <p><b>CO6:</b> Describe Recite algorithms that employ randomization. Explain the difference between a randomized algorithm and an algorithm with probabilistic inputs</p>
<p><b>Paper IV</b> <b>Data Warehousing</b></p>	<p><b>CO1:</b> Explain Data kernel mode with user mode and differentiate Kernel structuring methods</p> <p><b>CO2:</b> Explain internal file data system structure with device drivers and file operations using system calls</p> <p><b>CO3:</b> Explain Process of data warehousing and Thread management strategies</p> <p><b>CO4:</b> Describe Construct shell warehousing with different programming syntax</p> <p><b>CO5:</b> Explain the various Data Ware Housing case studies</p>

data in transit across data networks

**CO5:** Explain design security applications in the field of Information technology Graduates use effective communication skills and technical skills and explain assure production of quality software, on time and within budget.

**CO6:** Describe knowledge of science, mathematics, and engineering and explain take on more expansive tasks that require an increased level of self-reliance, technical expertise, and leadership

**CO7:** Explain the computing systems from view point of quality, security, privacy, cost effectiveness, utility and ethics



Head

Dept. of Computer Science

**HEAD**

**Department of Computer Science**

**Yogeshwari Mahavidyalaya,**

**AMBAJOGAI - 431 517**



**Coordinator**

**Internal Quality Assurance Cell**

**Yogeshwari Mahavidyalaya**

**Ambajogai**