Sri G.V.G. Visalakshi College For Women, Udumalpet- 642128
Autonomous and Affiliated to Bharathiar University, Coimbatore
Accredited at A$^+$ grade by NAAC (Fourth cycle)
An ISO 9001:2015 Certified Institution
www.gvgvc.ac.in; principal@gvgvc..ac.in Ph.04252-223019, Fax; 04252-233111

B.Sc. Computer Science
(For the students admitted from the academic year 2021-2022 onwards)

Programme Outcomes

PO1: To provide necessary mathematical knowledge for analyzing and solving real time problems with their work domain.

PO2: To provide state-of-art knowledge in programming, networking, database systems, algorithm development, software engineering, multimedia, information security, mobile computing, cloud computing, IoT, open source technology for successfully pursuinghigherstudies/freelance/industry/research.

PO3: To develop the ability to update and innovate the recent technology.

PO4: To expose and develop technical, analytical and creative skills.

PO5: To promote and uphold Self-Discipline, Leadership Qualities, Secular Outlook, National Integration and Civic Responsibility.

PO6: Augment the Acquisition of Micro and Macro Skills of Tamil, Malayalam, Hindi and French Language Usages.

PO7: Enhance Communicative Linguistic Competency and Employability Quotient.

PO8: Exhibit consistent academic excellence and integrated personality towards lifelong Learning.

Programme Specific Outcomes

A graduate with a B.Sc. in Computer Science will have the ability to,

PSO1: Apply suitable techniques using latest technology tools to solve problems in core domain with
an understanding of the limitations and result interpretation.

PSO2: Develop software projects to solve the computational tasks and to model the real world
problems by suitable algorithms.

PSO3: Inculcate social and ethical responsibility in the profession as an empowered woman.

Course Outcomes

Semester	Course Title	Course Code	Course Outcome
I	Part III - Core I - Programming with C++	121S01	CO1: Explain the model of programming and Fundamental features like Tokens, Expressions and Control Structures. CO2: Describe the Decision Making, Branching, Looping, Classes, Objects, Methods, constructors and destructors in C++ program. CO3: Explain the Operator Overloading, Overloading Binary Operators, Inheritance: Extending Classes and Virtual base classes using C++ program. CO4: Describe the Pointers, Pointers to Objects, this Pointer, Virtual Functions and Function Templates with Multiple Parameters. CO5: Summarize the Concept of Classes for File Stream Operations, Opening and Closing a File, Detecting End-of-File, Error Handling during File operations, Exception Handling Mechanism, Creating (String) Objects and Manipulating String Objects.
	Part III - Core Practical I - Programming with C++ Lab	121SP1	CO1: Write C++ program to sort the unsorted register number by implementing mathematical logic using various OOP concepts. CO2: Create applications like accessing student details which contains the different member variables and different member functions using OOP concepts. CO3: Design C++ program to execute the concepts of overloading, multiple inheritance and Friend concepts.
II	Part III - Core II - Data Structures using Python	221S02	CO1: Define the data structures, algorithms, objects and expressions. CO2: Explain the concepts such as Stack, Queue, Lists, Trees and Graphs in problem solving. CO3: Use the different types of Trees and Graphs. CO4: Illustrate the concept of searching, sorting and selection algorithms. CO5: Understanding the classification algorithms, tools and applications.
	Part III - Core Practical II - Data Structures Lab	221SP2	CO1: Write, Test and Debug the Python Programs CO2: Implement the structure and model of the python programming language. CO3: Understand the features of Sorting, Queue, Linked List, Graphs and String.

B.Sc. Computer Science
(For the students admitted from the academic year 2017-2018 onwards)

Programme Outcomes

PO1: A sound knowledge on the fundamentals of computer science to enable them to pursue higher studies at any on the leading institutions of the world

PO2: Ability to analyze real world/ scientific problems and convert them to computable algorithms and various approaches to solve such algorithms with available technological alternatives like client server, cloud, mobile, stand-alone etc.,

PO3: Ability to communicate effectively with stake holders

PO4: Willingness to remain bounded by ethical and moral constraints while making the choices

PO5: Ability to ensure safety of systems/ transactions from malicious attacks from outside as well as from within the organization

Programme Specific Outcomes

PSO 1: Provide the ability to employ modern computing environments and its platforms in creating innovative career paths and higher studies.

PSO 2: Ensure the ability to use knowledge in various domains to identify research gaps and hence to provide solution to new ideas and innovations

PSO 3: Facilitate to apply the knowledge of ethical and management principles required to work in a team as well as to lead a team.

PSO 4: Develop an understanding of the structure and development methodologies of software systems to solve the computational tasks and to model the real world problems by suitable algorithms.

Course Outcomes

Semester	Course Title	Course Code	Course Outcome
III	Part III - Core V Operating System	321S05	● Report the general architecture of computers. ● Demonstrate various process management concepts including scheduling, synchronization and deadlocks. ● Explain basic concepts related to prevention, avoidance and detection of deadlocks. ● Specify the concepts of memory management including virtual memory. ● State the knowledge with protection and security mechanisms. ● Draw and analyze the memory management and its allocation policies.
	Part III - Core VI Visual Programming	317S06	● Recognize knowledge about the fundamental skills in utilizing the tools of a visual environment in terms of the set of available command menus and toolbars and Explore Visual Basics Integrated Development Environment (IDE). ● Interpret the concept of one and two dimensional arrays for sorting, calculating and displaying of data. ● Implement syntax rules in Visual Basic programs ● Create Visual Basic programs using object-oriented programming techniques including classes, objects, constructors, inheritance and structures. ● Develop Windows applications using forms, controls and events ● Relate with Error handling and Database Connectivity.
	Part III - Core VII Relational Database Management System	317S07	● Recognize knowledge in fundamentals of Relational Data Base Management System. ● Operate and query a database using SQL DML/DDL commands. ● Record knowledge about tables and functions.

			• Demonstrate how query are being processed and executed and analyze database design methodology. • Implement PL/SQL including stored procedures, stored functions, cursors and packages. • Design different views of tables for different users and to apply embedded and nested queries.
	Part III - Core Practical III Visual Programming and RDBMS	317SP3	• Apply visual programming to software development by designing projects with menus and submenus. • Create Database connectivity with front-end. • Develop web applications and Handle online Transactions. • Design, Design ,implement, maintain and prepare reports using PL/SQL. • Recognize data Base design methodology and DB connectivity. • Demonstrate the use of structured query language and its syntax, transactions, database recovery and techniques for query optimization.
	Part IV - Non Major Elective - Desktop Publishing	317NDT	• Draw competence in creating artwork for digital medium. • Examine competence in the basic creative and technical aspects of image editing and manipulation. • Develop proficiency in using graphic arts and desktop publishing software to create a variety of business publications such as flyers, brochures, newsletters, etc. • Design professionally looking material using industry leading software • Review proficiency in a range of computer graphics technology, including bitmap, image editing and effects, vector graphics, page layout and web design. • Design and Implement formatted text and graphics.
III	Part IV - Skill Enhancement Course I: Web	317SS1	• Create and manipulate web media objects and medium through communication.

	Technology - Web Development		- Develop the webpage using HTML and CSS. - State a logical sequence of the web development skills. - Associate social media strategies for business use and build pages in a way that promote brand. - Develop ability to adapt the changes in Web development and design skills based on the high end design trends. - Design a Web Page using various Style Sheets.
IV	Part III - Core VIII Java Programming	417S08	- Demonstrate the model of object oriented programming and Fundamental features like object classes and interfaces, exceptions and libraries of object collections - Gain basic knowledge about input/output methods and its usage. - Implement, compile, test and run Java programs comprising more than one class, to address a particular software problem. - Discuss simple data structures like arrays and understand the concept of package and interface. - Evaluate user requirements for software functionality required to decide whether the Java programming language can meet user requirements. - Examine the concept of Files and Graphics in Java.
	Part III - Core IX Computer Graphics with Multimedia	417S09	- Provide comprehensive introduction about computer graphics system, design algorithms and two dimensional transformations. - Gain the knowledge on familiar techniques of clipping, three dimensional graphics and three dimensional transformations. - Involve in design, development and testing of modelling, rendering, shading and animation - Extrapolate various latest interactive multimedia devices, the basic concepts about images and image formats.

			● Gain the knowledge about data compression techniques, image compression techniques like JPEG, video compression techniques like MPEG, and the basic concepts about animation. ● Implement various methods and models for surface detection and Colors.
	Part III - Core X Software Engineering	417S10	● Design and conduct experiments, as well as to analyze and interpret data. ● Design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability. ● Work in one or more significant application domains. ● Gain knowledge on various testing strategies ● Apply the testing techniques and skills on various software testing projects. ● The ability to analyze, design, verify, validate, implement, apply, and maintain software systems.
	Part III - Core Practical IV Java Programming and Computer Graphics	417SP4	● Gain Knowledge of the structure and model of the Java programming language. ● Create packages and interfaces in a Java program. ● Implement the various graphics drawing algorithms, 2D-3D transformations and clipping techniques. ● Compile computational development of graphics with mathematics and to provide in-depth knowledge of display systems, image synthesis, shape modeling of 3D images. ● Provide the knowledge about the basic concepts related to Multimedia including data standards, algorithms and application software. ● Construct a Java class based on a UML class diagram and Perform a test plan to validate a Java program.

V	Part IV - Skill Enhancement Course II Web Technology - Web Graphics	417SS2	• Implement front-end web coding languages to add dynamic content, animation and effects to websites. • Adapt the changing Web development and design skills. • Employ multimedia and animation strategies for business use and build pages in a way that promote brand. • Develop proficiency in various techniques and methods in creative media. • Interpret the terminology used in the graphic design industry. • Design brochure, certificates, advertisement etc.
	Advanced Learners Course I – Client Server Technologies	417ALS	• Describe the hardware and software implementation in client/server computing. • Differentiate between client and server hardware technology. • Implement the uses of client/server productivity software. • Gain knowledge about the techniques for managing "redundancy" and distributed data in the client/server environments. • Get familiar with Distributed computing environment, RMI and DCOM architecture. • Gain Exposure on most common used servers.
	Part III - Core XI Computer Networks	517S11	• Express the terminology and basic concepts of the network protocols. • Analyze the Transport Protocol and its performance with QoS Issues. • Assess with contemporary issues in networking technologies and the concepts of protocols and network interfaces. • Identify the knowledge of protocols and the architecture for transmitting data over the network with routing mechanisms. • Summarize network industry standards such as Routing Protocols, Address Resolution and Reverse Address Resolution Protocols, IP Addresses and Subnetting.

			• Examine the different types of network devices and their functions within a network.
	Part III - Core XII PHP with MySQL	517S12	• Acquire Knowledge in basics of PHP and MySQL. • Summarize the Control Structures, Functions and String Operations in PHP. • Use Cookies and Sessions in website development. • Demonstrate the features of Exception handling, Java Scripting and Graphics • Design and implement simple web page in PHP, and MySQL Connectivity. • Test, debug, and deploy web pages containing PHP and MySQL.
	Part III - Core XIII Data Mining	517S13	• Demonstrate an understanding of the importance of data mining and the principles of business intelligence. • Determine the different steps followed in pre-processing and Data Mining. • Analyze large amount of data, extract patterns to solve problems and make predictions. • Develop the ability to design various algorithms based on data mining tools. • Apply the techniques of clustering, classification, association finding, feature selection and visualisation on real world data. • Draw the knowledge in Web Mining.
	Part III - Core Practical V PHP with MySQL	517SP5	• Classify the PHP scripts to handle HTML forms. • Demonstrate regular expressions including String, modifiers and operators. • State the knowledge about PHP programs that use various PHP library functions, manipulating files and directories. • Analyze and solve various database tasks using the PHP and MySQL. • Design, implement, maintain and prepare reports using MySQL. • Analyze and solve common Web application tasks by writing PHP programs.

	Part III - Elective I Information Storage and Management	517SE1/517GE1/517KE1	• Describe the functions to build data center networking for switch network. • Implement different types of RAID and their benefits. • Discuss about the importance of fiber channel protocols and how to communicate with each other. • Examine the benefits of different network storage options for different application environments. • Analyze different role in providing disaster recovery and business continuity capabilities. • Interpret the storage infrastructure and management activities.
V	Part III - Elective I Compiler Design	517SE1/517GE1/517KE1	• Acquire the concept areas of language translation and compiler design • Gain the knowledge of lexical analysis. • Extend the knowledge of parser by parsing LR parser • Define the syntax, translator and use symbol table • Learn the code optimization techniques to improve the performance of a program in terms of speed & space. • Acquire the knowledge of compiler & its features
	Part IV - Skill Enhancement Course III: Web Technology - Web Animation	517SS3	• Explore and develop new innovative ideas in visualization of texts and content. • Examine the learners and make them stay tuned and focused on the web based learning. • Apply the forms of videos on the internet using animation tool. • Familiar with several animation tools learned throughout the course to produce an interactive animated website. • Recognize the utilization of the timeline and motion tween effects to produce animation in effective manner. • Incorporate technology effectively in the development of animation projects.

	Part III - Core XIV Cloud Computing	617S14	- Articulate main concepts, key technologies, strength and limitations of clouds computing. - Specify the knowledge of primary technology components and threats common to cloud environment. - Compile the building blocks of cloud environment along with the security measures. - Analyze various fundamental and advanced cloud architectures. - Apply cloud delivery models, cost management strategies and service level agreement for cloud services. - Broadly apply the impact of engineering on legal and societal issues involved in addressing the security issues of cloud computing.
VI	Part III - Core XV - Linux and Shell Programming	617S15	- Interpret the basic concepts of Linux. - Draw a detailed knowledge on Shell command and File directories. - Analyze the Shell type and Linux environment variables with GUI programming. - Examine the security policies behind the Linux. - Enumerate the script file. - Identify and process build in Commands.
	Part III - Core Practical VI Linux and Shell Programming	617SP6	- State the concept of Shell and the different usage of the commands in shell. - Apply the Linux command line interface for file processing and system maintenance operations. - Identify the essentials of System configuration and CPU information - Recognize with the concepts of filter parameters, pipes and redirection in shell scripts. - Design and apply the commands for working with numbers and tables. - Apply shell scripts to perform repetitive tasks using loops.

	Part III - Elective II Basics of IoT	617SE2/617GE2/617KE2	● Comprehend the core concepts, background technologies and sub-domains of IoT. ● Explain IoT devices using sensors, micro controllers and communications interface. ● Discuss various application layer protocol and web services architecture for combining various components of IoT ecosystems. ● Interpret API and commercial architectures, industrial platforms and services. ● Utilize IoT technologies, design and tools. ● Built knowledge in industrial automation and real world design constraints.
	Part III - Elective II Mobile Computing	617SE4/617GE4/617KE4	● Express the concepts and features of mobile computing technologies and its applications with cellular networks design. ● Recognize the capabilities of next-generation networks and the role of wireless technologies in network design and operation. ● Evaluate wireless network topologies, wireless connectivity and characteristics, with the impact of wireless networks on security and Internet communications. ● Explain the structure and components for Mobile IP and Mobility Management ● Create an awareness of professional and ethical issues, in particular those relating to security and privacy of user data and user behavior. ● Predict the important issues of developing mobile computing systems and applications.
VI	Part III - Project & Viva Voce	617SPV	● Draw practical knowledge within the chosen area of technology for project development. ● Discuss, analyze, formulate and handle programming projects with a comprehensive and systematic approach. ● Evaluate as an individual or in a team in development of technical projects.

			- Develop effective communication skills for presentation of project related activities. - Assess solution within the context of legal framework addressing the societal and environmental concerns and upholding ethical issues. - Apply design and development principles in the construction of software systems of varying complexity.
	Part IV - Skill Enhancement Course IV: Web Technology - Java Script Programming	617SS4	- Demonstrate the working of the web and web applications using JavaScript language. - Draw knowledge about the loops and decision making statements to solve the problem. - Characterize with the usage of functions and operations on arrays to solve the given problem. - Analyze a webpage and identify its elements and attributes. - Comprehend the knowledge about Dynamic web pages using JavaScript. - Apply a structured approach to identifying needs, interests, and functionality of a website.
	Advanced Learners Course II: Web Services	617ALS	- Apply the use functions and objects of Java Script to create animation on webpage - Associate the basic understanding of XML programming and publishing models. - Characterize the schema for the given XML documents in both DTD and XML Schema languages. - Parse XML documents by using DOM, SAX. - Comprehend the knowledge on various service oriented analysis techniques and the technology underlying the service design. - Design well-formed XML documents.