# DEPARTMENT OF COMPUTER SCIENCE U.G.

# DEPARTMENT OF COMPUTER SCIENCE

**Programme Code: S** **Programme Name: B.Sc. Computer Science**

## Program Outcomes

1. To acquire the sound knowledge in theory and practical in the discipline of computer science. (Global)
2. Ability to use assortment of programming languages and tools to develop computer programs that are effective to solve the problems. (Global)
3. Understand the basic concept of computer architectures, including computer hardware and networking. (National)
4. Design and analyze the particular specifications of algorithms, procedures, and interaction behavior. (Regional)

5.Students undertook projects which offer opportunities for interaction with academia and industry. Students will be able to work in teams to build software systems and apply the computing knowledge to the benefit of the society. (Global)

6. An understanding of professional, ethical, legal, security, and social issues and responsibilities for the computing profession (Regional)

## Program Specific Outcomes

On completion of B.Sc Computer Science Programme, the students would be able to

1. Know the programming concepts and methodology & the functionality of hardware and software aspects of computer systems. (Global)
2. Provide effective and efficient real time solutions using acquired knowledge in various domains such as C, C++, JAVA, Web designing, RDBMS, Linux, DOT NET. (Global)
3. Apply problem-solving skills and the knowledge of computer science to solve real world problems. (Global)

4. Use software development tools, software systems, and modern computing platforms
5. Develop technical project reports for the requirements in society. (National)

6. Apply the knowledge gained through project experience in jobs. (Global)

# Course Outcomes

**Subject Code: 21S11**
**Course Name: C PROGRAMMING (**National)

Upon completion of the course, the students will be able to

1. Demonstrate an understanding of computer programming language concepts. To be able to develop C programs on MS-DOS platform.
2. Design and develop Computer programs, analyzes, and interprets the concept of pointers, declarations, initialization, operations on pointers and their usage.
3. Define data types and use them in simple data processing applications and to use the concept of array of structures.
4. Define union and enumeration user defined data types.
5. Develop confidence through self education and ability for life-long learning needed for Computer language.

**Subject Code: 21S1P**
**Course Name: C PROGRAMMING LAB** (National)

Upon completion of the course, the students will be able to

1. Understand the basic concept of C Programming, and its different modules.
2. Acquire knowledge about the basic concept of writing a program.
3. Demonstrate the role of Functions involving the idea of modularity.
4. Evaluate the concept of Array and pointers dealing with memory management.
5. Use the structures and unions through which derived data types can be formed.

**Sub code: 21SES1P**
**Course Name: OFFICE AUTOMATION LAB** (Regional)

Upon completion of the course, the students will be able to

1. Create Microsoft Office programs on professional and academic documents.
2. Perform documentation on accounting operations and presentation skills
3. Prepare documents, spreadsheets, make small presentations and would be acquainted with internet.
4. Acquire strong foundation in software and hardware to record, code, sort, calculate, summarize, store and communicate information.
5. Understand the dynamics of an office environment.

**Sub code: 21NMS1**
**Course Name: COMPUTER FUNDAMENTALS** (Regional)

Upon completion of the course, the students will be able to

1. Describe the usage of computers and why computers are essential components in business and society.
2. Utilize the Internet Web resources and evaluate on-line e-business system.
3. Identify categories of programs, system software and applications. Organize and work with files and folders.
4. Enhance the application software and their use to perform any software engineering activity.
5. Grasp the concept of input and output devices of Computers and how it works and recognize the basic terminology used in computer programming.

**Sub code: 21S21**
**Course Name: PROGRAMMING IN C++** (Global)

Upon completion of the course, the students will be able to

1. Create programming principles to design and implement it in the C++ programs.
2. Debug and test programs using the fundamental elements of C++.
3. Understand the primitive data types, values, operators and expressions in C++.
4. Comprehend design issues involved with variable allocation and binding, control flow, types, subroutines, parameter passing.
5. Create their own Applications/Projects using C++ and can be deputed as a C++ programmer in IT companies.

**Sub code : 21S2P**
**Course Name: C++ PROGRAMMING LAB** (Global)

Upon completion of the course, the students will be able to

1. Identify importance of object oriented programming and difference between structured oriented and object oriented programming features.
2. Make use of objects and classes for developing programs.
3. Analyze the various object oriented concepts to solve different problems.
4. Design and test programs to solve mathematical and scientific problems using object oriented concepts.
5. C++ is used frequently in areas such as game development, hardware manufacturing, embedded systems, and for military applications.

**Sub code:** 21SES2P
**Course Name:** MULTIMEDIA LAB (National)

Upon completion of the course, the students will be able to

1. Handle different file formats, changing the resolution, RGB color to gray-scale image and multicolor images.
2. Design brochure and multilayer of images.
3. Perform transformation and filtering on images.
4. Create some basic operations such as painting, strokes and grouping objects.
5. Animate using shapes, twining and actions.

**Sub code:** 21NMS2
**Course Name:** INTERNET APPLICATIONS (Global)

Upon completion of the course, the students will be able to

1. Implement interactive web page(s) using HTML, CSS and JavaScript.
2. Design a responsive web site using HTML5 and CSS3.
3. Demonstrate Rich Internet Application.
4. Build Dynamic web site using server side PHP Programming and Database connectivity.
5. Describe and differentiate different Web Extensions and Web Services.

**Sub code:** 17S31
**Course Name:** DIGITAL PRINCIPLES AND COMPUTER ORGANIZATION (National)

Upon completion of the course, the students will be able to

1. Understand the concepts of Central Processing units, I/O, and memory.
2. Demonstrate the binary number theory, Boolean algebra and binary codes.
3. Define and design combinational systems using standard gates and minimization methods.
4. Describe and design the combinational systems of multiplexers, Demultiplexer, encoder and decoder.
5. Analyze and design the Basic Computer organization.

**Sub code: 17S32**
**Course Name: JAVA PROGRAMMING** (Global)

Upon completion of the course, the students will be able to

1. Make out the use of oops concepts.
2. Solve real world problems using OOP techniques.
3. Define the use of abstraction.
4. Describe the use of Packages and Interface in java.
5. Acquire the knowledge of exception handling, multithreaded applications with synchronization.

**Sub Code: 17S3P**
**Course Name: JAVA PROGRAMMING LAB** (Global)

Upon completion of the course, the students will be able to

1. Use an integrated development environment to write, compile, run, and test simple object-oriented Java programs.
2. Read and make elementary modifications to Java programs that solve real-world problems. Validate input in a Java program.
3. Identify and fix defects and common security issues in code.
4. Use utility classes in the real time applications

**Sub code: 17SES3P**
**Course Name: MULTIMEDIA LAB** (Regional)

Upon completion of the course, the students will be able to

1. Handle different file formats, changing the resolution, RGB color to gray-scale image and multicolor images.
2. Design brochure and multilayer of images.
3. Perform transformation and filtering on images.
4. Create some basic operations such as painting, strokes and grouping objects.
5. Animate using shapes, twining and actions.

**Sub code: 17S41**
**Course Name: DOT NET** (Regional)

Upon completion of the course, the students will be able to

1. Understand .NET framework and can realize some of the major enhancements in the new version of VB.
2. Analyze the basic structure of VB Dot Net and features of IDE.
3. Differentiate the various controls in VB Dot NET and develop programs using controls.
4. Connect database by using ADO Dot NET and manipulate the database.
5. To serve as project leaders and team members in future.

**Sub code: 17S42**
**Course Name: DATA STRUCTURES AND COMPUTER ALGORITHM** (National)

Upon completion of the course, the students will be able to

1. Select the appropriate design techniques to solve real world problems.
2. Implement various sorting, searching, and hashing algorithms. Students will build a substantial, complex data structure.
3. Demonstrate the design and development principles in the construction of software systems of varying complexity.
4. Analyze randomized algorithms (expected running time, probability of error). Recite algorithms that employ randomization.
5. Compare between different data structures. Pick an appropriate data structure for a design situation.

**Sub code: 17S4P**
**Course Name: DATA STRUCTURES AND COMPUTER ALGORITHM LAB** (National)

Upon completion of the course, the students will be able to

1. Design and analyze the time and space efficiency of the data structure.
2. Intend the algorithms to solve the programming problems.
3. Use appropriate algorithmic strategy for better efficiency.
4. Solve problems using data structures such as linear lists, stacks, queues, hash tables, binary trees, heaps, binary search trees, and graphs and writing programs for these solutions
5. Implement / Design suitable data structures (abstract data types) as required in C++ programs.

**Sub code: 17SES4P**
**Course Name: DOT NET Lab** (Regional)

Upon completion of the course, the students will be able to

1. Creating website using ASP.Net Controls.
2. Performing Database operations for Windows Form and web applications.
3. Handle controls in Forms(message Box, Input Box), Windows MDI forms and Controls (Textbox, Creating Multi Line, Word Wrap textboxes).
4. Connect database by using ADO.NET and manipulate the database.
5. The concept of namespace includes the common, importing, referencing and creating own namespaces.

**Sub code: 17S51**

**Course Name: OPERATING SYSTEMS** (National)

Upon completion of the course, the students will be able to

1. Exhibit the design and management concepts along with issues and challenges of main memory, virtual memory and file system.
2. Understand the types of I/O management, disk scheduling, protection and security problems faced by operating systems and how to minimize these problems.
3. Apply design and development principles in the construction of software systems.
4. A high-level understanding of the structure of operating systems, applications, and the relationship between them.
5. Evaluate the requirement for process synchronization and coordination handled by operating system and analyze the memory management and its allocation policies.

**Sub code: 17S52**
**Course Name: SOFTWARE ENGINEERING** (Global)

Upon completion of the course, the students will be able to

1. Know the testing strategies and handle software product maintenance issues.
2. Apply different testing and debugging techniques and analyzing their effectiveness.
3. Analyze software risks and risk management strategies.
4. Extract and analyze software requirements specifications for different projects.
5. Define the concepts of software quality and reliability on the basis of International quality standards.

**Sub code: 17S53**
**Course Name: RDBMS** (Global)

Upon completion of the course, the students will be able to

1. Analyze Database design methodology.
2. Evaluate the difference between traditional file system and RDBMS.
3. Deal with online transactions and control Concurrency.
4. Apply DB system development life cycle to business problems
5. Understand the different types of Data Base failures and Recovery.

**Sub code: 17S5P**
**Course Name RDBMS LAB** (Global)

Upon completion of the course, the students will be able to

1. Gain knowledge about SQL Fundamentals.
2. Handle online Transactions.
3. Create Database connectivity with front-end.
4. Build Index ,Views, Procedures, Triggers and Cursers.
5. Perform all the Table join operations.

**Sub code: 17SE5A**
**Course Name: COMPUTER GRAPHICS** (Global)

Upon completion of the course, the students will be able to

1. Understand the use of object hierarchy in graphics applications.
2. Demonstrate computer graphics animation.
3. Create interactive graphics applications using graphics application programming interfaces.
4. Comprehend contemporary graphics hardware.
5. Have knowledge and understand the structure of an interactive computer graphics system, and the separation of system components.

**Sub code: 17SE5B**
**Course Name: CLOUD COMPUTING** (Global)

Upon completion of the course, the students will be able to

1. Apply the fundamental concepts in datacenters to understand the tradeoffs in power, efficiency and cost.
2. Identify resource management fundamentals, i.e. resource abstraction, sharing and sandboxing and outline their role in managing infrastructure in cloud computing.
3. Analyze various cloud programming models and apply them to solve problems on the cloud.
4. Articulate the main concepts, key technologies, strengths, and limitations of cloud computing and the possible applications for state-of-the-art cloud computing
5. Identify the architecture and infrastructure of cloud computing, including SaaS, PaaS, IaaS, public cloud, private cloud, hybrid cloud, etc.

**Sub code: 17SES5P**
**Course Name: PYTHON LAB** (Global)

Upon completion of the course, the students will be able to

1. Emphasis is placed on features unique to Python, such as tuples, array slices, and output formatting.
2. Use exception handling in Python applications for error handling and read/write files in Python.
3. Build and package Python modules for reusability and pass arguments in Python.
4. Know the concepts of lists, tuples, and dictionaries in Python programs and identify Python object type.
5. Write database applications and designing Graphical user Interfaces in Python.

**Sub code: 17S61**
**Course Name: DATA COMMUNICATIONS AND NETWORKING** (Global)

Upon completion of the course, the students will be able to

1. Understand and explain the concept of Data Communication and networks, layered architecture and their applications.
2. Analyse and Set up protocol designing issues for Communication networks.
3. Apply various network layer techniques for designing subnets and supernet and analyse packet flow on basis of routing protocols.
4. Estimate the congestion control mechanism to improve quality of service of networking application
5. Be familiar with the architecture of a number of different networks.

**Sub code: 17S62**
**Course Name: WEB PROGRAMMING** (Global)

Upon completion of the course, the students will be able to

1. Analyze and apply the role of languages like HTML, DHTML, CSS, XML, Javascript, VBScript, ASP, PHP and protocols in the workings of the web and web applications
2. Analyze a web project and identify its elements and attributes in comparison to traditional projects.
3. Build dynamic web pages using JavaScript and VBScript (client side programming).
4. Acquire and build interactive web applications.
5. Learn and create XML documents and XML Schema.

**Sub code: 17S6P**

**Course Name: WEB PROGRAMMING LAB** (Global)

Upon completion of the course, the students will be able to

1. Design and implement dynamic websites with good aesthetic sense of designing and latest technical know-how's.
2. Have a Good grounding of Web Application Terminologies, Internet Tools, E – Commerce and other web services.
3. Get introduced in the area of Online Game programming.
4. Create interactive web applications using XML, ASP.NET and PHP.
5. Familiarize the client server architecture and develop a web application using java technologies.

**Sub code: 17SE6A**
**Course Name: DATA MINING** (Global)

Upon completion of the course, the students will be able to

1. Categorize and carefully differentiate between situations for applying different data mining techniques: mining frequent pattern, association, correlation, classification, prediction, and cluster analysis
2. Acquire the knowledge in data extraction and transformation techniques.
3. Use operational database, warehousing and multidimensional need of data base to meet industrial needs.
4. Describe the components of warehousing, classification methods and clustering analysis.
5. Identify and understand the Business analysis, query tools and application, OLAP etc.

**Sub code: 17SE6B**
**Course Name: MOBILE COMPUTING** (Global)

Upon completion of the course, the students will be able to

1. Analyze and explain problems associated to localization and movements and the wireless and wired communication architecture and handling of data and business application over slow wireless networks
2. Identify business data management and security issues over slow wireless media and Working of software mobile agents over long distances
3. Learn transaction processing over wire and wireless media and various routing and communication protocols
4. Utilize QoS over wire and wireless channels and recognize CDMA and other network applications
5. Comprehend working, characteristics and limitations of mobile hardware devices including their user-interface modalities.

**Sub code: 17SES6P**
**Course Name: PHP LAB** (Global)

Upon completion of the course, the students will be able to

1. Create PHP programs that use various PHP library functions, and that manipulate files and directories.
2. Web Development with PHP/MySQL is designed to provide essential skills and hands-on experience in developing dynamic web applications using PHP and MySQL.
3. Create powerful and dynamic web applications using PHP and MySQL.
4. Setup and configure MySQL, PHP, and Apache web server development environment.
5. Solve problems and insert data using PHP and MySQL and to Test, debug, and deploy web pages containing PHP and MySQL.

**Sub code: 17SPR6**
**Course Name: PROJECT** (Global)

Upon completion of the course, the students will be able to

1. Analyze a problem, and identify and define the computing requirements appropriate to its solution.
2. Design, implements, and evaluate a computer-based system, process, component, or program to meet desired needs.
3. Apply design and development principles in the construction of software systems of varying complexity.
4. Learn to accomplish shared computing design, evaluation, or implementation goals.
5. Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusion.