Name of the Programme: B. Sc. Computer Science

S No	Title of the Paper	Course Code	Course Objectives	Course Outcomes	Relevance
1	PROBLEM SOLVING TECHNIQUES	CS120	• To develop problem solving skills with top down design principles. • To become competent in algorithm design and program implementation. • To develop skills to apply appropriate standard methods in problem solving	• Upon Completing the Course, Students will be able to: • Develop programming techniques required to solve a given problem. • Develop problem solving skill using top – down design principles. • Design an algorithm for a problem. • Develop techniques to handle array structure • Develop techniques such as searching and sorting	**National**
2	WEB DEVELOPMENT USING HTML	CS121	• To provide a comprehensive overview of the two largest Web technologies, Hyper Text Markup Language (HTML), and Cascading Style. • To learn through hands-on,	• Upon Completing the Course, Students will able to: • Use knowledge of HTML and CSS code and an HTML editor to create personal and/or business websites	**National**

			practical instruction that will assist the students to tackle the real-world problems they face in building websites today—with a specific focus on HTML and CSS • To develop an ability to design and implement a web site	following current professional and/or industry standards. • Use critical thinking skills to design and create websites	
3	DIGITAL COMPUTER FUNDAMENTALS	CS221	• To explore the Number System, Number Conversion from one Base to another Base and Complements. • To understand the Logic Gates, Boolean Algebra and to design the Logical Circuits. • To simplify the Boolean Functions using K-Map Method • To Learn Combinational circuits as Adders and Subtractors, Encoders and Decoders. • To Learn the different types of Flip-Flops such as SR Flip flop, JK Flip flop, T Flip flop and D Flip flop.	• Perform conversions among different number systems, to be familiar with basic logic gates, • Draw the Logic circuits and truth table for Boolean functions • Simplify Boolean functions by using k-map method and Boolean Laws and Theorems. • Design of combinational circuits such as Adder, Subtractor, Multiplexer, Encoder and Decoder etc. • Understand the design of sequential Circuits such as Flip-Flops, Edge-trigger and master slave flip flops.	**National**
4	PROGRAMMING USING C	CS222	• To enhance analysing and problem-solving skills and use the same for writing programs in C. • To develop logics which will help them to create programs, applications in C. • To use the comparisons and limitations of the various programming constructs and	• After course completion the students will have the following Course Outcomes: • Understanding a functional hierarchical code organization. • Ability to define and manage data structures based on problem subject domain. • Ability to work with textual information, characters and	**National**

			choose the right one for the task in hand. • To enter the program on a computer, edit, compile, debug, correct, recompile and run it.	strings. • Ability to work with arrays, structures, pointers and files.	
5	COMPUTER ORGANIZATION AND ARCHITECTURE	CS322	• To understand the basics of Computer Organization. • To know the relationship between computer instruction and the Machine code execution. • To know about the various types of CPU Organization and Addressing Modes. • To recognize the need of interface between CPU and Input / Output devices. • To think critically, independently, and quantitatively about Computer Memory.	• Study basic computer organization, design and micro-operations. • Prepare machine code from the instructions • Understand CPU organization and different types of addressing modes. • Understand how the Input/ Output devices communicate with the computer • Learn various methods and techniques of memory organization.	**National**
6	DATA STRUCTURES AND ALGORITHMS USING C	CS323	• To provide the knowledge of basic data structures and their implementations. • To understand importance of data structures in context of writing efficient programs. • To develop skills to apply appropriate data structures in problem solving	• Upon Completing the Course, Students will able to: • Learn the basic types for data structure, implementation and application. • Know the strength and weakness of different data structures. • Use the appropriate data structure for a given problem. • Develop programming skills required to solve a given problem.	**National**

7	SOFTWARE ENGINEERING	CS422	• Understand the principles of large scale software systems, and the processes that are used to build them. • Acquire ability to the software-development process, including requirements analysis, design, programming, testing and maintenance. • Understand the Communication issues in large, complex software projects. • Understand purpose and importance of the project management from the perspective of planning, tracking and completion of project.	• Upon completion of this course, students should be able to: • Plan and deliver an effective software engineering process, based on knowledge of widely used development lifecycle models. • Employ group working skills including general organization, planning and time management and inter-group negotiation. • Capture, document and analyse requirements. • Translate a requirements specification into an implementable design, following a structured and organized process. • Make effective use of UML, along with design strategies such as defining a software architecture, separation of concerns and design patterns. • Formulate a testing strategy for a software system, employing techniques such as unit testing, test driven development and functional testing. • Evaluate the quality of the requirements, analysis and design work done during the module.	**National**

8	RELATIONAL DATABASE MANAGEMENT SYSTEMS	CS423	• To understand the basic principles of Databases and Data Models. • To know about the Relational Data Structures and Relational Algebra. • To understands the concepts of Functional Dependency and Normalization. • To learn the features and to write Queries using SQL. • To explore the organization and to acquire skills in developing programs using/SQL.	• Gain a good understanding of the architecture functioning of database management systems as well as associated tools and techniques. • Implement the Entity Relationship Diagram using various E-R Diagram Symbol. • Develop a good database design using normalization techniques. • Understand the use of structured query language & PL/SQL, its syntax, its working and its scope. • Acquire a good understanding of database systems concepts and to be in a position to use and design databases for different applications	**National**
9	PROGRAMMING USING JAVA	CS540	• To acquire the programming skills in core java applications. • To learn the art of GUI programming with Applet. • To write interface with Applet Controls. • To understand the Layouts of Applets. • To establish database connectivity. • To learn the Interaction between AWT control and Data Base.	• Upon completion of this course, students should be able to: • Understand the concept of OOP as well as the purpose and usage principles of inheritance, polymorphism, encapsulation and method overloading. • Identify classes, objects, members of a class and the relationships among them needed for a specific problem. • Create Java application programs using sound OOP practices (e.g., interfaces and	**National**

				APIs) and proper program structuring (e.g., by using access control identifies, and create user define package for specific task,(reusability concepts) error exception handling) • Develop programs using the Java standard class library. • Develop software in the Java programming language, (using applet, AWT controls, and JDBC)	
10	WEB DEVELOPMENT USING XML	CS541	• To know how to represent data over the Web using XML. • Understanding of the XML Document Object Model. • Understanding xml DTD and its uses. • Understanding xml schema and its uses. • Understanding JSON and its uses	• Upon completion of this course, students should be able to: • Describe how namespaces are used in XML. • Follow XML syntax rules. • Validate XML using DTD. • Construct XSLT style sheets for transforming HTML. • Construct XPath expressions for use within XSLT style sheet templates. • Be able to write the schema for the given XML documents in both DTD and XML Schema languages. • Be able to parse XML documents by using DOM.	**National**
11	PROGRAMMING USING PHP	CS542	• To learn about PHP is a server scripting language, and a powerful tool for making dynamic and interactive Web pages	• Upon completion of this course, students should be able to: • Understand process of	**National**

			• To Understand File handling concepts • Understanding PHP code to connect, access, and update a MySQL database • Understanding PHP using XML	executing a PHP-based Script on a webserver. • Understand basic PHP syntax for variables use and standard language constructs, such as conditional and loops. • Storing data in arrays. • Using PHP built-in functions and creating custom functions • Understanding POST and GET in form submission. • How to receive and process form submission data. • Reading and writing cookies. • Create a database in phpMyAdmin Read and process data in a MySQL database.	
12	OPERATING SYSTEMS	CS543	• To acquire the principles of Operating System, Process, its Description, Uniprocessor and Multiprocessor and its Scheduling Techniques. • To understand the concept of Mutual Exclusion, Deadlock and its detection, prevention & avoidance. • To learn the various Main Memory and Virtual Memory Management techniques. • To explore the Organization and Management of I/O, Disk and File Managements.	• To make students able to learn different types of operating systems along with concept of file systems and CPU scheduling algorithms used in operating system. • To provide students' knowledge of memory management schemes and I/O handling algorithms. • At the end of the course, students will be able to implement various algorithms required for management, scheduling, allocation and communication used in operating system.	**National**

				• Able to compare & constant various scheduling algorithm	
13	COMPUTER GRAPHICS	CS544 A	• Understand the Role and importance of Algorithms like Line drawing Algorithm, Circle drawing Algorithm, Character generating Algorithm. • Understand 2D and 3D Transformations. • Understand various Clipping Algorithms like point clipping, line clipping and polygon clipping. • Understand the importance of the User Dialogue and various input functions. • Understand the Visible Surface Detection Methods.	• To provide comprehensive introduction about computer graphics system, design and two-dimensional transformations. • To make the students familiar with techniques of clipping, three-dimensional graphics and three-dimensional transformations. • Prepares the students for activities involving in design, development and testing of modelling, rendering, shading and animation	**National**
14	DATA MINING AND WAREHOUSING	CS544 B	• To understand data mining principles and techniques and Introduce DM as a cutting-edge business intelligence • To expose the students to the concepts of data warehousing architecture and implementation • To study the overview of developing areas – web mining, text mining and ethical aspects of data Mining • To identify business applications and trends of data mining		**National**

15	DECISION SUPPORT SYSTEM	CS544 C	• To introduce the decision-making system, models and support • To appraise the general nature and range of decision support and group support systems • To impart about knowledge-based system and advanced intelligent systems		**National**
16	SOFTWARE TESTING AND QUALITY ASSURANCE	CS544 D	• To introduce various approaches, techniques, technologies, and methodologies used in software testing and quality assurance. • To understand the role of testing in applications • To learn to design the test cases • To know the different levels of testing • To study the state-of-the-art of software testing and quality assurance		**National**
17	MOBILE APPLICATIONS DEVELOPMENT	CS633	• To develop a mobile application. • To understand the concept of SQLite	Upon completion of this course, students should be able to: • Describe the platforms upon which the Android operating System will run. • Create a simple application that runs under the Android operating system. • Access and work with the Android file system. • Create an application that uses multimedia under the Android operating system. • Access and work with	**National**

				database under the Android operating system.	
18	PROGRAMMING USING PYTHON	CS634	• Develop basic understanding of the basics of Python programming language. • Learn core Python scripting elements such as data types and flow control structures. • Design simple applications using Python.	After this course, the student will be able to • Understand and apply Python's core data types while writing new programs. • Express different decision-making statements and functions • Understand and summarize the different file handling operations	**National**
19	LINUX AND SHELL PROGRAMMING	CS635	• State the major components and describe the architecture of the UNIX operating system. • To learn and understand UNIX commands. • State how the shell functions at the user interface and command line interpreter. • Create structured shell programming with flow control constructs.	Upon completion of this course, students should be able to: • Understand the basic Unix command • Understand the concepts piping and redirections. • Create a shell script using VI editor. • Able to develop using shell script to solve simple application problem.	**National**
20	MICROPROCESSOR USING 8086/88	CS636	• To Understand the basic architecture of the Microprocessor • To learn the instruction sets of the processor • To write applications using assembly level language program • To study the input/output interfaces of the processor • To understand the importance	At the end of the course, students should be able to: • Identify the types of instructions and the organization of registers and memory • Describe the translation model of assembly language to machine language. • Understand the micro-program by mapping the instructions.	**National**

			of interrupts in programming	• Recognize the types of computer organizations. • Accept the better ways of Parallel and Vector processing.	
21	COMPUTER NETWORKS	CS637 A	• To learn the basic concepts of Computer Networks	• To explain how communication works in computer networks and to understand the basic terminology of computer networks • To explain the role of protocols in networking and to analyse the services and features of the various layers in the protocol stack. • To understand design issues in Network Security and to understand security threats, security services and mechanisms to counter it.	**National**