

**Rashtriya Sanskrit Vidyapeetha
(Deemed University)
Tirupati - 517 507.**

Department of Computer Science

B.Sc. (Sastri)

2019 - 2020

Semester wise Syllabus

S.No.	Semester	Paper	Title of the Paper
1.	I Semester	1	PC software
2.	II Semester	2	C Programming
3.	III Semester	3	Object Oriented Programming with Java
4.	IV Semester	4	Introduction to Data Structures
5.	V Semester	5	Database Management Systems - I
6.	V Semester	6	GUI Programming I
7.	VI Semester	7	Database Management Systems - II
8.	VI Semester	8	GUI Programming - II

Programme Name: BSc Iyear I semester

Course No: Paper 1. PC Software

Name of the Text Book:

Prescribed Book:

1. Peter Norton, Introduction to Computers, Sixth edition, Tata McGraw Hill.
2. Ron Mansfield, Working in Microsoft Office, Tata McGraw Hill

Reference Books:

1. Michael Miller, Absolute Beginners Guide to Computer Basics, Fourth Edition, Pearson Education
2. Thomson Ed Bott, Woody Leonhard, Using Microsoft Office 2007, Pearson Education.

General Objective of the Course: Information Technology program aims to prepare students to understand the technology and introduction to the fundamentals of computing devices with respective to personal use of computer hardware, software and basic computer skills such as Word, Power Point, Excel and Access - 2007

UNIT I

Objective: The main objective of this unit is to make clear about basic functionalities of computer system

Computer definition–Types of Computer–Logical Organization of a Digital Computer– **Memory: Main Memory:** RAM, ROM and Cache– **Secondary Memory:** Magnetic type, Floppy disk, Hard disk, Compact disk– Input devices–Output devices– **Operating System:** Definition, functions of an operating system, **Types of Operating Systems:** Brief details of batch processing, Multi Programming, multitasking, time sharing, real time operating systems - Introduction to DOS, DOS internal commands, DOS External Commands– Introduction to Windows, Desktop, File, Folder, My Computer, My documents, Recycle bin, Internet Explorer, Windows Explorer – Types of Programming Languages.

UNIT II

Objective: It is a word processor, which is world's leading word processing application. The primary objective is to enable students to create and edit document, mail merge and so on.

Word Basics: Starting word, Creating a new document, Opening preexisting document, The parts of a word window, Typing text, Selecting text, Deleting text, Undo, Redo, Repeat, Inserting text, Replacing text, Formatting text, Cut, Copy, Paste–Printing.

Formatting Your Text and Documents: Auto format, Line spacing, Margins, Borders and Shading.

Working with Headers and Footers: Definition of headers and footers, creating basic headers and footers, creating different headers and footers for odd and even pages.

Tables: Creating a simple table, Creating a table using the table menu, Entering and editing text in a table, selecting in table, adding rows, changing row heights, Deleting rows, Inserting columns, Deleting columns, changing column width.

Graphics: Importing graphics, Clipart, Insert picture, Clip Art Gallery, using word's drawing features, drawing objects, text in drawing.

Templates: Template types, using templates, exploring templates, modifying templates.

Macros: Macro, Recording macros, editing macros, running a macro.

Mail Merge: Mail Merge concept, Main document, data sources, merging data source and main document.

Overview of word menu options word basic tool bar.

UNIT III

Objective: The main objective of this MS Power Point to make the student perfect in creating presentation, deleting unnecessary slides, slide numbering, slide animation etc.

Power Point: Basics, Terminology, Getting started, Views, Creating Presentations: Using auto content wizard, Using blank presentation option, Using design template option, Adding slides, Deleting a slide, Importing Images from the outside world, Drawing in power point, Transition and build effects, Deleting a slide, Numbering a slide, Saving presentation, Closing presentation, Printing presentation elements.

UNIT IV

Objective: The main objective is to working with data base tables using Access

Creating a Simple Database and Tables: Creating contacts Databases with the wiz, The Access Table Wizard, Creating Database Tables without the wizard, Field Names, Data Types and Properties, Adding, deleting fields, renaming the fields in a table. **Forms:** The Form Wizard, Saving Forms, Modifying Forms

Entering and Editing Data: Adding Records, Duplicating previous entries without Retyping, Undo, Correcting Entries, Global Replacements, Moving from Record to Record in a table.

Finding, Sorting and Displaying Data: Queries and Dynasets, Creating and using select queries, Returning to the Query Design, Multilevel Sorts, Finding incomplete matches, Showing All Records after a Query, Saving Queries, Crosstab Queries.

Printing Reports: Simple table, Form and Database printing, Defining advanced Reports, Manual Reporting, properties in Reports, Saving Reports.

Relational Databases: Flat Versus Relational, Types of Relationships, Viewing Relationships, Defining and Redefining Relationships, Creating and Deleting Relationships.

UNIT V

Objective: Discuss about Work sheet creation, editing formulas, creating charts, graphics etc.

Excel Basics: Overview of Excel features, Getting started, Creating a new worksheet, Selecting cells, Entering and editing text, Entering and editing Numbers, entering and editing Formulas, Referencing cells, moving cells, copying cells, sorting cell data, inserting rows, inserting columns, Inserting cells, Deleting parts of a worksheet, clearing parts of a worksheet.

Formatting: Page setup, changing column widths and Row heights, auto format, changing font sizes and Attributes, centering text across columns, using border buttons and Commands, changing colors and shading, hiding rows and columns.

Introduction to functions: Parts of functions, Functions Requiring Add - ins, The Function Wizard. Examples functions by category: Data and time functions, Engineering functions, Math and Trig functions, Statistical functions, Text functions.

Excel Charts: Chart parts and terminology, Instant charts with the chard wizard, creation of different types of charts, printing charts, deleting charts-Linking in Excel

Excel Graphics: Creating and placing graphic objects, Resizing Graphics, Drawing Lines and Shapes.

Lab: PC Software Lab (50marks)

Programme Name: BSc Iyear II semester

Course No: Paper 2: C Programming

Name of the Text Book:

Prescribed Books:

1. Stephen G. Kochan, Programming in C, Third Edition, Pearson Education

Reference Books:

1. Beyron S Gottfried, Programming with C, Second Edition, Tata McGraw Hill.

2. Ashok N. Kamthane, Programming with ANSI and Turbo C, Pearson Education.

General Objective of the Course: C is the mother of all languages and learning C is that it makes your fundamentals very strong in programming.

Objective of UNIT I:

The main objective of this unit is to make clear about how C programming Language came in to existence, what are variable, constants? How to declare and used? what are different types of operators and expression used in C language and decision making statements.

Objective of UNIT II: Here Loop control statements, function and arrays discussed.

Objective of UNIT III: Discuss about structures and string character.

Objective of UNIT IV: Discuss Pointers in detail.

Objective of UNIT V: Pre Processors and Input and Output Operations in C Languages.

Detailed syllabus

UNIT I

Introduction– ‘C’ **Fundamentals:** Programming–High Level Languages–compiling programs – Integrated Development Environments – Language Interpreters – Compiling your first program –Running your program–understanding your first program–comments–variables, Data types

Arithmetic Expressions: working with variables–Understanding Data types and constants –working with Arithmetic Expressions–The Assignment operators–The printf function–The scanf function

Decision making: The if statement – the if else construct – Nested if statements–The else if construct–The switch statement–Boolean variables

UNIT II

The conditional operator – **Program Looping:** The for statement–Relational operators–Nested for loops – The while statement – The do statement – The break statement – The continue statement

Working With Arrays: Defining an array–Initializing Arrays–character Arrays–The const Qualifier–Multidimensional arrays - variable length Arrays

Working With Functions: Defining a Function - Arguments and Local variables – Returning Function Results – Function calling – Declaring Return Types and Argument types – Top Down programming–Functions and Arrays–Global variables– Automatic and static variables – Recursive Functions.

UNIT III

Working with Structures: Defining structure–Functions and structures–Initializing structures –Array of structures

- structures containing structures–structures containing Arrays–Structure variants

Character strings: Array of characters–variable length character strings–Escape characters–character strings, structures and arrays - character operations.

UNIT IV

Pointers: Defining a pointer variable–using pointers in Expressions–pointers and structures (Exclude Linked List)–Pointers and Functions–pointers and Arrays–operations on pointers– pointers and Memory address **Operations on**

Bits: Bit operators–Bit fields

UNIT V

The pre processor: The #define statement – The ## operator – The #include statement – conditional compilation.

More on Data Types: Enumerated Data Types–The typedef statement–Data Type conversions

Input and Output Operations in “C”: Character I/O – formatted I/O – Input and Output Operations with Files–Special functions for working with Files.

Miscellaneous and Advanced features: The Go to Statement, the null statement, working with unions - the comma operator - type qualifiers.

Lab: C Programming Lab (50marks)

Programme Name: BSc Iyear I semester

Course No: Paper 3. Object Oriented Programming with Java

Name of the Text Book:

Prescribed book:

1. E.Balaguruswamy, Programming with Java A primer 4e, TATA McGraw - Hill Company

Reference Books:

1. John R. Hubbard, Programming with Java Second Edition, Tata McGraw-Hill.
2. Jana, Java and Object Oriented Programming Paradigm, PHI.
3. Deitel& Deitel. Java: How to Program, 7th Edition, PHI.

General Objective of the Course: Understanding fundamentals of Object Oriented Programming in Java, including classes, invoking methods, Java SDK environment to create, debug and run simple java programs

Objective of UNIT I: Understanding fundamentals of OOPs, fundamentals of programming such as variables, how to run java on different platforms.

Objective of UNIT II: The main objective of this unit is to learn about decision making and branching statements in Java language.

Objective of UNIT III: Students can learn how to create classes, objects, arrays.

Objective of UNIT IV: interface are more flexible, because a classes can implement interfaces, that can be created by students by studying this unit, packages and multithreading also discussed.

Objective of UNIT V: Exception handling and Applets concepts discussed.

Detailed syllabus

UNIT I

Fundamentals of Object Oriented programming: Object Oriented paradigm – Basic concepts of Object Oriented Programming – Benefits of OOP – Applications of OOP.

Java Evolution: Java Features – How Java differs from C and C++ - Java and Internet – Java and World Wide Web – Web Browsers – Hardware and Software Requirements – Java Environment. Overview of Java Language: Simple Java Program – Java Program Structure – Java Tokens - Java Statements – Implementing a Java Program – Java Virtual Machine – Command Line Arguments. Constants, Variables and Data types: Constants – Variables – Data types – Declaration of Variables - Giving Values to variables - Scope of Variables - Symbolic Constants - Type Casting.

UNIT II

Operators and Expressions: Arithmetic Operators – Relational Operators - Logical Operators – Assignment Operators – Increment and Decrement Operators – Conditional Operators – Bitwise Operators – Special Operators – Arithmetic Expressions – Evaluation of Expressions – Precedence of Arithmetic Operators – Operator Precedence and Associativity.

Decision Making and Branching: Decision Making with If statement – Simple If Statement - If else Statement - Nesting If Else Statement - the Else If Ladder - The switch Statement – The ?: operator.

Decision Making and Looping: The while statement – The do statement – The for statement – Jumps in Loops.

UNIT III

Class, Objects and Methods: Defining a Class – Fields Declaration – Methods Declaration – Creating Objects – Accessing class members – Constructors – Methods Overloading – Static Members – Nesting of Methods – Inheritance – Overriding Methods – Final Variables and Methods – Final Classes – Abstract Methods and Classes – Visibility Control.

Arrays, Strings and Vectors: One - dimensional Arrays - creating an Array – Two dimensional Arrays – Strings – Vectors – Wrapper Classes – Enumerated Types.

UNIT IV

Interfaces: Multiple Inheritance: Defining Interfaces – Extending Interfaces – Implementing Interfaces – Accessing Interface Variables.

Packages: Java API Packages – Using system Packages – Naming Conventions – Creating Packages – Accessing a Package – Using a Package – Adding a Class to a Package – Hiding Classes – Static Import.

Multithreaded Programming: Creating Threads – Extending the Thread Class – Stopping and Blocking a Thread – Life Cycle of a Thread – Using Thread Methods – Thread Exceptions – Thread Priority – Synchronization.

UNIT V

Managing Errors and Exceptions: **Types of Errors – Exceptions – Syntax of Exception Handling Code – Multiple Catch Statements – Using Finally Statement – Throwing our own Exceptions – Using Exceptions for debugging.**

Applet Programming: How Applets differ from Applications – Preparing to write Applets – Building Applet Code – Applet Life Cycle – Creating an executable Applet – Designing a WebPage – Applet Tag – Adding Applet to HTML file – Running the Applet – More about Applet Tag – Passing parameters to Applets – Aligning the display – More about HTML tags – Displaying Numerical Values – Getting Input from the user.

Lab: Java Programming Lab (50 marks)

Programme Name: BSc Iyear II semester

Course No: Paper 4. Introduction to Data Structures

Name of the Text Book:

Prescribed book:

1. Ellis Horowitz and Sartaj Sahni, Fundamentals of Data Structures, Galgotia book source, New Delhi

Reference Books:

1. Jean - Paul Tremblay and Paul G. Sorenson, An Introduction to Data structures with Applications, Tata McGraw - Hill
2. Samatha, Classic Data Structures, PHI.

General Objective of the Course: Understanding fundamentals of Data structures, working with linear and non linear data structures in detail.

Objective of UNIT I: Introduction to different data types, arrays, stacks and queues.

Objective of UNIT II: The main objective of this unit is to learn linear linked list.

Objective of UNIT III: Here we discuss about Trees and traversals

Objective of UNIT IV: Objective: This unit makes clear study of graph representation and Searching, Depth First Search and Breadth first search methods.

Objective of UNIT V: Discusses about sorting and merging techniques.

Detailed syllabus

UNIT I

Introduction to Data Structures: primitive data structures: integer, float, character, Boolean – arrays – Stacks: push and pop operations – Queues : insert and delete operations. - Circular queues.

UNIT II

Linear Linked Lists: creating a linked list, inserting a node and deleting node in linked list. - Double linked list – Circular linked list.

UNIT III

Trees : Binary trees – inserting a node in a binary tree, deleting a node in binary tree, searching a node in a binary tree Tree traversal : Pre - order, Post - order and in - order traversals.

UNIT IV

Graphs: Basic concepts, Representations : adjacency lists, adjacency Matrix, Searching, Depth First Search and Breadth first search methods.

UNIT V

Sorting: Bubble sort, Insertion sort, quick sort, selection sort – Merging, Searching : Linear search and Binary search.

Lab: Data Structures Lab (50 Marks)

Programme Name: BSc IIIyear I semester

Course No: Paper 5. Data Base Management Systems - I

Name of the Text Book:

Prescribed Textbook:

1. Peter Rob, Carlos Coronel, Database Systems Design, Implementation and Management, 7th Edition, Thomson

Reference Books:

2. Elimasri / Navathe, Fundamentals of Database Systems, Fifth Edition, Pearson Addison Wesley.

3. Raman A Mata – Toledo/Panline K Cushman, Database Management Systems, Schaum's Outlibe series, Tata McGraw Hill

4. C.J.Date, A.Kannan, S.Swamynathan, An Introduction to Database Systems, 8th Edition, Pearson Education.

Michel Kifer, Arthur Bernstein, Philip M. Lewis, Prabin K. Pani Graphi, and Database Systems: An application oriented Approach, second edition, Pearson education.

5. Atul Kahate, Introduction to Database Management Systems, Pearson Education.

General Objective of the Course: The objective of the course is to present an introduction to database management systems, with an emphasis on how to organize, maintain and retrieve - efficiently, and effectively - information from a DBMS.

Objective of UNIT I: Discuss the fundamentals of DBMS

Objective of UNIT II: Discuss the concepts of Relational DataBase Model, ER model.

Objective of UNIT III: Discuss the database design by normalization.

Objective of UNIT IV: how to write SQL queries discussed.

Objective of UNIT V: Advance SQL queries are important in database design which discussed in this unit.

Detailed syllabus

UNIT I

Database Systems: Introducing the database and DBMS, Why the database is important

Historical Roots: Files and File Systems, Problems with File System Data Management, Database

Systems - Data Models: The importance of Data models, Data Model Basic Building Blocks, Business Rules, The evaluation of Data Models, Degree of Data Abstraction.

UNIT II

The Relational Database Model: A logical view of Data, Keys, Integrity Rules, Relational Set Operators, The Data Dictionary and the system catalog, Relationships within the Relational Database, Data Redundancy revisited, Indexes, Codd's relational database rules.

Entity Relationship Model: The ER Model, Developing ER Diagram, Database Design Challenges: Conflicting Goals. - Advanced Data Modeling: The Extended Entity Relationship Model, Entity clustering.

Entity Integrity: Selecting Primary keys, Design Cases: Learning Flexible Database Design.

UNIT III

Normalization of Database Tables: Database Tables and Normalization, The need for Normalization, The Normalization Process, Improving the design, Surrogate Key Considerations, High Level Normal Forms, Normalization and database design, Denormalization.

UNIT IV

Introduction to SQL: Data Definition Commands, Data Manipulation Commands, Select queries, Advanced Data Definition Commands, Advanced Select Queries, Virtual Tables, Joining Database Tables.

UNIT V

Advanced SQL: Relational Set Operators, SQL Join Operators, Sub Queries and correlated queries, SQL Functions, Oracle Sequences, Updatable Views, and Procedural SQL.

Lab: DBMS Lab (50 Marks)

Programme Name: BSc IIIyear II semester

Course No: Paper 6. GUI Programming - I

Name of the Text Book:

Prescribed Textbook :

1. Julia Case Bradley, Anita C.Millspaugh, Programming in Visual Basic 6.0, Tata McGraw Hill

Reference Textbook:

1. Evangelos Petroustos, Mastering Visual Basic, BPB Publications

General Objective of the Course: The objective of the course is to introduce GUI Programming with Visual Basic 6.0.

Objective of UNIT I: Discuss Windows applications with VB, Visual Basic Environment.

Objective of UNIT II: Introduction to controls and working with multiple controls discussed.

Objective of UNIT III: Variable, constants studied in this unit.

Objective of UNIT IV: Decision making and loop control statements are important in programming which discussed in this unit.

Objective of UNIT V: how to create menus, sub procedures and sub function can be understand by reading this unit.

Detailed syllabus

UNIT I

Introduction to Visual Basic: Writing Windows applications with Visual Basic – programming languages – procedural, object oriented, and Event Driven – The Visual Basic environment – Finding and Fixing errors.

UNIT II

Controls: Introducing Controls – Working with Multiple controls – Coding for the controls.

UNIT III

Variables, Constants and Calculations: Data – Variables and constants – calculations – Val function – Arithmetic Operations – Formatting Data – A Calculation Programming - Counting and Accumulating sums.

UNIT IV

Decisions and Conditions: If Statements – conditions – Using If Statements with Option buttons and check boxes – Displaying messages in message boxes – input validation – calling event procedures – Debugging visual basic projects.

UNIT V

Menus, Sub Procedures, and Sub Functions: Menus – Common Dialog Boxes – Writing General Procedures

LAB: GUI Programming Lab (50 marks)

Programme Name: BSc III year II semester

Course No: Paper 7. Data Base Management Systems - II

Name of the Text Book:

Prescribed Textbook:

1. Peter Rob, Carlos Coronel, Database Systems Design Implementation and Management, 7th Edition, Thomson

Reference Books:

1. Elimasri/ Navathe, Fundamentals of Database Systems, Fifth Edition, Pearson Addison Wesley.
2. Raman A Mata-Toledo/Panline K Cushman, Database Management Systems, Schaum's Outlibe series, Tata McGraw Hill.
3. C.J.Date, A.Kannan, S.Swamynathan, An Introduction to Database Systems, Eight Edition, Pearson Education.
4. Michel Kifer, Arthur Bernstein, Philip M. Lewis, Prabin K. Pani Graphi, Database Systems: An application oriented Approach, second edition,pearson education.
5. Atul Kahate, Introduction to Database Management Systems, Pearson Education

General Objective of the Course: The objective of the course is to present an introduction to System Development Life Cycle, transaction management, a study of data warehouse, data mining techniques.

Objective of UNIT I: Discuss the System Development Life Cycle and Database Life Cycle.

Objective of UNIT II: Discuss the concepts of transaction management and concurrency control for Database.

Objective of UNIT III: Distributed Database Management system and Client Server Vs DDMS discussed.

Objective of UNIT IV: how to work with Data Warehouse, data mining and schemas discussed.

Objective of UNIT V: Data base Administration function can study from this unit.

Detailed syllabus

UNIT I

Database Design: The Information System, The Systems Development Life Cycle, The Database Life Cycle, Database Design Strategies, Centralized Vs Decentralized design.

UNIT II

Transaction Management and Concurrency Control: What is transaction, Concurrency control, Concurrency control with locking Methods, Concurrency control with time stamping methods, concurrency control with optimistic methods, database recovery management

UNIT-III

Distributed Database Management Systems: The evolution of Distributed Database Management Systems, DDBMS advantages and Disadvantages, Distribution Processing and Distribution Databases, Characteristics of Distributed database management systems, DDBMS Components, Levels of Data and Process distribution, Distributed database Transparency Features, Distributed Transparency, Transaction Transparency, Performance Transparency and Query Optimization, Distributed Database Design, Client Server VS DDBMS.

UNIT IV

The Data Warehouse: The need for data analysis, Decision support systems, The data warehouse, Online analytical processing, Star schemas, Data mining, SQL extension for OLAP.

UNIT-V

Database Administration: Data as a corporate asset, The need for and role of databases in an organization, The evolution of the database administration function, The database environment's Human Component, Database administration Tools, The DBA at work: Using Oracle for Database Administration.

Lab: Database Management Systems - II (50 marks)

Programme Name: BSc IIIyear II semester

Course No: Paper 8. GUI Programming - II

Name of the Text Book:

Prescribed Textbook :

1. Julia Case Bradley, Anita C.Millsbaugh, Programming in Visual Basic 6.0, Tata McGraw Hill

Reference Textbook:

1. Evangelos Petroutsos, Mastering Visual Basic, BPB Publications

General Objective of the Course: The objective of the course is to introduce GUI Programming - II with Visual Basic 6.0. with ADOD controls.

Objective of UNIT I: Discuss Windows applications with VB for multiple forms

Objective of UNIT II: Introduction to loops and function, how to create message boxes discussed.

Objective of UNIT III: Arrays implementation, and database connection studied in this unit.

Objective of UNIT IV: How to access Database files, lookup table and navigation step by step updating database files discussed in this unit.

Objective of Unit V: Advance data handling, grids, validation, selection and SQL explained.

Detailed syllabus

UNIT I

Multiple Forms: Multiple forms–Standard code Modules–Variables and Constants in Multiple form projects–An about box–A splash screen–Using Sub Main for startup.

UNIT II

Lists, Loops and Printing: List Boxes and combo boxes–Do/Loops–For/Next Loops - Using the MsgBox Function–Using String Functions–Sending Information to the Printer.

UNIT III

Arrays: Control arrays–Case structure–Single Dimension arrays–For Each /Next statements –User defined data types–Table Lookup–Using List boxes with arrays–Multi Dimensional arrays.

UNIT IV

Accessing Database Files: Visual Basic and Database Files–Using the data control–Navigating the Database in Code–Using List Boxes and Combo Boxes as Data–Bound Controls–Adding a Lookup Table and Navigation – step - by - step–updating a database file.

UNIT V

Advance Data Handling – Grids, Validation, Selection and SQL: Displaying data in Grids– record sets–working with database fields–Creating a new Dynaset.

LAB: Project Work (100marks)