BACHELOR OF SCIENCE (B.Sc.)

(THREE YEAR DEGREE COURSE)

SUBJECT

COMPUTER SCIENCE

B.Sc. (COMPUTER SCIENCE)

COURSE STRUCTURE

FIRST YEAR

PAPER – 101: Computer Fundamental   50 MARKS

PAPER – 102: Programming IN C   50 MARKS

PAPER – 103: PC Software   50 MARKS

PAPER – 104: PRACTICAL   50 MARKS

(PC Software Based, DOS, Windows & Programming IN C)

SECOND YEAR

PAPER – 201: Operating System   50 MARKS

PAPER – 202: C++ and Object Oriented Programming   50 MARKS

PAPER – 203: Data Structure Using C   50 MARKS

PAPER – 204: PRACTICAL   50 MARKS

(C++ & Data Structure Using C)

THIRD YEAR

PAPER – 301: Visual Basic and Introduction to Web-Designing   50 MARKS

PAPER – 302: Computer Architecture & Data Communication   50 MARKS

PAPER – 303: Introduction To DBMS—SQL & Software   50 MARKS

        Engineering Concept

PAPER – 304: PRACTICAL   50 MARKS

(VB, DBMS, HTML & Microprocessor)

B.Sc. (COMPUTER SCIENCE)

FIRST YEAR DETAILED SYALLBUS

PAPER – 101

Computer Fundamentals

UNIT-I

Introduction to Computers:

Evolution of Computers, Generation of Computers, Classification of Computers Analog Digital and Hybrid Computers, Classification of Computers according to size, Super Computers, Mainframe Computers, Personal Computers (Different Types) and Terminals (Different Types), Characteristics of Computers, Block Diagram of a Digital Computer, types of OS.

Input / Output Devices:

Input Devices-Keyboard, Mouse, Output Devices – VDU, Printers. Internet, Multimedia, Computer viruses

Introduction to Programming Concepts:

Types of Programming Languages, software, Classification of software, Application software and System Software, Structured Programming, Algorithms and Flowcharts with Examples.

UNIT-II

Introduction to Number system and codes:

Different number systems and their conversions (Decimal, Binary, Octal, and Hexadecimal), 1's

Complement and 2's complement, Floating Point numbers, Coding – BCD, Gray, ASCII

Boolean algebra and Gate networks:

Fundamental concepts of Boolean algebra, Inverter gates, AND gate, OR gate, NAND gate, NOR gate, X-OR gate, X-NOR gate, The universal property of NAND gate and NOR gate, Basic laws of Boolean algebra, De Morgan's theorems, Simplification of Boolean expression, Karnaugh map (SOP)

UNIT-III

Combinational circuit & Sequential circuit:

Adders (Half and Full), Decoder, Encoder, Multiplexer, De-multiplexer (Introductory Concepts only).

Flip-Flops:

Flip-flops (SR flip-flops, D flip-flops, JK flip-flops), Edge – Triggered flip-flops and Master Slave flip-flops,

Introduction to Registers and Counters:

Buffer register, Multivibrators – Astable , Monostable, Biastable.

Memory:

Memory Heirarchy, Primary Memory-Volatile and non-valatile memory, RAM and ROM, EPROM and EEPROM, Secondary Memory-Floppy Disk and Hard Disk.

UNIT-IV

Disk Operating System:

Introduction to DOS Commands. Types of DOS Commands Wild Card Character in DOS Directory Related Commands. File Related Commands and Utilities. Filfers & Redirection, Batch file.

Introduction of Windows, Features, Application:

MS Windows, and its various elements of application windows title bar, menu bar, maximize and close buttons, borders and corners, scroll bars, windows icon, folder icons, dialog box and its items, starting Microsoft windows, searching the files, copying the files, disk clean up, deleting unnecessary files, Determining Free space on disk, disk defragmenter, sound recorder, using scan disk, imaging, character map, calculator notepad paint, Word Pad.

B.Sc. (COMPUTER SCIENCE)

FIRST YEAR DETAILED SYALLBUS

PAPER – 102

Programming IN C

UNIT-I

Introduction to C:

History of C, Structure of a C program. The C character set, Constants, Variables and keywords, Data type. Types of constants and variables. Type declaration and arithmetic instructions, Integer and float conversions. Type conversion in assignment, Operators in C , Hierarchy of operators, control instructions, Input-Output statements in C (Formatted and Unformatted)

UNIT-II

Control Structures:

Decision control structures, Logical operators, conditional operator and relational operators. Loop control structures –while, do-while, for loop, Break statement, Continue statement, switch-case control structure, goto statement

Bitwise operators Bitwise AND, OR, exclusive OR, compliment, right shift and left shift operators

UNIT-III

Arrays:

One dimensional and multidimensional array, declaration, initialization and array Manipulations, sorting (Bubble sort) Strings – Basic Concepts, Library Functions.

Functions:

Definition, function definition and prototyping, types of functions, type of arguments, Recursion, passing arrays to functions, storage class in C-automatic, register, external and static variables.

UNIT-IV

Pointers:

Definition, notation, pointers and arrays, array of pointers and functions – call by value and Call by reference, Pointers to pointers. Definition, declaration, accessing structure elements, Array of structure in a structure, Pointers and structures, Unions – definition, declaration, accessing union elements, typedef, Enum Bit fields.

Types of C preprocessor directives, Macros, data file handling, file opening modes, Text and Binary files.

B.Sc. (COMPUTER SCIENCE)

FIRST YEAR DETAILED SYALLBUS

PAPER – 103

PC Software

UNIT-I

MS Word: Introduction, Menus, Toolbars, Creating, Saving, Inserting files, Formatting, Editing Text, Find and Replace, Header and Footer, Working with text boxes, columns, pictures, charts and graph, Tables, Equations, WordArt, Printing, Mail Merge. Import and Export files, spelling and grammar checking, Thesaurus, Creating Bookmark and Hyperlinks.

UNIT-II

MS PowerPoint: Introduction, Creation of Presentation, Built-in-wizard, Working with Text, list, color and transitions. Header and Footer, Drawing tools, Animation and sound, Importing Objects from other applications.

UNIT-III

MS Excel: Introduction, An overview of worksheet, Creating worksheet and workbook, Opening and saving Workbook and exiting Excel, Formatting, Protecting Cells, Producing Charts, Macros, Database, Using Tables, Using files with other Programme. Goal seek, scenario, Pivot table, different functions (Antiemetic / String / Date and Time function etc.)

UNIT-IV

MS Access: Introduction, Understanding Databases, Create Tables and Quires, Forms, Finding information in a Database, Create Report, Adding Graph.

B.Sc. (COMPUTER SCIENCE)

FIRST YEAR DETAILED SYALLBUS

PAPER – 104

PRACTICAL

- **PC Software Based**

- **DOS**

- **Windows & Programming IN C**

B.Sc. (COMPUTER SCIENCE)

SECOND YEAR DETAILED SYALLBUS

PAPER – 201

Operating System

UNIT-I

Definition of operating system (OS), History of OS, Simple Batch Systems, Multi-programmed Batched Systems, Tim-Sharing Systems, Personal Computer system, Distributed Systems and Real-Time Systems, Operating System Structures-Command Interpreter System, Operating System Services, System Calls, System Programs.

Process Management:

Process Concept, Process control Block, process Scheduling, CPU scheduling-Basic Concepts.

UNIT-II

Storage Management:

Basic Concepts, Logical and Physical Address Space, Swapping, Contiguous Allocation, Paging Segmentation, Virtual Memory- Demand Paging, Paging Replacement, Thrashing and Demand Segmentation.

File System:

File Concept, Access Methods, Directory Structure, Protection, File System Structure. Allocation methods, Free Space Management.

UNIT-III

CPU scheduling, Scheduling Criteria, Round Robin Scheduling, Real Time Scheduling

UNIT-IV

Definition Deadlock, Deadlock Characterizations, method for Handling Deadlocks, Deadlock prevention, Avoidance, Detection, recovery from Deadlock.

B.Sc. (COMPUTER SCIENCE)
SECOND YEAR DETAILED SYALLBUS
PAPER – 202
C++ and Object Oriented programming

UNIT-I

OOP concept, Procedural vs OOP programming, OOP terminology and features, Tokens, Character set, Keywords, Data-types, Data Types declarations, Constants and variables, expressions, Standard Library and header files. Operator and Expressions: Arithmetic Operator, Increment/Decrement Operator, Relational Operator, Logical Operator and conditional operators, library functions, Logical Expressions, C++ shorthand,

UNIT-II

Flow of control statements: Selection statements, Iteration statement, Jump statement, Construction of loops and implementation, While, Do-while, For statements nested loops. If-else, switch, break, continue and Go to statements.

Classes and Objects: Need for Classes, Declaration of Classes, referencing class Members, Scope of class and its members Nested Classes, Functions in a class: Inline Functions, Constant Member functions, Nesting of Member Functions, friend function, Memory allocation of objects, Arrays of objects, Static Class Member

UNIT-III

Functions, function definition, Default arguments, Constant arguments, Call by value, Call by reference, returning from a function, storage class specifier and

variables, storage class specifier and Functions automatic, external and static variables, Pointer: Declarations, Passing to a function, Operations on Pointers

UNIT-IV

Arrays two dimensional and multidimensional arrays, Arrays of Pointers, Pointers and functions, Constructors and Destructor: Declaration, Definition and characteristics, Function Overloading, Inheritance: Need, Different forms, Single Inheritance, Multilevel Inheritance, C++ Memory Map: Dynamic and Static Allocation of Memory, Stacks Queues and Linked Lists, Declarations, File handling: Open, Close, Create, Process, Detecting EOF.

B.Sc. (COMPUTER SCIENCE)

SECOND YEAR DETAILED SYALLBUS

PAPER – 203

Data Structure Using C

UNIT-I

Structure, definition, and application, Lists, Basic Terminology, Static Implementation of Lists, Pointer Implementation of Lists, Insertion in a List, Deletion from a List, Storage of Sparse, Arrays using Linked List, Doubly Linked Lists, Circular Linked List

UNIT-II

Defining Stack and Queue, Stack Operations and Implementation, Array Implementation, Pointer Implementation, Stack Applications, Convert Number Bases by Using Stacks, Infix to Postfix Conversion, Queues: Operations and Implementation, Queue Application, Priority Queues

UNIT-III

Defining Graph, Basic Terminology, Graph Representation, Graph Traversal, Depth First Search (DFS), Breadth First Search (BFS), Shortest Path Problem, Minimal Spanning Tree, Binary Trees, In order Traversal, Post order Traversal, Preorder Traversal, Binary Search Trees, Operations on a BST, Insertion in Binary Search Tree, Deletion of a node in BST, Search for a key in BST, Height Balanced Tree.

UNIT-IV

Searching and Sorting techniques, Sequential Search, Binary Search, Internal Sort, Insertion Sort, Bubble Sort, Quick Sort, 2-way Merge Sort, Heap Sort

B.Sc. (COMPUTER SCIENCE)

SECOND YEAR DETAILED SYALLBUS

PAPER – 204

PRACTICAL

(C++ & Data Structure Using C)

B.Sc. (COMPUTER SCIENCE)

THIRD YEAR DETAILED SYALLBUS

PAPER – 301

Visual Basic and Introduction to Web-Designing.

UNIT-I

Basics of Visual Basic Language, Requirements for VB 6.0, Toolbars, Menu Bars-File, Edit, View, Project, format, Tools, Add-Ins menu, Project Explorer, properties Window, Code, form, Debug Windows, Immediate Debug Window, Local Debug Window, Watch Debug Window, Toolbox Window, Adding/Removing Custom Control to Toolbox,

Creating and saving a Project, visual Development and event Driven Programming, OOPS, Object and Classes, Properties Methods and Events.

UNIT-II

Operating, Controll Flow Statements, Decision Making Statements, Select Case Statement, Iterations For Loop Structure, Do-loop Structure, Do-Loops Do-Until Loops, Do…While, While….Wend, With…End With Statements, Array : Accessing Array elements, Double Dimensional or Multidimensional Arrays, Dynamic Arrays, Redimensioning an Array, Lbound and Ubound statements Option Base Statement, Collections, Interacting with the basic Controls, Forms, Form Collection, Controlling one form within another MDI form, command Buttons, Label Control, Text Box Control, Capturing the Key Strokes, List Box Controls, Combo Box Controls, Lab Assignments, more Controls : Radio Buttons, Scrollbars, Example program timer Control, Running Lights Application, Image Control, Drive List Box, Searching a

drive the directory list box, file Box copying a file, Deleting a File, Renaming a File, Moving a File, Lab Assignments.

UNIT-III

Creating Menu Based Applications: Menus and the Menu Editor, Designing Menus, programming Menu Commands, Manipulating Menus at runtime, Creating a Menu's Control Array, Types of Dialog Boxes (Commond Custom Predefined dialog Box), Procedures and functions: Introduction to procedure types, procedures: Sub. Procedure, General procedures, Event Procedures, Function procedures, Creating new procedures, Selecting existing procedures, Calling sub procedures, Calling Function Procedures, Calling procedures in other modules, passing arguments to procedures, passing arguments by value, Passing arguments by Reference, Using Optional Arguments, Using an Indefinite number of arguments.

UNIT-IV

HTML tags and VB Script

<HTML>, <HEAD>,<BODY>, Paragraphing, line Break tag, Bullet and Numbering tag, Text formatting tags,(Bold, Italic, Underline, strike through, subscript, superscript) Marquee tag, Hyperlink tag, Inserting Back ground image, Horizontal Rule, Changing the Background and fore ground color, Creating table, merging cells, splitter cells, Inhering Colum heading table caption etc. VB script, variable and constant declaration, Output function decision making statement, **Looping control statement etc.**

B.Sc. (COMPUTER SCIENCE)

THIRD YEAR DETAILED SYALLBUS

PAPER – 302

Computer Architecture & Data Communication

UNIT-I

Introduction of Microprocessor: Evolution of microprocessor, Embedded microprocessor, Bit-Slic Processors RISC and CISC Processor, Vector Processor Array processor.

Intel 8086 Microprocessor: Pin description of Intel 8085, operating model of 8085, Register organization of 8085, Bus Interface and Execution Unit (BIU and EU), Interrupts 8085 Read and write Bus Cycle.

UNIT-II

8086 Instruction Group: Data transfer Instruction, Arithmetic Instruction, Logical Instruction processor Control Instructing, string Instructions, Interrupts instructions and Addressing modes of 8086 up, Assembly Language Programming.

UNIT-III

Synchronous Data Transfer, Asynchronous Data Transfer, Interrupt Driven Data Transfer DMA Controller

Address space partitioning – Memory mapped I/O scheme, I/O mapped I/O scheme.

UNIT-IV

Data Communication, Types of Transmission media.

Topology - Mesh, Star, tree, Bus, Ring, Hybrid.

Transmission mode-Simplex, Half Duplex Full Duplex

Categories of Networks-LAN, MAN, WAN the OSI model, Functions of the Layer-Physical Layer, Data Link Layer, Network Layer, Transport Layer session Layer, Presentation Layer, Application layer.

B.Sc. (COMPUTER SCIENCE)

THIRD YEAR DETAILED SYALLBUS

PAPER – 303

Introduction To DBMS

SQL & Software Engineering Concept

UNIT-I

Data, Information and Knowledge, Introducing Databases and Different kinds of database users, Concept Of A Database, Interacting With A Database, Architecture Of A Database, Using Relational Databases, Basics Of Relational Databases, Using Relational Databases, Identifiers For Relations, characteristics of database, database system concepts and Data Independence, Content of Data Dictionary, Data administration function, DBMS, Concurrency control, Database security, Database recovery

UNIT-II

Traditional Data Model – ANSI/SPRC 3-level Architecture, Overview of three Traditional models—Hierarchical, Network and Relational Models, Comparison of these models

File organization technique—Random file organization technique, Multi key file organization technique, Entity relationship Model, ER Model

Structured Query Language- Introduction, Data definition, views and queries in SQL, Specifying constraints and indexes in SQL, Data Manipulation, Data maintenance, Multiple Table Operations, Transaction integrity facilities,

UNIT-III

Why Software Engineering? Software processes-Software Process model (water Fall model, iterative, spiral model) Software Requirements: Functional and non-functional requirements user requirements, system requirements Software requirement document, DFD, Pert Chart ER Diagram.

UNIT-IV

Software Testing –System testing Component testing, test case design test automation. Software Cast Estimation-Software productivity, Estimation technique, Algorithmic Cost modeling project duration and staffing.

B.Sc. (COMPUTER SCIENCE)

THIRD YEAR DETAILED SYALLBUS

PAPER – 304

PRACTICAL

(VB, DBMS, HTML & Microprocessor)