**Lesson Plan September 2022-December 2022)**

**Name of the Assistant Professor**- Ritu Narwal **Subject**- Computer Science

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| **Month** | **BCA ( 1st Sem)**  **BC-112, Windows and PC Software** | **B.Com CAV-1st Sem**  **BC(Voc)-105, Computer Fundamentals & Logical Organizations** | **BCA 5th Sem, BCA-354, Computer Networks** |
| **September** | **WINDOWS :** Introduction to Windows and its Features, Hardware Requirements of  Windows. Windows Concepts, Windows Structure, Desktop, Taskbar, Start Menu, My  Pictures, My Music, My Documents, Recycle Bin. Managing Files, Folders and Disk .  My Computer, Windows Explorer and its Facilities, Using CD, DVD, Pen Drive, Burning  CD. Windows Accessories. Entertainment- Media Players, Sound Recorder, Volume  Control. | Introduction to computers: definition, components and characteristics of computers; input and output  devices: memory and mass storage devices; memory hierarchy, RAM, ROM, EPROM, PROM and other  types of memory, cloud memory; logical organization of computer. Number systems, binary arithmetic operations. character codes and error detecting and correcting codes.  Boolean algebra, Boolean functions, truth tables, simplifications of Boolean functions, digital logic gates. | Introduction to Data Communication and Computer Networks; Uses of Computer Networks; Types of  Computer Networks and their Topologies; Network Hardware Components: Connectors,  Transceivers, Repeaters, Hubs, Network Interface Cards and PC Cards, Bridges, Switches, Routers,  Gateways; Network Software: Network Design issues and Protocols; Connection-Oriented and  Connectionless Services; OSI Reference Model; Networking Models: Distributed Systems,  Client/Server Model, Peer-to-Peer Model, Web-Based Model and Emerging File-Sharing Model; |
| **October** | **ADVANCED FEATURES OF WINDOWS:**  Managing Hardware & Software - Installation of Hardware & Software, Using Scanner, Web  Camera, Printers. System Tools - Backup, Character Map, Clipboard Viewer, Disk  Defragmenter, Drive Space, Scandisk, System Information, System Monitor, Disk Cleanup,  Using Windows Update. Browsing the Web with Internet Explorer, Multiple User Features  of Windows, Creating and Deleting User, Changing User Password, etc.  Accessibility Features of Windows - Sharing Folders and Drives, Browsing the Entire  Network, Using Shared Printers. Control Panel & its components | combinational logic- adders subtractions, encoders, decoders, multiplexors, de-multiplexors. sequential  logic- flip flops, shift registers, counters, memory organization semiconductor RAMs and ROMs;  machine instructions, instruction formats, addressing modes, instruction cycles; concept of microprogramming;  I/O interface, I/O transfer - program - controlled, interrupt controlled, direct memory  access. | Analog and Digital data and signals; Bandwidth and Data Rate, Capacity, Baud Rate; Transmission  Impairment; Data Rate Limits; Guided Transmission Media; Wireless Transmission ; Communication  Satellites; Switching and Multiplexing; Modems and Modulation techniques; ADSL and Cable  Modems; |
| **November** | **WORKING WITH SPREAD SHEET:**  Introduction and area of use, Working with Excel, Toolbars, Menus and Keyboard  Shortcuts, concepts of Workbook & Worksheets, Using Wizards, Various Data Types, Using  different features with Data, Cell and Texts, Inserting, Removing & Resizing of Columns &  Rows, Working with Data & Ranges, Different Views of Worksheets, Column Freezing,  Labels, Hiding, Splitting etc., Using different features with Data and Text, Cell Formatting  including Borders & Shading. | Computer software – introduction, types of software - system, application and utility software;  programming languages; introduction to operating system: types and function of operating system; real  time applications; operating systems for tabs, mobile phones, etc. – Android, etc; open source software:  an overview, Linux Ubuntu; concepts of translators, linkers and loader. | Data Link Layer Design issues; Error Detection and Correction; Sliding Window Protocols: One-bit,  Go Back N and Selective Repeat; Media Access Control: ALOHA, Slotted ALOHA, CSMA, Collision  free protocols; Introduction to LAN technologies: Ethernet, Switched Ethernet, Fast Ethernet, Gigabit  Ethernet; Token Ring; Introduction to Wireless LANs and Bluetooth; VLANs |
| **December** | **ADVANCED FEATURES OF EXCEL:**  Multiple Worksheets: Concept, Creating and Using Multiple Worksheets; Use of Formulas,  Calculations & Functions, Various types of Functions, Cell Referencing, Absolute and  Relative Addressing, Working with Different Chart Types, Chart Wizard, Printing of  Workbook & Worksheets with various options, Database: Creation, Sorting, Query and  Filtering a Database; Creating and Using Macros; Pivot table & Pivot chart | Application software: spreadsheets, word processors, database management software; networks basic,  types of networks, topologies, media, hardware and software required for networking. | Routing Algorithms: Flooding, Shortest Path Routing, Distance Vector Routing; Link State Routing,  Hierarchical Routing; Congestion Control; Traffic shaping; Choke packets; Load shedding; Elements  of Transport Protocols; Network Security Issues: Security attacks; Encryption methods; Digital  Signature; Digital Certificate |

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| **Subject/Month** | **September** | **October** | **November** | **December** |
| **B.A 3rd Sem**  **Computer Sci Semester III**  **PAPER-I: Data Structure** | Introduction: Elementary data organization, Data Structure definition,  Data type vs. data structure, Categories of data structures, Data  structure operations, Applications of data structures, Algorithms  complexity and time-space tradeoff, Big-O notation.  Strings: Introduction, strings, String operations, Pattern matching  Algorithms. Arrays: Introduction, Linear arrays, Representation of linear array in  memory, Traversal, Insertions, Deletion in an array, Multidimensional  arrays, Parallel arrays, Sparse matrix. | Linked List: Introduction, Array vs. linked list, Representation of linked  lists in memory, Traversal, Insertion, Deletion, Searching in a linked  list, Header linked list, Circular linked list, Two-way linked list, Garbage  collection, Applications of linked lists. Algorithm of insertion/ deletion  in SLL. | Stack: primitive operation on stack, algorithms for push and pop.  Representation of Stack as Linked List and array, Stacks applications :  polish notation, recursion. Introduction to queues, Primitive Operations  on the Queues, Circular queue, Priority queue, Representation of  Queues as Linked List and array, Applications of queue. Algorithm on  insertion and deletion in simple queue and circular queue. | Trees - Basic Terminology, representation, Binary Trees, Tree  Representations using Array & Linked List, Basic operation on Binary  tree, Traversal of binary trees:- In order, Preorder & post order,  Applications of Binary tree. Algorithm of tree traversal with and without  recursion.  Introduction to graphs, Definition, Terminology, Directed, Undirected &  Weighted graph, Representation of graphs. |