

Course Code: PGDCA 101, 01/MSCCS-101, 01/MCA-101
Course Name: Computer Fundamental and System Software

Unit 1: Introduction to Computer System

Objectives, Introduction, Classification and Applications, Overview of Computer System, Input and Output Devices, Personal Computer Configuration, Computer Languages, System Software.

Unit 2: Storage Devices

Objectives, Introduction Memory System in a Computer Storage Media Random Vs Sequential Access, Floppy Disk, Hard Disc, Storage, Disc Formatting, Tracks and Sectors Cylinder.

Unit 3: Hard Disc Drive Interfaces

Objectives, Introduction, Hard Disc Drive, Interfaces, RAID, Optical Disk, CD ROM and DVD Technology, Magnetic Tape, Wheels, Streamers, DAT, DLT Stripe, Smart Card Modem

Unit 4: Input Devices

Objectives, Introduction, Keyboard, Mouse, Trackball, Trackpad, Bar Code Reader, Scanner, OMR, OCR Voice Input, Video Input, Digital Camera.

Unit 5: Output Devices

Objective, Introduction, Monitor, Printers, Plotters.

Unit 6: Representation of Number System

Objective Introduction Number System: Decimal Number System, Binary Number System, Octal Number System, Exit Decimal Number System, Conversion to Decimal Number System: Binary to Decimal, Octal to Decimal, Hexadecimal to Decimal. Conversion to Other Number System From Decimal System: Decimal to Binary, Decimal to Octal, Decimal to Hexadecimal. Other Conversions: Binary to Octal and Vice Versa, Binary to Hexadecimal and Vice Versa. Unsigned and Signed Integers, Floating Point representation. Definitions: Bit, Byte, Machine Word. Boolean Algebra: Fundamental Concept of Boolean Algebra, Postulates of Boolean Algebra, Minimization of Boolean Functions, Simplification of Boolean Equation, Karnaught Map (K-Map).

Unit 7: Study of Logic Gate

Introduction, Logic Gates: Inverter(NOT Gate), AND Gate, OR Gate, NAND Gate, NOR Gate, Exclusive-OR Gate, Exclusive NOR Gate, Equivalent Circuits, Codes: Character Repertoire, Character Code, Character Encoding, ASCII Code, EBCDIC, Grey Code, Unicode, Binary Code, Encoding and Decoding.

Unit 8: Operating System Concepts

Introduction, Layered View of Computer System, Basic Functions of Computer System, Classification of Operating System, Operating System Components: Process Management, Memory Management, File Management, System Management, Secondary Memory Management, Networking Protection System, Command Interpreter System, Operating System Services, System Call, System Program, Kernel, Device Drivers.

Unit 9: Process Management

Introduction, Process Management, Functions Process States, Process Control Block, Context Switching of Process, Threads: Advantage of Multithreading, Types of Threads, Threading Issues, Process Scheduling: Type of Scheduler, Scheduling Algorithm: Pre-emptive and Non pre-emptive Scheduling, Scheduling Algorithm, Operating System Scheduler Implementation, Inter Process Communication and Process Synchronisation, Deadlock: Necessary Conditions Method of Handling Deadlock.

Unit 10: Memory Management

Introduction, Address Binding, Logical Vs. Physical Address, Space Address, Translation and Relocation, Memory Allocation, Fragmentation, Memory Compaction, Virtual Memory, Paging, Segmentation, Segmentation Vs. Paging, Demand Paging, Working Set Model, Free Paging, Threshing, Page Replacement Algorithm.

Unit 11: File System

Introduction, File Concept, Component of a File, Logical Data Organisation, Directories, Disk Organisation, Disk Space Management, Linked List, Bitmap, Disc Allocation Method, Contiguous Allocation, Non-Contiguous Allocation, Disc Access Scheduling, FCFS(First Come First Serve Scheduling), Shortest Seek Time First Scheduling, Scan Scheduling, File Protection Access and Sharing, Introduction to Linux and Windows File System, Unix File System, Windows File System, Introduction to a Subsystem Device Drivers, Terminal IO.

Unit 12: DOS Operating System

Introduction, History and versions of MS DOS, Physical Structure of Disk, DOS File System, File Allocation Table (FAT), Booting Process, The Command Prompt, Typing a Command, Drive Name, File, Directory, File and Filename, Dos Commands: Internal DOS Command, External DOS Command Wildcard Characters, File Management Commands, General Commands, Disc Management Commands, Dos Utility Commands, Using Copycon to Build a File.

Unit 13: Windows Operating System

Introduction, Feature of MS Windows 2000, Windows 2000 Professional at a Glance, Accessibility of Special Needs, Hardware Requirements of Windows 2000, Desktop Environment, Taskbar, Start Menu, My Computer, Recycle Bin, Control Panel, Windows Explorer, Windows Accessories, Managing Hardware and Software and Its Installation, Add Remove Applications, Add New Hardware Printers, System Tools, Disk Defragmenter, Check for Disc Error (SCAN DISK), Backup Your Data, Clipboard Viewer, System Information, NTFS, Network Neighborhood (My network Places), Sharing Information between Programs.

Unit 14: LINUX Operating System

Introduction, Feature of Linux Operating System, Advantage of Linux, Linux Structure, Various Flavours of Linux, Login in and Log out from Linux, Session, Types of Users in Linux, Security for Linux User: Password, File System for Linux, File Naming Conventions in Linux, Relative Pathname, Sample Directory: Structure, Type of Files in Linux, Linux Commands, VI Editor, The Insert Command and Replacement Command.