CHM-O level

H4: Operating System, Software & Tools

80 Hours

Course Prerequisites:

Basic understanding of computers Operating system ,

Learning outcome of the Course

Subject contents are designed with an intention to provide an Introduction to the Operating system (windows 7,8 & Linux), types of software , software engineering basic, and understanding various programming languages and platforms, it also focuses on inbuilt diagnostic tools of windows. with additional information about file system, memory management, system backup and restore , viruses and anti viruses.

Course details

Section	Brief Contents	Duration
Basics of Operating System	Computer organization, Central Processing Unit , Introduction to Operating system, types of Operating system (single user , multiuser etc), Concepts of process management, concurrency, scheduling, synchronization, Different types of operating system (DOS, UNIX, LINUX, Windows 7, Windows 8, Mac , Android etc. Working with existing programs in WINDOWS 7,8 and Linux, working with files and folders, working with different explorers, study of control panel and its settings.	5
Memory management and file systems	Types of Memory – RAM, ROM etc, Understanding working of internal and external Storage devices. Memory units, memory structure and management. Introduction to FAT/NTFS, difference between FAT/NTFS. data storage and data access principles of FAT/NTFS, FAT and MFT structure, attributes in FAT/NTFS, file management and memory management in FAT/NTFS, data deletion and data recovery Concept. formatting,	5
Operating system Back-up and restore	System Image backup, backup and restore, freeing up disk space, defragmentation, taking updates, network firewall, spyware and unwanted software protection, run maintenance, and other operating system security featuresUpgrade Options & StrategiesPrinters: Printer Technology, How Printer Works, Attaching Printer, Installing Network Printer Drivers, Common Printer Problems & Solution	4
Advanced operating system concepts	Operating systems in Mainframe systems, Desktop Systems, Multiprocessor Systems, Distributed Systems, Clustered Systems, Real Time Systems, Handheld Systems, Operating	6

Section	Brief Contents	Duration
	System Services, System Calls, Process Scheduling. Deadlock, Methods for handling Deadlocks ,Deadlock Prevention, Deadlock avoidance, Deadlock detection, Recovery from Deadlocks. Storage Management, Swapping, Contiguous Memory allocation, Paging, Segmentation Virtual Memory, File Sharing, File System Implementation, Directory Implementation, Free-space Management, Disk Management.	
Viruses & anti-viruses	What are virus, types of virus , worms, malware, adware, spyware, virus signatures , how antivirus works, concept behind Virus prevention and removing, various Antivirus programs and installation, difference between virus removal and quarantine, introduction to zero day/zero hour attacks, no single antivirus is perfect	4
Operating system security	Creating accounts with proper privileges, Authentication, program threats , system threats , network threats in various operating system. Protected objects and methods of protection, Memory address protection, Control of access to general objects, File protection mechanism, file & resource access control security in various operating system.	4
Introduction to Software and software engineering	Types of software's, Application Software and System Software, device drivers, firmware's. development software's.Definitions, Characteristics of Software , Software Life Cycle Models ,Requirement Analysis, Prototyping, Specification, Analysis model, Software Design: Abstraction, modularity, Software architecture, Architectural design and procedural design – Data flow oriented design. User Interface Design: Human computer interface design, basic understanding and working of various programming/scripting languages and platform.	12
Practical's	Practical-1. Installation of Windows 7, 8 , Linux	2
	Practical-2. Study of control panel and settings	2
	Practical-3. Adding of new hardware, and software	2
	Practical-4. Creating and administration of User accounts	2
	Practical-5. Installing/scheduling/Running of Anti-virus program	2
	Practical-6. Taking the backup of directories, files & complete hard disk	2
	Practical-7. Installation of Windows NT Server /Linux, clients and practice of using the network	2
	Practical-8. Running of Scan disk and Disk defragmenter as part of preventive maintenance	2
	Practical-9. Use of different commands of Windows 7,8 in command prompt.	2
	Practical-10. Patches in Linux/ service pack in Windows and its update in both.	2
	Practical-11. Installation of Multiple operating Systems.	2
	Practical-12. Configuring System as server.	2

Section	Brief Contents	Duration
	Practical-13. Creating a backup files on CD/ DVD etc.	2
	Practical-14. Personalizing desktop.	2
	Practical-15. Creating partition and file system in Windows/ Linux	2
	Practical-16. Adding and removing user accounts.	2
	Practical-17. understanding windows registry	2
	Practical-18. Basic programs in various programming languages	2
	Practical-19. Understanding system configuration of various development platforms	2
	Practical-20. Trouble shooting Linux	2