CHM-O level
H3: Advanced networks and networking peripherals

80 Hours

Course Prerequisites:
Basic understanding of computers networks and Internet

Learning outcome of the Course
Subject contents are designed with an intention to provide an Introduction to Computer Networks, other relevant networks and extensively used Network peripherals. it also focuses on various types of internet connections , network services , network security and finally deals with general troubleshooting and maintenance of Networks and networking peripherals.

Course details

Section	Brief Contents	Duration
Networking Basics	What is networking, Basic types of network, server client & peer to peer, Types of topologies, Types of Networks, Local Area Network(LAN), Metropolitan Area Networks (MAN) and Wide Area Networks (WAN), Personalized area Network (PAN), Storage area network (SAN), campus area Network(CAN), Network attached storage (NAS) , OSI & TCP/IP Model and layers, The need of layered solutions.	6
Network components & Management	Transmission mediums (wired, radio frequency, electromagnetic waves) , types of cables, Modems, routers, switches, Hubs, Wireless Routers , Network management, effect of Natural elements on Networks.	3
Data Communication, protocols and filters	Data Transmission Mode, Digital and Analog Data Transmission , circuit Switching and packet switching , Introduction to Communication Protocols(TCP, UDP, ICMP, DHCP, HTTP, POP, FTP, IMAP etc), data Packets Structure, Packet Filters, Application-Level , Circuit-Level and Dynamic Packet Filters, packet filtering with Proxy	6
Transmission Media and Networking Connectivity Hardware	Network interface cards–Ethernet, Cabling Concepts (designing, installing, and maintaining modern communications infrastructures and electronic physical security systems. Fiber optics, wireless networks) CAT 5 & 6 Structured Cabling, Crimping etc.	5
Types of Internet connections and protocols	Dialup, DSL/ADSL, Cable broadband, cable TV, leased line, satellite(V-Sat) , Wi-Fi, WI-Max, (3G-4G) Internet service provider (ISP) , Networking protocol, Internet protocol (IP), IP grouping.	4
Network services	Introduction to Internet , World Wide Web, E-mails, Chat, Search Engines, types of portals, Social Networking , cloud based application, Virtual private network (VPN), Enterprise private network (EPN), Intranets and extranets ,	6

Section	Brief Contents	Duration
	Audio/video intercoms, Video teleconferencing, various Security cameras, voice over internet protocol (VOIP).	
Network security	Need of network security, Types of Attacks(Active and Passive), Threats, Vulnerabilities, Access control, security in wireless networks, Introduction to firewalls , Intrusion detection system (IDS), Intrusion prevention system (IPS), need of network security in E-commerce and E-governance	5
Practical's	Practical-1. Demonstration of LAN-client/server, user creation, password protection and peer to peer network	2
	Practical-2 Demonstration and installation of networking cables co-axial , twisted pair, optic fibre, crimping of cables straight cable , cross cable , RJ 45	2
	Practical-3. Installation of Network card in system and connecting system in LAN	2
	Practical-4. Using basic Networking commands- like ping, IP Config, etc with various switches.	2
	Practical-5. Demonstration and installation of networking components Modems, routers, switches, Hubs, Wireless Routers	2
	Practical-6. IP configuration and working with various protocols.	2
	Practical-7. Personalized Area Network Setup	2
	Practical-8. wireless network setup	2
	Practical-9. VPN and EPN setup	2
	Practical-10. Broadband Router installation in networks	2
	Practical-11. Working with advance network diagnosis and connectivity command	2
	Practical-12. Software based Firewall Installation & understanding firewall logs	2
	Practical-13. Installation and working of Audio/video intercoms,	2
	Practical-14. Installation and working of Video teleconferencing	2
	Practical-15. Installation and working of Security cameras (CCTV)	2
	Practical-16. Working and understanding of FTP and remote access	2
	Practical-17. Demonstration of Networking administration services	2
	Practical-18. Demonstration of VOIP	2
	Practical-19. Demonstration of IDS/IPS	2
	Practical-20. Demonstration of E-commerce/E-tendering	2