

# NIELIT Courses

Level Code: Vertical Name:

L4

Office Automation, IT & networking

Course Code: Course Name:

3.6.2 BSNL Certified Telecom Technician - PC Hardware and Networking –L4

Objective of the Course:

To obtain proficiency in the different components of PC (processors, mother board, RAM, I/O Devices) and networking

components (Simple Network Components, Networking Components like Switch, Router, Hub, NIC, PC/Laptop, Router) and the various processes of setting up different kinds of network. It also helps to gain proficiency in trouble shooting of networks, installation of software, setting up network security

The students are also equipped with good Communicative English Skills, soft Skills and Basic IT skills required for good performance in any job in the modern world .

Learning Outcomes:

Acquire hands on training in assembling a PC using the scrap components. Also get a detailed knowledge on the

basic networking concepts and complete hands on training in setting up different kinds of network. Efficient in managing, configuring, installing and troubleshooting different hardware and networking resources.

Have Good Communicative English Skills, Soft Skills & IT skills

Expected Job Roles:

1. Troubleshooting PC & it’s Components
2. Maintenance of Computer Hardware
3. Network Administrators
4. Hardware Technicians
5. Entrepreneurs - Consultancy Services

Duration of the Course (in hours)

170 hrs

Minimum Eligibility Criteria 10th with strong aptitude in Science / 12th Pass



Professional Knowledge:

KA1. Knowledge to assemble a PC using scrap components and standard methodologies to set up a system using various components of the system

KA2. Understanding on designing the network and set up a network

KA3. How to troubleshoot the various hardware resources like printer, scanner, hard disk, mouse, keyboard etc. KA4. How to troubleshoot the software resources (application troubleshooting)

KA5. How to troubleshoot of networks and networking resources like routers, switches, hub, cable, modem

etc.

KA6. To interpret design requirements of different types of networks KA9. SMPS and Specifications- Form factors, Power Connectors

KA10. K n o w l e d g e t o p repare HDD- Configuring, Mounting, Partitioning, Formatting and loading OS

KA11. Introduction to Computer Software- Application Software, Open Source Software , Proprietary Software, Functions of System Software

KA12. Protocols and topologies to simulate, analyze and synthesize design options KA13. Number Conversion systems and IP addresses

KA14. IP Addressing and sub-netting

KA15. Broadband, Network Architecture & Wireless networks

Professional Skill:

SA1. Assemble a PC using scrap components and standard methodologies to set up a system using various components of the system

SA2. Designing the network topologies and setting up various types of networks

SA3. Troubleshooting of hardware resources like printer, scanner, hard disk, mouse, keyboard etc., software resources (application troubleshooting) and the networks and networking resources like routers, switches, hub, cable, modem etc.

SA4. Connecting SMPS and use of Form factors, Power Connectors SA5. Usage of number conversion systems, IP addresses and IPV6 SA6. Setting up Broadband Network & Wireless networks

Core Skill:

SA1. Complete accurate well written work with attention to detail on the different components of PC (processors, mother board, RAM, I/O Devices)

SA2. Setting up networks and understanding of various network topologies SA3. IP Addresses and IPV6

SA4. Number conversion systems and it’s usage

SA5. Information on Broadband & Wireless Networks

Detailed Syllabus of Course

|  |  |  |
| --- | --- | --- |
| Module.  No | Module. Name | Minimum No. of Hours |
| 1 | PC Hardware   1. Know your computer, PC case , SMPS 2. Motherboard of clients, Motherboard of Servers 3. Hard disks , CPUs-Intel/AMD , Keyboards , Mouse , USB Devices 4. Monitors – CRT / TFT / LCD / LED 5. I/O devices – Printers , Webcams, Scanners, Digital Camera, 6. USB Wifi, USB BT, USB Storages, UPS 7. Overhead/LCD/DLP/LED Projectors 8. Assembling of a PC, Severs and trouble shooting | 25 |
| 2 | PC Hardware Practical   1. Loading and configuration procedure of Microsoft Client O/S – Win XP /Win 7 and Windows 8 2. Loading and configuration procedure of Microsoft Server O/S – Win 2003 server /Win 2008 Server 3. Loading and configuration procedure of Linux Clients and server OS 4. Firewall configuration, Antivirus/Internet security loading and configuration procedure 5. Installation and configuration of , I/O devices – Printers , Webcams , Scanners , Digital Camera , USB Wifi , USB BT, USB Storages , Projectors 6. Multiple OS loading and trouble shooting | 35 |

|  |  |  |
| --- | --- | --- |
| 3 | Computer Networking   1. Introduction to Networking, Types of Networks and Topologies available and its areas of use 2. Protocols used in networking- Its purpose, use and types 3. Introduction to ISO-OSI Layer Protocols 4. Different Networking elements used to build a network and its purpose-like NIC, Hubs, Switches, Routers 5. Addressing used in Networking-IP address 6. Basics of Internet protocol TCP/IP 7. Different types of cabling used in networking and their standards 8. UTP cable types and its purpose, UTP cable crimping using RJ 45 connectors- Straight through and Cross over Crimping 9. Introduction to Server- features, Hardware features and Software features, RAID etc. 10. Basics of routers- Difference from switches, uses, features 11. Configuration aspects, Basic concepts of Switching and Routing 12. Internet connection mechanisms-Dial up, Broadband etc 13. Overview of a Service Provider network to connect Internet 14. Wireless Networking- Wireless networking concepts, different wireless standards like Blue tooth, Wifi, WiMaX etc | 25 |
| 4 | Computer Networking Practical   1. Familiarization of Internetworking elements like Hubs, switches, routers 2. Network Cable Crimping- Straight through and Cross over Crimping using UTP cables and testing 3. Installation of NIC in PCs and trouble shooting 4. Client configuration for networking, advanced client configuration for connecting multiple networks 5. Setting up of a simple LAN ,Checking the connectivity using DOS commands 6. Sharing files, Printers, CD drives 7. Sharing desktops, Remote desktop, Using Applications like Team Viewer for accessing a remote computer | 35 |

|  |  |  |
| --- | --- | --- |
|  | 1. Configuration of client PCs for connecting multiple networks etc 2. Installation of Windows server, Configuration of server for Web Server and FTP server, Verification from a client 3. Basic router configuration, Connecting through Hyper terminal, Configuring router connecting different networks 4. Broadband Lab- Type 1 and Type 2 Modems, Modem configuration for internet connection 5. Wireless modem configuration for Wi Fi connectivity, Internet connection sharing to multiple clients |  |
| 5 | Internship  Internship at various BSNL Units | 50 |

Total Course Theory / Lecture Hours: 50

Total Course Practical / Tutorial Hours: 120 Total Course Hours: 170

(Training in 100 hrs of Communicative English and 80 hrs of Basic IT Skills also provided, as required)

Recommended Hardware:

Scrap CPUs, Scrap PC Cabinet, SMPS and other basic components, Scrap Motherboard and Different Types of Processors, Scrap RAM, Desktop PC without loading OS, Scrap UPS, Laptop, Tablet, Smart Phones, Simple Network Components, Networking Components like Switch, Router, Hub, NIC, PC/Laptop, Router, Connectivity

Network lab of BSNL

Recommended Software:

Text Books:

Reference Books:

Material prepared by BSNL.

Evaluation criteria:

Course conducted in Industry (BSNL). MoU Signed with BSNL

Evaluation & Certification by BSNL.

ESSCI has also agreed to do Assessment and Certification.