Savitribai Phule Pune University

(Formerly University of Pune)

Certificate Course

In

Network Administration

(CBCS)

To be implemented from Academic

Year (2021-2022)

Savitribai Phule Pune University

Certificate Course In Network Administration

Objective of the Course: By the end of the course, students will be able to describe and execute network administrator duties and utilities. They will know how to implement server organisation, user rights, user addition, and maintenance of security and user accounting.

Learning Outcomes: Demonstrate understanding of how computers communicate with each other and the methods employed to ensure that the communication is reliable.

Expected Job Roles: Network Technician / Hardware Engineer

What Comes Under this Hardware and Networking Training?

Customarily, this training comprises many valuable courses that have more benefits to the students. If you undergo this computer hardware training, you will be capable of knowing about

- ➢ Computer Hardware
- ➢ Fundamentals of Troubleshooting
- ➢ Assembling a computer
- ➢ Networking concepts
- ➢ Safety hazards

About Course:

This Course is designed to provide extensive knowledge and experience in computer hardware & networking field. Curriculum includes information and practice activities to prepare students for configuring, monitoring and troubleshooting basic tasks of computer hardware, OS and networks.

Training course will build on your existing user-level knowledge and experience with computer software, hardware and Networking to present fundamental skills and concepts that you will use on the job. In this course, you will acquire the essential skills and information you will need to assemble, install, upgrade, repair, configure, troubleshoot, optimize, and perform preventative maintenance of basic computer hardware, operating systems and Network.

Eligibility:

A candidate is eligible for admission to the Certificate Course In Network Administration after passing 12th Std. examination (H.S.C. 10 +2) from any stream or equivalent.

Examination Pattern:

There will be written Examination of 80 marks and 3 hrs duration for every Course at the end of year.

Setting of Question Papers (Applicable to theory subjects)

1. A candidate shall have to **answer** the questions in all the subjects in English only.
2. Question papers shall be framed so as to ensure that no part of the syllabus is left Out of study by a candidate.
3. Question paper shall be balanced in respect of various topics outlined in the Syllabus.
4. The question papers shall have a combination of long, short answer and MCQ type Questions.

Award of Credits:

Each course having 4 credits shall be evaluated out of 100 marks and student should secure at least 40 marks to earn full credits of that course.

Evaluation Pattern:

Each course carrying 100 marks shall be evaluated with Continuous Assessment (CA) and University Evaluation (UE) mechanism. Continuous assessment shall be of 20 marks while University Evaluation shall be of 80 marks. To pass in the course, a student has to secure minimum 40 marks provided that he should secure minimum 32 marks in University Evaluation (UE). CA shall be based on internal tests (minimum 2 for 15 marks). In addition, for remaining 5 marks a teacher may assign various activities such as home assignments, 3 tutorials, seminars, presentations, group discussion etc, to the students and evaluate accordingly.

Syllabus Structure

Course Code	Course	Credits	Subject
DCHNT-101	CC	4	Windows Operating System
DCHNT-102	CC	4	Linux Operating System
DCHNT-103	CC	4	Networking and Internet
DCHNP -104	PR	4	Laboratory for Windows
DCHNP -105	PR	4	Laboratory for Linux
DCHNP -106	PR	4	Laboratory for Network and Internet

Number of Lectures: 64   **Total Credits: 04**

Objective:
  ➢ To know about working of networking models, addresses, transmission Medias
    and Connectivity devices.
  ➢ To acquire information about network security and cryptography.

Unit No	Contents	No. of Lectures
1	**Microprocessor System** **1.1** Introduction of System overview **1.2** Introduction to Processors **1.3** Memory Interfacing **1.4** Interfacing I/O Devices. **1.5** Interfacing Data Converters **1.6** Display Interface **1.7** Serial I/O and Data Communication **1.8** Higher Level Processors.	6

2	**Introduction to PC Architecture**
	2.1 Study of PC-AT/ATX System
	2.2 Pentium
	2.3 Core 2 Cord
	2.4 Core 2 Duo
	2.5 Processor
	        2.5.1 I3
	        2.5.2 I5
	        2.5.3 I7
	2.6 Basics of Processor and CPU
	2.7 Block Diagram of Computer and
	     Computer Generation
	2.8 Motherboards
	2.9 Chipset and Controllers
	2.10 BIOS and the Boot Process
	2.11 Computer Memory
		12

3	**Internal Components**
	3.1 IDE and SATA Devices
	        3.1.1 Hard Disk Drive and CD/DVDs
	             Drives.
	        3.1.2 SCSI Devices
	        3.1.3 Floppy Disk
	        3.1.4 Zip Drive
	        3.1.5 Backup Drive
	3.2 Expansion Cards
	        3.2.1 LAN Card.
	        3.2.2 IDE Card
	        3.2.3 VGA and SVGA Cards
	        3.2.4 Sound Card
	        3.2.5 Interface Cards
	        3.2.6 I/O cards
	3.3 Video Cards
	        3.3.1 USB Card
	        3.3.2 Fire-Wire Cards
	        3.3.3 Internal Ports
		12

		3.3.4 Cables and Connector Types.	

4	**External Components**
	  4.1 Monitors
	      4.1.1 CRT
	      4.1.2 LCD and LED Displays
	  4.2 Printers
	      4.2.1 Dot-Matrix Printer
	      4.2.2 Inkjet Printer
	      4.2.3 Laser Printer
	  4.3 Scanner
	      4.3.1 Photo Scanner
	      4.3.2 Documents Scanner
	  4.4 Other Devices
	      4.4.1 Keyboard
	      4.4.2 Mouse
	      4.4.3 External Modem
	      4.4.4 Ports and Connectors
	      4.4.5 Batteries and Power supply
	      4.4.6 Pen Drives
	      4.4.7 Devices
	      4.4.8 Laptop Computers
	      4.4.9 Digital Advance storage
	technology.
		12	

5	**Operating System Basics & Installation**
	      5.1.1 Introduction to OS
	      5.1.2 Types of Operating systems
	      5.1.3 System files FAT and NTFS
	      5.1.4 Installation of Windows 7 and
	            Windows 10
		4	

6	**Various types of Software Installation**
	      6.1.1 Office 2007 and Office 2010
	      6.1.2 Photoshop 7 and CS5
	      6.1.3 Java and Visual Studio
	      6.1.4 C & C++
	      6.1.5 Apache tomcat,
	      6.1.6 php Server's
	      6.1.7 Internet Browsers like- IE9,
	          Google Chrome, Mozilla
	          Firefox
		6	

7	**Device Installation**
	      7.1 Graphics Card
	      7.2 Sound Card
	      7.3 LAN Card
	      7.4 Wireless LAN Card
	      7.5 SCSI Card
	      7.6 External Drive
	      7.7 Flash Cards
	      7.8 Web Camera
	      7.9 Mobile Devices
	      7.10 Pen Drive
	      7.11 Wireless LAN
	  7.12 Access Point
		8	

8	**Introduction and Installation of Server** 8.1 Installation of server like windows	**4**	

| | 2008 and 2012
   8.2 user account administration
   8.3 group management
   8.4 implementing DNS server
   8.5 creating a Domain account
   8.6 File system NTFS permission | |

References:

- ➢ Introduction to Operating System by E Krogh.
- ➢ Windows Operating System Fundamentals: Microsoft Technology Associate.
- ➢ Operating System by Steven Hand.

Linux Operating System

Number of Lectures: 60   **Total Credits: 04**

Objective:
  ➢ To know about installation of Linux Operating System.
  ➢ To know working with GNOME and KDE.
  ➢ To know about the Linux Services

Unit No	Contents	Number of Lectures
1	Introduction and installation of Linux **1.1** History of Linux **1.2** Linux distributions **1.3** Features of Linux **1.4** advantages of Linux **1.5** Installation of Red Hat and SUSE Linux and Fedora Edition. **1.6** System requirements **1.7** Disk partition **1.8** Mount points **1.9** Installation method, **1.10** Creating the boot disk.	18
2	**Working with Linux GNOME and KDE** 2.1 User Management 2.2 Mounting, 2.3 X- windows Desktop environment 2.4 Using Gnome and KDE Desktop environment 2.5 Linux commands 2.6 Linux file system 2.7 Directories 2.8 Text Editors 2.9 Linux Shell.	19
3	**Linux Services** 3.1 Administering user accounts and groups 3.2 command line tool 3.3 Linux Package Installation, Educational Software, Installation in Linux. 3.4 Red Hat Linux and Multi Boot Operating System	21

References:
  ➢ Understanding the Linux kernel by Daniel P. Bovet
  ➢ Complete Reference Linux by Richard Petersen

<center>**Course Code: DCHNT – 103**</center>
<center>Networking and Internet</center>

Number of Lectures: 60   Total Credits: 04

Objective:
- ➢ To know about working of networking models, addresses, transmission medias and Connectivity devices.
- ➢ To acquire information about network security and cryptography.
- ➢ To know about Network Administration.
- ➢ To know about network security in Windows and Linux operating System.

Unit No	Contents	No of Lectures
1	**Basic Network Introduction & Installation** 1.1 Introduction About Network 1.2 Installing Network Operating System Windows 2012 Server 1.3 Cable Crimping 1.4 Network Sharing and user Permission 1.5 Internet Connection.	**10**
2	**Network Components** 2.1 Introduction of Network Cable like UTP, STP, Fiber Optics 2.2 Hub 2.3 Unmanageable Switch and Manageable Switch, 2.4 Router, Modem 2.5 Wi-Fi 2.6 Access Point 2.7 PCI Wireless Card 2.8 USB Wireless Device 2.9 Print Server and USB.	**12**
3	**Network Administration** 3.1 Installing and Configuring Wire & Wireless Network 3.2 Network Troubleshooting 3.3 Installing Manageable Switches, Routers, Wi-Fi Device, Printer and Other Network Devices.	**8**
4	**Network Security** 4.1 Network Services and Host Security 4.2 Web Server 4.3 File systems 4.4 IP address 4.5 DNS and Internet 4.6 Security fundamentals 4.7 system security 4.8 choosing user ID's for services 4.9 Network security	**10**

	4.10 IT laws and security.	

5	**WANs and Remote Connectivity**
	    5.1 Public networks
	    5.2 Remote connectivity for server and clients
	    5.3 Indoor and Outdoor Wireless
	    5.4 WLANWIFI and PCI Wireless Card
	    5.5 USB Wireless Card
	    5.6 Wireless Access Point
	    5.7 Security of networks like Firewalls Hardware and Software
		10

6	**Networking with Linux**
	    6.1 Installing and setting up a Network card
	    6.2 Setting TCP/IP parameters with Linux
	    6.3Testing the network
	    6.4 Configuration
	    6.5 Network Printing
		10

References:
- Computer Network by Ashish Kumar
- TCP/IP protocol by W. Richard Stevens
- Internetworking with TCP/IP Douglas E. Comer.

DCHNP -104
Laboratory for Windows
Practical Assignments
Total Credits: 04

Assignment No	Assignment Title	Objective
1	Assembling of a Computer.	➢ To know the basic Components. ➢ To understand use of each component. ➢ To know the hardware specifications. ➢ To understand the applicability.
2.	Installation of different device drivers.	➢ To know the different types of device drivers. ➢ To understand installation process of all the device drivers. ➢ To understand use of device drivers.
3	Installation of different application Software.	➢ To understand installation process of application software. ➢ To know the different types of application software.
4	To Run All Dos Command (Internal and External)	➢ To understand use of Internal and External DOS Commands.
5	Assembling and Dissembling of computer System.	➢ To know the basic Components ➢ To understand the use of each components. ➢ To know hardware specifications. ➢ To understand assembly process of computer system.
6	Installation of operating system.	➢ To understand installation process of operating system. ➢ To know the different types of operating system. ➢ To know the applicability of operating system.
7	Troubleshooting and Repair Operating System : Windows 7, Windows 10	➢ To know the basic concepts of Troubleshooting and Repair Operating System. ➢ To understand repairing process of operating system.
8	Tacking Data Backup , System Formatting and OS Installation	➢ To understand the concepts of data backup, formatting and installation. ➢ To know use of formatting and data backup.
9	Installation of Web Camera and CCTV Camera Drivers and Software	➢ To know the use of components. ➢ To understand installation process

			of CCTV and web camera.
11	Installation and Troubleshooting Different types of Antivirus Software	➢ ➢	To understand use of different types of antivirus software's. To understand process of Installation and Troubleshooting of Antivirus Software.
12	Installation and Troubleshooting of Printer (Dot-Matrix and Laser Printer)	➢ ➢ ➢	To know the different types of printers. To understand installation process of Dot matrix and Laser Printer. To Understand Troubleshooting process of printer.

DCHNP -105
Laboratory for Linux
Practical Assignments
Total Credits :04

Assignment No	Assignment Title	Objective
1.	Installation of Linux Operating System	➢ To know the concepts of Linux Operating system. ➢ To understand installation process of Linux operating system. ➢ Tom know different types of Linux operating system.
2	Installation Dual Operating System like: Windows and Linux	➢ To know about dual processing and booting. ➢ To understand dual installation process of windows and Linux operating system.
3	Installation of packages in Linux Operating System.	➢ To understand how to add packages in Linux operating system. ➢ To know the list of packages in Linux operating system.

DCHNP -106
Laboratory for Network and Internet
Practical Assignments

Assignment No	Assignment Title	Objective
1	To Run All Types of Network Troubleshooting Command	➢ To know use of network troubleshooting commands. ➢ To understand how to run troubleshooting command for smooth running of network.
2	Cable Crimping using Different Color Codes (Straight and Cross Cable)	➢ To know different types of cables. ➢ To know the different types of color codes. ➢ To understand the cable crimping concept. ➢ To understand cable crimping with different colors.
3	Installation and configuring Peer to Peer and Server-Client Network.	➢ To know the concept of Peer to Peer network and Server Client Network. ➢ To understand installation and configuration process of peer to peer and server-client network.
4	Installation and Configuring Active Directory Services.	➢ To understand the concept of Directory Services. ➢ To understand installation and configuration of active directory services.
5	Installation and Configuring DNS & DHCP Services	➢ To understand the concept of DNS and DHCP Services. ➢ To understand installation and configuration of DNS and DHCP services.
6	Installation and Configuring FTP, HTTP Services	➢ To understand the concept of FTP and HTTP. ➢ To understand installation and configuration of FTP and HTTP services
7	FAT and NTFS Sharing Permission	➢ To understand the concept of FAT and NTFS sharing Permission. ➢ To know how to use FAT and NTFS sharing permission.

8	Configuring & Implementing Unmanageable Network Switch	➢ To know the concept of switch. ➢ To understand how to configure and implement manageable network switch.
9	Configuring a Local Security Policies & Domain Security Policies	➢ To know the concept of Security Policies. ➢ To understand the difference between Local and Domain Security policies. ➢ To understand the concept of configuration of Security policies.
10	Configuring Wireless Access Point	➢ To understand the concept of wireless Access point. ➢ To know the process of configuration of wireless access point.
11	Installation and Configuring Wire Network.	➢ To understand the concept of wire network. ➢ To understand the process of installation and configuration of wire network.
12	Installation and Configuring Wireless Network	➢ To understand the concept of wireless network. ➢ To understand the process of installation and configuration of wireless network
13	Installation and Configure Different Antivirus Software and Admin Console	➢ To know the list of antivirus software's. ➢ To understand the concept of installation and configuration of antivirus software's and admin console.
14	Remote Desktop, Remote Assistance, Telnet, HyperTerminal, Team Viewer	➢ To understand the basic. ➢ To know use of all. ➢ To understand how to implement them.