

**Department** : COMPUTER SCIENCE  
**Name of the course** : COMPUTER HARDWARE AND NETWORKING ADMINISTRATION  
 (UGC Approval No : F.No. 4-148/2005 (COP), dt.16.12.2004 ]

COURSE CODE	COURSE	COURSE TITLE	TEACHING HOURS	CREDIT	CIA MARKS	SE MARKS	TOTAL MARKS
<b>CERTIFICATE COURSE</b>							
14CSCT1	CORE I	Basic Computer Hardware	150	10	40	60	100
14CSCT2	CORE II	System Assembly Maintenance and Troubleshooting	150	10	40	60	100
14CSCT3P	CORE III	PC assembly and Troubleshooting Lab	150	10	40	60	100
<b>TOTAL</b>			<b>450</b>	<b>30</b>	<b>120</b>	<b>180</b>	<b>300</b>
<b>DIPLOMA PROGRAMME</b>							
14CSDM1	CORE I	Novell Netware Administration	150	10	40	60	100
14CSDM2	CORE II	Windows Administration	150	10	40	60	100
14CSDM3P	CORE III	Networking Lab – I	150	10	40	60	100
<b>TOTAL</b>			<b>450</b>	<b>30</b>	<b>120</b>	<b>180</b>	<b>300</b>
<b>GRAND TOTAL</b>			<b>900</b>	<b>60</b>	<b>240</b>	<b>360</b>	<b>600</b>
<b>ADVANCED DIPLOMA PROGRAMME</b>							
14CSAD1	CORE I	UNIX/LINUX Administration	150	10	40	60	100
14CSAD2	CORE II	Internet Programming	150	10	40	60	100
14CSAD3P	CORE III	Networking Lab – II	150	10	40	60	100
<b>TOTAL</b>			<b>450</b>	<b>30</b>	<b>120</b>	<b>180</b>	<b>300</b>
<b>GRAND TOTAL</b>			<b>1350</b>	<b>90</b>	<b>360</b>	<b>540</b>	<b>900</b>

\* Practical Examinations will be conducted at the end of the year

**CORE – I**  
**BASIC COMPUTER HARDWARE**

**Course Code : 14CSCT1**  
**Hours/Week : 10**  
**Credit : 10**

**Max. Marks : 100**  
**Internal Marks : 40**  
**External Marks : 60**

**Objective:**

To provide basic knowledge in electronic devices, computer architecture, computer hardware, and networking devices.

**UNIT-I**

**30 hours**

Basic Electronics : Resistors - Capacitors - Diodes - Transistors - FET - Transformers - Inductance - Filter Circuits - Rectifiers - Integrated Circuits - #Power Supplies#.

**UNIT-II**

**30 hours**

PC Architecture : The Case - The Power Supply - The Motherboard - Architecture - The Processor/CPU - Architecture - Memory - #RAM# - Storage Devices - Adapter Cards - Display Devices - Ports and Cables.

**UNIT-III**

**30 hours**

Input/Output Hardware : Keyboard - Organisation - Keyboard Types - Mouse - Mouse Types - Scanners - Digital Camera - Monitor - Monitor Types - Printers - Printer Types - Hard Disk Drive - Floppy Disk Drive - #CD-ROM Drive# - DVD-Drive.

**UNIT-IV**

**30 hours**

Networking Fundamentals - LAN & WAN - Network Components - Topologies - Communication - Architecture - Network Media - #Network Interface Card# - Media Access Methods

**UNIT – V**

**30 hours**

Network Connectivity devices – Repeaters – Hubs/Switches - Bridges - Routers – Gateways – #WIFI# – Bluetooth – Networking and the Internet.

**# ..... # self-study portion.**

**Text Books :**

1. Albert P.Malvino, Basic Electronics, TMH, 5<sup>th</sup> Edition, 1998.  
**UNIT I :** Chapter 1, 2, 3, 4, 5
2. David Groth, A+ Complete Study Guide, Sybex, Third Edition, 1999.  
**UNIT II :** Chapter 1, 2  
**UNIT IV :** Chapter 5  
**UNIT V :** Chapter 5
3. Manahar Lotia & Others, Modern Computer Hardware Course, BPB, First Edition, 2004.  
**UNIT III :** Chapter 7, 8, 9, 10, 11, 12

**Books for Reference :**

1. N. Mathivanan, Microprocessors, PC Hardware and Interfacing, PHI, 2003.

**CORE - II**  
**SYSTEM ASSEMBLY, MAINTENANCE & TROUBLE SHOOTING**

**Course Code : 14CSCT2**  
**Hours/Week : 10**  
**Credit : 10**

**Max. Marks : 100**  
**Internal Marks : 40**  
**External Marks : 60**

**Objective:**

To provide knowledge in system assembly, maintenance, and trouble shooting.

**UNIT – I**

**30 hours**

Building a PC : Gathering Tools - Gathering Parts - Preparing the Motherboard -Installation of the Motherboard, the Power supply, Storage Devices, Expansion Cards -#Connecting External Peripherals# - Configuring CMOS

**UNIT –II**

**30 hours**

Backup Troubleshooting - BIOS Upgrade Troubleshooting - Troubleshooting CD Drives - CMOS Maintenance and Troubleshooting - Troubleshooting CPU Problems -Troubleshooting a Drive Adapter - Troubleshooting DVD Drives - #Troubleshooting Cooling Problems# - Floppy Drive and HDD Troubleshooting.

**UNIT – III**

**30 hours**

Keyboard Maintenance and Troubleshooting - Memory Troubleshooting -Troubleshooting Pointing Devices - Motherboard Troubleshooting - #Parallel Port Troubleshooting# - Plug-and-Play Configuration and Troubleshooting

**UNIT – IV**

**30 hours**

Troubleshooting Power Protection Devices - Troubleshooting Power Supplies and Power Management -Troubleshooting the SCSI System - Troubleshooting Sound Boards and Video Adapters. Installing Speakers/Headphones - Installing the Operating System -Removal and Replacement Procedures - Upgrading PC Components - Installing PC Peripherals - #Installing Network/Modem Connections#

**UNIT – V**

**30 hours**

Software Troubleshooting - #DOS Troubleshooting# - Windows Troubleshooting -Optimizing PC Performance - Preventing Electrostatic Discharge - Maintaining Safety -Environmental Concerns - Cleaning Systems.

# ..... # self-study portion

**Text Book:**

1. David Groth, A+ Complete Study Guide, Sybex , Third Edition, 1999.  
**UNIT I** : Chapter 8,  
**UNIT V** : Chapter 9,10
2. Stephen J. Bigelow, *PC Troubleshooting & Repair The Ultimate Reference*, Dreamtech, Second Edition,1999.  
**UNIT II** : Chapter 4, Chapter 6 ,Chapter 8, Chapter 10, Chapter 12, Chapter 14, Chapter 15 , Chapter 18 ,Chapter 19, Chapter 20  
**UNIT III** : Chapter 22 , Chapter 23, Chapter 24, Chapter 26, Chapter 27, Chapter28  
**UNIT IV** : Chapter 29, Chapter 30, Chapter 32, Chapter 34, Chapter 35  
Chapter 14, Chapter 8 ( A+ Complete Reference)

**Books for Reference :**

1. Stephen J. Bigelow, *Troubleshooting, Maintaining and Repairing PCs*, Osborne/McGraw-Hill, 5th Edition, 2001.

**CORE- III**  
**PC ASSEMBLY AND TROUBLESHOOTING LAB**

**Course Code : 14CSCT3P**  
**Hours/Week : 10**  
**Credit : 10**

**Max. Marks : 100**  
**Internal Marks : 40**  
**External Marks : 60**

1. Identification of basic electronics components.
2. Power supply functions and operations.
3. Identification and function of Motherboards, CPUs and RAMs.
4. Identification and function of Storage Devices (FDD, SCSI-HDD, CD-ROM, and DVD)
5. Identification and function of adapter cards (Video, Sound, Ethernet, Modem)
6. Identification and function of Ports and Cables.
7. Identification and function of input and output devices (Keyboard, Mouse, Monitor, Printer).
8. Assembling a PC

- Gathering Parts
- Installing the Motherboard
- Installing the Power supply
- Installing Storage Devices
- Installing Expansion cards
- Installing other external Peripherals
- Connecting the Power, Testing and Configuring CMOS
- Installing Network/Modem connections
- Installing Speakers/Headphones

9. Removing and replacing the components
10. Installing the operating system (DOS, Windows 98, Windows 2000, Windows-XP)
11. Upgrading PC Components
12. Hardware Troubleshooting

- POST Routines
- BIOS problems
- Power supply problems
- Motherboard problems
- Hard disk problems
- Keyboard and Mouse problems
- Monitor problems
- Floppy Drive problems
- Sound Card problems
- Printer problems
- Other Peripheral problems

13. Software Troubleshooting (DOS, Windows)

**CORE - I**  
**NOVELL NETWARE ADMINISTRATION**

**Course Code : 14CSDM1**  
**Hours/Hours : 10**  
**Credit : 10**

**Max. Marks : 100**  
**Internal Marks : 40**  
**External Marks : 60**

**Objective:**

To provide knowledge in the basic concepts of networking and network administration.

**UNIT - I**

**30 hours**

The Client - Server Model - Four Main Components of the Netware v3.x Operating System - The Netware Loader - The Netware Kernel - The Netware Scheduler - Structure of an IPX Packet - The NLM Environment - Application Services - #print Services# - Architecture Summary.

**UNIT – II**

**30 hours**

Protocol and workstation support - Multiple Name Spaces - Media-Level Protocols - Netware's Transport and Service Protocols - Network Topologies - Cabling Types - General Cabling Concepts - Ethernet Cabling Concepts - #Token# - Ring Cabling Concepts

**UNIT - III**

**30 hours**

Installing Netware 3.x on the Server - Loading Netware Disk Drivers - Running the INSTALL NLM - Creating Netware Volumes - Copying the System and Public Files - Loading Server LAN Drivers - Checking Driver Parameters with the CONFIG Command - Loading NLMS and Editing Server Boot Files - Creating the Server Boot Files - #Editing the Server Boot Files#.

**UNIT – IV**

**30 hours**

Netware Directory Services - Netware 4 Enhanced File System - Netware 4 Security - Netware 4 Utility Management - Netware 4 Configuration - Netware 4 Management - Netware 4 Printing - Other Netware 4 Features - Understanding NDS - NDS Objects - NDS Naming - NDS Partitioning - #Time Synchronization#.

**UNIT - V**

**30 hours**

Netware 4 Simple Installation - Netware 4 Custom Installation - Installing other stuff - Netware 4 Configuration - Establishing Workstation Connectivity - Login Scripts - Creating the Menu System - Installing Network Applications - #E-mail#.

# ..... # **self-study portion.**

**Text Book:**

1. David James Clarke, Novell's Study Guide for Netware 4.1, Novell Press, Comdex Computer Publishing, 2<sup>nd</sup> Edition, 1996.  
**UNIT IV** : Chapter 1, 2  
**UNIT V** : Chapter 6, 12
2. Michael Day, Ken Neff, Troubleshooting Netware for the 386, BPB, First Edition, 1993.  
**UNIT I** : Chapter 1  
**UNIT II** : Chapter 3,4  
**UNIT III** : Chapter 5,6,7

**Books for Reference :**

1. Warren Wroystek, Novell Netware 6.5 CNA, Pearson IT Certification, 2005.

**CORE - II**  
**WINDOWS ADMINISTRATION**

**Course Code : 14CSDM2**  
**Hours/Week : 10**  
**Credit : 10**

**Max. Marks : 100**  
**Internal Marks : 40**  
**External Marks : 60**

**Objective:**

To impart knowledge in windows NT, Windows server, DNS, and managing users and groups.

**UNIT – I**

**30 hours**

Overview of NT, Profile Basics - understanding client / server model - windows NT differs from windows 98, windows 2000 - setting up the drivers - #setting up the driver card# - setting up the server for FAT and convert - choosing and NT partition -trust relationship.

**UNIT – II**

**30 hours**

Windows Server 2000 Architecture , Availability services , Hardware support and plug and play, internet services - #Understanding Kerberos# - TCP/IP Basics(IPV4) Setting up TCP/IP - Understanding and using IPV6.

**UNIT – III**

**30 hours**

Windows Server Active Directory - Why do we need directories , What is active directory - Element of Active Directory - The Active directory database structure . Active Directory Physical Architecture -#Naming Conventions# - Domain object -Tree - Forests, Trusts.

**UNIT – IV**

**30 hours**

Basic Concepts of DNS - DHCP understanding DHCP, WINS, Administration Planning - Delegating admin - Delegating Forests, trees and Organizational unit -#Troubleshooting concepts ping, Ipconfig, Net state, Hostname , Tracert,ARP, orbstat, NS lookup#.

**UNIT – V**

**30 hours**

Managing users and groups - Architecture group policy - #Password Policy, Account lockout Policy, Audit Policy, Event log, Locking down desktop, customizing login/logoff, controlling the start menu , folder redirection#.

**# ..... # self-study portion**

**Test Books:**

1. Alan R. Carter, Installing, Configuring and Administering Windows 2000 Professional Windows 2000 server Windows 2000 Networking Infrastructure Windows 2000 Directory Services, Wiley Dreamtech India, 2005.  
**UNIT II** : Chapter 1, 16  
**UNIT III** : Chapter 2  
**UNIT V** : Chapter 9, 10
2. Kathy Ivens, Kenton Gardinier, The Complete Reference Windows 2000, TMH, 2000.  
**UNIT I** : Chapter 1, 2
3. William Bosewell, Inside Windows Server 2003, Pearson Education, First Edition, 2003.  
**UNIT IV** : Chapter 4, 5

**Books for Reference:**

1. Tom Carpenter, Microsoft Windows Server Administration Essentials, Sybex 1<sup>st</sup> Edition, 2011.

**CORE - III**  
**NETWORKING LAB - I**  
**(NOVELL NETWARE AND WINDOWS ADMINISTRATION)**

**Course Code : 14CSDM3P**

**Hours/Week : 10**

**Credit : 10**

**Max. Marks : 100**

**Internal Marks : 40**

**External Marks : 60**

**Novell Netware Administration**

1. Steps for Server Installation
2. Choosing to Boot Netware from a DOS Partition
3. Creating DOS Partition
4. Preparing the Server and Booting with DOS
5. Loading Netware and Deleting Existing Partitions
6. Creating New DOS partition using FDISK Command
7. Formatting the DOS partition
8. Installing Netware v3.11 on the Server
9. Loading Netware Disk Drivers and Setting up Netware Partitions
10. Creating Netware Volumes and Copying the System and Public Files
11. Loading LAN Drivers, Creating and Editing the Server Boot Files
12. Security Concepts and Setting up Netware Security
13. Utilities for Finding Security Problems
14. Netware User and Group Concepts
15. Creating Login Scripts
16. Setting up Netware Printing using the Netware Printing Utilities.

**Windows Administration**

1. Installation of Windows 98.
2. Installation of Windows NT, 2000, XP.
3. Installation of Windows Server 2000 and 2003.
4. Promote the Member Server to Domain Controller
5. Configuring Domain Name Service (DNS)
6. Creating the various Profiles.
7. Creation of Organization Unit (OU)
8. Creation of Users, Group Users.
9. Implementation of Policy for Users and Group Users.
10. Configuring DHCP, WINS, NAT.
11. Implementation Delegation of Administration
12. Creation of Remote Desktop
13. Terminal Services
14. Creating of Disk Volume (Simple Volume, Span Volume, Striped Volume)
15. DFS Creating.
16. Troubleshooting Command lines Command Ping, Ipconfig, Netstate, Hostname, Tracert, ARP, Nb Stat, netshare.

**CORE - I**  
**UNIX / LINUX ADMINISTRATION**

**Course Code : 14CSAD1**  
**Hours/Week : 10**  
**Credit : 10**

**Max. Marks : 100**  
**Internal Marks : 40**  
**External Marks : 60**

**Objective :**

To provide knowledge in Unix, system administration, and networking.

**UNIT – I** **30 hours**

Unix : Introduction - Features of UNIX - UNIX System Organization - #UNIX File System# - Login and Logout Commands : Directory Oriented Commands , File Oriented Commands, Process Oriented Commands, Communication Oriented Commands, General . Purpose Commands. SHELL Programming: The Introduction - Shell script -Command Grouping - Shell Variables - Conditional parameter substitution. - Escape Mechanisms - #Shell Functions#.

**UNIT – II** **30 hours**

System Administration : Introduction - The System Administrator - Booting the System-Shutting down the System - Adding and deleting a user - Managing devices - Mounting the File System - Compression and Decompression - #Backup Utilities# - Accessing Remote Systems.

**UNIT – III** **30 hours**

Linux Introduction and Installation: Linux- Advantages - Red Hat Linux - New Features Installation Procedures and methods Using Desktop-GNOME-KDE-Linux Commands ,Accessing and Running Applications - Installing Red Hat Linux Applications, Running Window Application, Running Window, #DOS and Macintosh Applications# - Tools for using Internet and Web.

**UNIT – IV** **30 hours**

Administration : Understanding System Administration : Root login-super user - GUI tools, commands and Log files - Configuring Hardware - File System and Disk Management- Monitoring Performances. Setting Up and supporting users : Creating user accounts - Setting user defaults - #Creating Desktops# - Modifying and Deleting Accounts.

**UNIT – V** **30 hours**

Networking : Setting up a LAN-LAN-Wireless-LAN-Understanding IP Addresses, Connecting to the Internet : Dial up connection - Red Hat Linux as a router - VPN connection - Red Hat Linux as a proxy server - proxy clients. Setting up File Server -#Setting up a Web Server# - Setting up a Apache Web Server- #Configuring Apache Server-Starting and Stopping the Server#.

**# ..... # self-study portion**

**Text Book:**

1. Sumitabha Das, UNIX Concepts and Applications, Tata McGraw-Hill Publishing Company Ltd., New Delhi, 2003.  
**UNIT I** : Chapter 1, 2, 3  
**UNIT II** : Chapter 5, 6, 7
2. Christopher Negus, Red Hat Linux 9 Bible, WILEY - Dreamtech India Pvt. Ltd, First Edition, New Delhi, 2003.  
**UNIT III** : Chapter 1, 2, 3  
**UNIT IV** : Chapter 6, 7, 8
3. Neil Matthew, Richard Stones, Beginning Linux Programming, Wiley Dreamtech, 3<sup>rd</sup> Edition, 2004.  
**UNIT V** : Chapter 1, 6, 7

**Books for Reference:**

1. Love, Linux System Programming, Shroff, First edition, 2007.



**CORE - II**  
**INTERNET PROGRAMMING**

**Course Code : 14CSAD2**  
**Hours/Week : 10**  
**Credit : 10**

**Max. Marks : 100**  
**Internal Marks : 40**  
**External Marks : 60**

**Objective:**

To impart knowledge in basics of Internet and Internet programming.

**UNIT – I** **30 hours**

Introduction to the Internet: Introduction - Evolution and growth of Internet - Working of the Internet — Hardware requirements - Software Requirements - Mail clients -Resource Sharing , Gopher - FTP - #Usenet# — Bulletin Board Systems - Wide Area Information Service.

**UNIT – II** **30 hours**

Getting Online : Internet Connections - Internet Accounts and Addressing - Types of Internet Accounts - Types of Internet Addresses - Electronic Mail. Free E-Mail Accounts - Opening and Submitting the Registration Form, reading and Sending mails -#Using Address Book. World Wide Web : Types of Web Site, URL, Visiting Websites# -Searching Web - Search Engine - Cookies.

**UNIT – III** **30 hours**

Internet Basics : Basic Concepts - Internet Domains - IP Address - TCP/IP Protocol -The WWW - #Telnet# - Introduction to HTML : Web Server - Web Client - Browser -Tags - Text Formatting - Lists - Tables - Linking Documents - #Frames#.

**UNIT – IV** **30 hours**

XML : Comparison with HTML - DTD - XML elements - Content creation Attributes - Entities - XSL - XLINK - XPATH - XPOINTER - Name Spaces - #Applications #-integrating XML with other applications.

**UNIT – V** **30 hours**

File Server : Setting up a Web Server - Setting up a Apache Web Server in Linux -#Configuring Apache Server#- Starting and Stopping the Server. Configuring DNS in Windows 2000 - Configuring VPN in Windows 2003 - Configuring Group Policies -Configuring Remote Desktop - Application server - Remote Printing - #RAS server#.

**# ..... # self-study portion**

**Text Books :**

1. K.L. James, The Internet A User's Guide, Prentice Hall of India, New Delhi, Second edition,  
**UNIT I:** Chapter 1, 2, 3, 4, 6  
**UNIT II:** Chapter 5, 6, 7, 8
2. C. Xavier, World Wide Web Design with HTML, Tata McGraw-Hill Publishing, New Delhi, First edition, 2001.  
**UNIT III :** Chapter 2, 4, 5, 6, 7
3. Kris Jamsa and Ken Cope, Internet Programming, First edition, Tata McGraw-Hill Publishing, 1995.  
**UNIT IV :** Chapter 2, 4, 17, 18, 19
4. Elliotte Rusty Harold, XML Bible, Wrox Publication, 2<sup>nd</sup> edition, 2003.  
**UNIT IV :** Chapter 3, 4, 5
5. Christopher Negus, Red Hat Linux 9 Bible, WILEY - Dreamtech India Pvt. Ltd., New Delhi, First edition, 2003.  
**UNIT V :** Chapter 1, 2, 6, 7, 8

**Books for Reference :**

1. Jonatha Hassel, Windows Server 2003 : The complete reference, 1<sup>st</sup> edition, Tata McGraw Hill.
2. Joe Fawcett, Danny Ayers and Liam R.E. Quin, Beginning XML, 5<sup>th</sup> Edition, July 2012.

**CORE - III**  
**NETWORKING LAB - II (UNIX/LINUX AND INTERNET)**

**Course Code : 14CSAD3P**  
**Hours/Sem. : 10**  
**Credit : 10**

**Max. Marks : 100**  
**Internal Marks : 40**  
**External Marks : 60**

1. Write a Menu driven shell program to copy , edit ,rename and delete a file.
2. Write a shell program to prepare the electricity bill based on following rules :  
For First 100 units - Rs. 1.00/unit For next  
100 units - Rs.2.00/unit Above 200 units -  
Rs. 3.00/unit
3. Write a XML program for job listing in HTML.
4. Develop a college website using HTML.
5. Execute simple commands in Linux
6. Execute Advanced Commands in Linux.
7. Install Red Hat Linux and configure the network.
8. Configure DNS in Linux
9. Configure DHCP in Linux
10. Configure Mail server system.
11. Configure NFS
12. Install Linux on Multi operating System
13. Configure Print Queuing in Linux.
14. Configure Astro Firewall on the Linux Environment.
15. Creation of Users, Groups, Policies and giving Access rights to users.
16. Working with various modes like GNOME and KDE environment.
17. Setup a Peer to Peer Network using Linux.
18. Install Oracle Software on Linux.
19. Creation of Mail ids , sending, receiving, downloading a document and a Image.
20. Demonstrate the Operations using FTP,TFTP,TELNET
21. E-Mail Signatures.