CERTIFICATE IN COMPUTER HARDWARE AND NETWORK TECHNOLOGY
(CCHNT)

COURSE STRUCTURE

UNIVERSITY SCIENCE INSTRUMENTATION CENTRE (USIC)

GUJARAT VIDYAPITH: AHMEDABAD – 14

USIC DEPARTMENT: GUJARAT VIDYAPITH

CERTIFICATE IN COMPUTER HARDWARE AND NETWORK TECHNOLOGY (CCHNT)

1. **Course Name** :- **Certificate in Computer Hardware & Network Technology**

2. **Eligibility** :- **12 Pass / Fail**

3. **Duration** :- **Six Months**

4. **Intake** :- **20 Student.**

5. **Course Fee** :- **Rs. 5000/-**

6. **Course Timing** :- **Monday to Saturday (Two Hours)**

7. **Medium of Teaching** :- **Gujarati / English.**

8. **Admission Procedure** :- **By written and oral Exam.**

9. **Presence (Working days)** :- **90% Present is Compulsory**

CERTIFICATE IN COMPUTER HARDWARE AND NETWORK TECHNOLOGY

SUBJECT AND EXAM CODE
(6 MONTHS DURATION)

Paper No.	Name of Subject	External Marks	Internal Marks	Total Marks
CCHNT-101	Basic Electronics Circuits	60	40	100
CCHNT -102	Computer Hardware & Operating System	60	40	100
CCHNT -103	Network Management & Administration	60	40	100
CCHNT -104	Practical (101,102,103)	60	40	100
CCHNT-105	Project (101,102,103)	60	40	100
	TOTAL	300	200	500

PAPER: 1

CCHNT 101 : BASIC ELECTRONICS CIRCUITS

1.1   BASIC ELECTRICITY

Atom, Molecule, Electrons, Current, Voltage, Resistance, Power, Conductor, Ohm's Law, Electric Circuit, Switch Board Wiring.

1.2   BASIC ELECTRONICS COMPONENT

Register, Capacitor, Inductor, Transformer, Diode, Zener Diode, Transistor, ICs, Coils, Relays, Batteries, Fuse, Switches etc.

1.3   TO USE VARIOUS LABORATORY INSTRUMENTS & DEVICES

Multi-Meter, Oscilloscope, Function Generator, Soldering Iron, De-Soldring Pump, Component Testing, Soldering and De-Soldring

1.4   ELECTRONICS CIRCUITS

Series and Parallel Circuits of Resistor, Capacitor, Inductor, Battery, Diode. Half-wave, Full-wave and Bridge Rectifier Circuit. Linear and Switch Mode Power Supply Circuit.

PAPER: 2

CCHNT 102: COMPUTER HARDWARE & OPERATING SYSTEM

2.1   Internal and External Components

Processor, Motherboard, BIOS, Hard Disk Drive IDE and SATA Hard disk and DVD-RW & CD-RW drives, Floppy Disk, Zip Drive, Expansion cards- PCI LAN Card, PCI IDE Card, PCI VGA Card, AGP VGA Card, PCI Sound Card, PCI USB Card, USB Hub, PCI Fire wire cards, Internal Ports and External Ports, Cables and All Types of Connector and Converter

System Case (Cabinet), Monitors: - CRT, LCD and LCD Displays, Projector, Printers, Scanners, Modem, Keyboard, Mouse, Ports and Connectors, Power Supply (AT SMPS and ATX SMPS)

2.2   Operating System Installation Configuration

Introduction to DOS Command (Internal and External DOS Command)
Introduction to Operating System Types of Operating Systems,
System files & Booting System, Installing of Windows XP, Windows 7 & Windows 8
Installing Dual Operating System and Virtual Operating System

2.3   Various types of Software Installation

MS-Office 2003 and Ms-Office 2007 and Ms-Office 2010
Adobe Acrobat Reader, Adobe Photoshop, Adobe PageMaker Corel-Draw 12
Tally 7.2 and Tally ERP, Printer and Scanner Software Installation

2.4   Installation of Device and Drivers

All Types of PCI Device and Driver Installation AGP and PCI-e Graphics Card
Drivers Installation PCI and On Board Sound card, PCI and On Board LAN card
Web Camera, CCTV Camera, Printer, Scanner, Modem and Network Switch

2.5   Diagnostic Tools & PC Maintenance

Introduction of Virus and its types, Installation of Anti Virus Software and
Virus remover tools, Safety and Preventive Maintenance Tools
Concept of Printers, Scanner, Fax, E-mail, and Internet
Troubleshooting of Operating System and Hardware Problems

CCHNT 103: NETWORK MANAGEMENT & ADMINISTRATOR

3.1 Overview of Networking

Introduction to networks and networking, LAN, CAN, MAN, WAN,
Internet and Intranet, Uses and benefits of Network,
Server-Client based Network, peer to peer Networks.

3.2 Network Hardware & Component

Concept of Server, client, node, segment, backbone, host etc. Analog and
Digital transmission, Network Interface Card, Crimping tools and Color,
standards for Straight crimping and Cross crimping Functions of NIC,
Repeaters, Hub, Switches, Routers, Bridges, Router etc.

3.3 IP Address and Sub-Netting

Introduction of TCP/IPv6 and Sub-netting, IP Classes A, B, C and D
Local IP Address and Public IP Address, Static and Dynamic IP Address

3.4 Transmission Media and Topologies

Media types: STP cable, UTP cable, Coaxial cable, Fiber cable, Base band and
Broadband transmission, Cables and Connectors, Physical and logical
Topologies, Bus, Star, Ring and Mesh Topologies

3.5 Protocols and Services

TCP/IP, Net Bios, ARP and other Different types of protocols,
OSI Layer, Media Access Method,
DNS services, DHCP services, HTTP services, RAS services,
Web services, Proxies Server, FTP etc.

3.6   Introduction & Installation of Server and Client Operating System

Features of Windows Network Operating System
Installation of Windows 2003 and Windows 2008 Server
Windows XP professional, Windows 7 Ultimate and Windows 8 Pro

3.7   Configuring Client & Managing Users and Groups

Configuring workstation & client computers, Managing user accounts, managing groups, Managing user rights, Managing file and folder sharing, Copying or moving files between FAT & NTFS partitions, accessing resources, Data Access and Permission

3.8   Windows Administration

Data Backup with Windows Backup Utility
Active Directory Data Backup and Restoration
Managing Different types of profiles (Local Profile and Roaming Profile)
Using Disk Space administration
Sharing Printer and Administration with Windows 2003 and 2008 Server
IP Addressing, Subnet Mask & Gateway
Internet Security with Antivirus Software.
Remote Desktop, Remote Assistance, Telnet, HyperTerminal, TemViwer

3.9   Managing Network Services

Installing, Configuring and Managing ADS Services (Domain Controller)
Installing, Configuring and Managing DHCP services
Installing, Configuring and Managing DNS services
Installing and Configuring FTP and HTTP Servers
Unattended/Automatic Installation Services

3.10   Wireless Network Technology

Managing Public Networks, Remote connectivity for server and clients, Indoor and Outdoor Wireless Network, WLAN- WIFI and WIMAX, PCI Wireless Card, USB Wireless Card, Wireless Access Point, Wireless Access Point with Router, Security for Networks Like: Firewalls Software & Firewall Hardware Devices

PAPER: 4

CCHNT 104 : PRACTICAL (101,102,103)

1. Switch Board Wiring and Testing

2. Soldering and De-Soldering Practice

3. Component Testing and Symbols

4. Voltage Measurement of Different Circuits

5. Testing and Measurement of SMPS

6. Biometric Security Device Installation and Configuration

7. To Run All Dos Command (Internal and External Dos Command)

8. Assembling and Dissembling Of a Computer System

9. Installation of Different Operating Systems : Windows XP, Windows 7

10. Troubleshooting and Repair Operating System : Windows XP, Windows 7

11. Tacking Data Backup and System Formatting and OS Installation

12. Installation of Different Device and Drivers PCI, PCI-E, AGP

13. Installation of Ms Office 2003, Ms-Office 2007 and Ms-Office 2010

14. Installation of On Board and PCI Device Driver

15. Installation of Web Camera and CCTV Camera Drivers and Software

16. Installation of Application Software : Photoshop 7.0, Page Maker 6.5, CorelDraw 12

17. Installation of CD-DVD Burning Software like: Nero 7.0 & PowerISO 4.0

18. Installation of Tally 7.2 and Tally ERP 9.0 and Tack Data Backup

19. Installation and Troubleshooting Different types of Antivirus Software

20. Installation Dual Operating System like: Windows XP and Windows 7

21. Installation and Troubleshooting of Printer (Dot-Matrix and Laser Printer)

22. Installation and Troubleshooting of Scanner (Photo & Bar Code Scanner)

23. To Repair and Troubleshooting of SMPS, Monitor, Printer and Motherboard

24. To Install All Types of Connectors and Converters

25. To Run All Types of Network Troubleshooting Command

1. Installing and Configuring Windows 2003 and 2008 Server

2. Cable Crimping using Different Color Codes (Straight and Cross Cable)

3. Installation and configuring Peer to Peer and Server-Client Network

4. Installation and Configuring Active Directory Services

5. Installation and Configuring DNS & DHCP Services

6. Installation and Configuring FTP, HTTP Services

7. Backup and Restoration for ADS, DHCP and User Data

8. FAT and NTFS Data Sharing Permission

9. Configuring & Implementing Unmanageable Network Switch

10. Configuring & Implementing Manageable Network Switch

11. Configuring a Local Security Policies & Domain Security Policies

12. Installing Printer in Windows XP, Windows 7, Windows 2003 & 2008 Server

13. Configuring Gateway Service for Internet Connectivity

14. Configuring ADSL+2 Router for BSNL Internet Connectivity

15. Configuring Wireless Access Point

16. Installation and Configuring Wire Network

17. Installation and Configuring Wireless Network

18. Installation of AD-hoc Wireless Network

19. Installation and Configure Different Antivirus Software and Admin Console

20. Remote Desktop, Remote Assistance, Telnet, HyperTerminal, TeamViewer

PAPER: 5

<u>CCHNT 105 : PROJECT</u>

1. **Hardware Project :-**
    1. Processor (All Types of CPU and Socket)
    2. Motherboard (All Types of Motherboard)
    3. RAM (EDO, SDRAM, DDR I, II and III)
    4. Hard Disk Drive (IED and SATA Technology)
    5. PCI Device (Graphic Card, Sound Card, LAN Card etc.)
    6. Storage Devices (IDE, SATA, Floppy, Flash Driver, Pen Drive)
    7. Printer (Dot-Matrix, Ink-Jet and Laser Printer)
    8. Scanner (Photo Scanner, Bar Code Scanner, Document Scanner)
    9. Display Devices (CRT, LCD, LED and Projector)
    10. Optical Devices (Floppy, CD-DVD, Mouse)
    11. SMPS (AT and ATX)
    12. Electronic Project

2. **Network Project :-**
    1. Network Topologies (Bus, Ring, Star, Mash and Hybrid)
    2. Network Protocols (TCP/IT, SMTP, Pop3, IMAP, FTP, HTTP)
    3. OSI Layers (Physical Layer, Data-Link Layer, Network Layer…)
    4. Wire Network (LAN, CAN, MAN and WAN)
    5. Wireless Network (IEEE 802.11a, 802.11b, 802.11g, 802.11n)
    6. Network Devices (Hub, Switch, Router, Wireless Devices)
    7. Network Media (Co-axial, UTP, STP and Fiber Optics Cable)
    8. Server Hardware (HP Server, Dell Server, IBM Server)
    9. Server Roll (ADS, DHCP, FTP, HTTP, Mail Server)
    10. Peer-to-Peer and Server-Client Network

3. **Presentation :-**

    At the end of the course student has to give the presentation regarding related topics which is examine by the panel of examiner

4. **Seminars :-**

    Seminars on Latest Hardware Topics like: Processor, Motherboard, Printer, SMPS, Monitor, Laptop, RAM, Virus Software and Latest Network Topics like: Manageable Network Switch, Cyberoam Network Security Device, Windows 8 Server and Other relevant topics.

5. **Case Study :-**

    Case Study on Gujarat Vidyapith Computer Assets and IT Devices like: list of Computer Hardware, Printer, Scanner, Wire Network, Wireless Netowrk and Fiber Optics Network in all Departments of Gujarat Vidyapith and other centre like Sadra and Randheja.