



## Swami Vivekananda Rural Community College (SVRCC),

### Name of the Programme- Vocational Diploma in Computer Hardware Servicing - Syllabus (Flexible Skill Training Mode)

<b>Course Title</b>	<b>Personal Computer Organization</b>
<b>Course Code</b>	<b>VDHS-1</b>
<b>Course Credit</b>	<b>4</b>

#### Course Objectives

While studying the **Personal Computer Organization**, the student shall be able to:

- Explains the computer configuration and detail about the Motherboard
- List the external peripherals, busses and ports
- Describes the working and functions of keyboard, mouse, display device
- Elaborates about the construction and working of the various types of printers

#### Course Outcomes

After completion of the **Course Personal Computer Organization**, the student will be able to:

- Define the plugs, connectors and ports
- Elaborate the installation procedure of Motherboard
- List the Key board layout, mouse applications
- Describe the working of advanced level printers

### Block- 1: Motherboard, Buses, Ports and Memory of a PC

#### Unit-1 - Motherboard

Mother Board -Components and Functions-Data Exchange in the Motherboard - Plugs, Connectors and Ports- Bootstrapping using the BIOS - Installing Peripherals- Single Board Computer- Block diagram of Motherboard - Installation of Computer System -Motherboard Installation and Upgrade Guide

#### Unit-2: Standard External Connectors, Buses and Ports

Standard External Connectors -How to Upgrade and Install a New Hard Drive How to Partition and Format a New Hard Drive- How to Install New Memory Modules- Installation Upgrade Guide for CD/DVD/CDRW Drives - Network Interface Card (NIC) Installation Guide - Fax/Modem Installation Guidelines - Different type of Buses- USB Hubs

### **Unit-3: Memory**

Floppy Disk Drive Construction and Operation- Formatted and Unformatted Capacity - Floppy Disk Interfacing and Configuration- Hard Disk Drives - Construction and Operation of the Hard Disk- Hard Disk Operational Overview - Hard Disk Connectors and Jumpers - Hard Disk Logic Board - Sense, Amplification and Conversion Circuits- Hard Disk Cache and Cache Circuitry - External Hard Disks- Removable Hard Disk Trays

## **Block- 2: External Peripherals of a PC**

### **Unit-4: Keyboard**

Keyboards -General Layout Issues -Standard Keyboard Layouts -Non-Standard Keyboard Layouts -Programmable Keyboards -Notebook Keyboards -Special Keyboard Features and Accessories - Integrated Peripherals -DOS Keyboard Controls -Accessibility Features (Sticky Keys, Filter Keys and Toggle Keys) -BIOS Settings

### **Unit-5: Mouse**

Mechanical Mice - Mechanical or Opto-Mechanical - Connectivity and Communication Protocols - Common Mouse Operations - Applications Programming Interface - Graphics Tablet (DIGITIZER) - History and Background - Operation- Uses

## **Block -3: Display Devices**

### **Unit-6: CRT Display Devices**

Monitors- Block Diagram of a Monitor - The Cathode Ray Tube (CRT) - Interface and Cabling - CRT Characteristics - Magnetization and Degaussing - Monitor Power and Safety - Frame Buffer Memory Requirements - Difference between TV and computer monitor - Resolution: A Key Problem in Imaging

### **Unit-7: Advanced Displays**

Analog Verses Digital Interfaces- Liquid Crystal Displays- Video Adapter- Video Display Standards - Monochrome Display Adapter (MDA) - SuperVGA (SVGA) and Other Standards Beyond VGA- 3D Video Acceleration- Video Card Performance- The Importance of Drivers

## **Block- 4: Printers and Its Working**

### **Unit-8: Printers**

Computer Printer - Printing Technology - Modern Print Technology - Obsolete and Special-Purpose Printing Technologies - Other Printers -Printing Mode-Monochrome, Colour and Photo Printers- Forensic Identification - Dot Matrix Printer - History of Printing

### **Unit-9: Advanced level Printers**

Inkjet Inks - Inkjet Head Design - Cleaning Mechanisms- Third-Party Ink and Cartridges - Underlying Business Model - Laser Printers - Colour Lasers- How it Works - Laser Printer

Maintenance - Stenographic Anti-Counterfeiting ("Secret") Marks - Safety Hazards, Health Risks and Precautions- Centronics Interface - Signals from PC to Printer and Printer to PC- How to Connect a Printer to a Computer



## Swami Vivekananda Rural Community College (SVRCC),

### Name of the Programme- Vocational Diploma in Computer Hardware Servicing - Syllabus (Flexible Skill Training Mode)

<b>Course Title</b>	<b>Computer Hardware Servicing</b>
<b>Course Code</b>	<b>VDHS-2</b>
<b>Course Credit</b>	<b>4</b>

### Course Objectives

While studying the **Computer Hardware Servicing**, the student shall be able to:

- Describe the brief history of Computer and its generations of growth
- Explain about the various components of the Hardware in the system
- Deal with BIOS/ CMOS Management
- Detail about installation of Motherboard, Printer

### Course Outcomes

After completion of the **Course Computer Hardware Servicing**, the student will be able to:

- Draw the block diagram of a modern computer
- Identify the components of the Hardware
- Perform the installation of Motherboard and Printer
- Conduct a self-test on the system for its running condition

## Block -1: PC Hardware and Its Components

### Unit-1: Overview of PC Hardware

Brief History of Computers - PC through Pentium - Evolution of the Pentium - 4 - Athlon - Athlon XP versus Pentium-4- Opteron / Athlon-64 - A Complete Line of Chips - Historical Overview - Computer Block Diagram - PC Schematic

### Unit-2: Components of Hardware

Motherboard and Daughterboard- SMPS (Switched-Mode Power Supply)- Visual Display

Unit- Keyboards- Mother Board- Intel 80286/80386/80486 Microprocessor Family- Intel Pentium Microprocessor Family - Motherboard Memory - BUS System Architecture

## Block -2: BIOS Management and Its Components

### Unit-3: BIOS/ CMOS Management

How BIOS Works - Booting the Computer - Updating Your BIOS - FLASH the BIOS - the process - Function of BIOS- BIOS Feature "Magic Dates" - BIOS Power-On Self Test (POST) -BIOS Start-up Screen- System Configuration Summary

### Unit-4: Components of BIOS

BIOS Components and Features- Extended System Configuration Data (ESCD)- BIOS Settings - Accessing CMOS Setup- Virus Protection/Virus Warning - Boot Sequence - Troubleshooting system faults using POST - BIOS Settings - Integrated Peripherals- BIOS Settings - Exit Setup - BIOS and POST codes - Troubleshoot video card- Sound Card and Speaker Troubleshooting

## Block- 3: Installations of Motherboard and Connecting the Peripherals

### Unit-5: Motherboard Installation

Motherboard Comments and Function- Identification or Component Functions- Motherboard Configuring - Configuring a Board Which Uses Jumpers - Motherboard and Case Connection Procedure- External Peripheral Connection Procedure- Install the Motherboard - All-in-one Motherboards

### Unit-6: Connecting peripherals and Memory

Identifying the Connectors and Cables- I/O Cables / Connectors - Motherboard Power Connectors- Add Memory Modules to Your Computer -Adding Computer Memory - Steps to Upgrade a CPU - BIOS setup program- Power on Self Test

## Block- 4: Printer Installation and PC Servicing

### Unit-7: Printer Installation

Introduction to Dot-Matrix Printer - Near Letter Quality (NLD)- Dot Matrix (Impact) Printer Mechanisms - General Trouble Shooting tips- Self Test- Printer Installation - Laser Printer- Principles of Operation- Laser Printer- Interface Controller- Inkjet Printer - Impact vs. Non-impact- Inside an Inkjet Printer

### Unit-8: Advance PC Servicing

Trouble Shooting - Tips- Driver Dilemmas - Common Troubleshooting Techniques and Strategies - Maintenance Troubleshooting and Methodology- Power Circuit Troubleshooting - LCD Panel Troubleshooting- Peripheral Troubleshooting - Other Function Troubleshooting - Touch Screen Troubleshooting - Determining Common Causes of Failures- Isolating Hardware Problems



## Swami Vivekananda Rural Community College (SVRCC),

### Name of the Programme- Vocational Diploma in Computer Hardware Servicing - Syllabus (Flexible Skill Training Mode)

<b>Course Title</b>	<b>Trouble Shooting And Data Recovery</b>
<b>Course Code</b>	<b>VDHS-3</b>
<b>Course Credit</b>	<b>4</b>

#### Course Objectives

While studying the **Trouble Shooting**, the student shall be able to:

- Identify the error and the cause for the error
- Describe the essentials of DOS
- Perform Hard Disk management and configuration
- Explain the procedure of Software Installation

#### Course Outcomes

After completion of the **Course Trouble Shooting**, the student will be able to:

- List the errors and trouble shoot the same
- Prepare the hard Disk management and configure the same
- Perform the software installation including the installation of anti-virus software
- Explain the Windows File System

### Block -1: Errors and DOS Essentials

#### Unit-1 - Errors

Common Windows errors -DLL Errors - Stop Errors - Vxd Errors- ActiveX Errors - Desktop Operating Systems - Microsoft Windows 2000 Price - Sun Microsystems - Solaris 3 - Various - Linux review - Network Operating Systems - Overview of Windows Operating

#### Unit-2: DOS Essentials

Windows Desktop Timeline - Windows Server Products History - Windows Configuration Files - An Overview of MS DOS - Working with the Files -DOS system files - DOS interface (CLI) - DOS Error Message HW124

## Block -2:File System and Hard Disk Management

### Unit-3: Windows File System

Understanding the FAT File Systems – FAT12- The FAT16 File System- The FAT32 File System - NTFS4 - NTFS5 - HPFS - How to Fix Hard Drive Errors- Testing For Drive Errors and Health with Check Disk- Microsoft Windows File Systems

### Unit-4: Hard Disk Management

Hard Disk - Hard Disk Drive Configuration and Installation - Preparing your hard drive for Mac OS - Reassigning Drive Letters - Volume - Formatting a Hard Disk Drive - Format Hard Drive

## Block- 3: Hard Disk Configuration and OS Installation

### Unit-5: Hard Disk Configuration

Using Debug to Remove a Non-DOS Partition - Partition Table and Boot Sector repair with Byte Back D.R.I.S. - Disk Analysis- Fixboot - Partition recovery - Fixing Bad Sectors on Hard Disk- Solution to Bad Sector Problem-Low-level formatting (LLF) of hard disks- Transition away from LLF

### Unit-6: Operating System Installations, Upgrades Hardware Device Driver Installation

System requirements for Windows XP operating Systems- Common Errors during Windows Vista Activation - Minimum Hardware Requirements to Install Windows 93- Microsoft's Windows 93 SE-CD Install on Blank Hard Drive - Upgrading Win98 - Device Driver - How to create and entrust a ZIP File in Windows MEJXP/2003- A hardware driver - A Network Interface Card U

## Block -4:Software Installations

### Unit-7: Introduction to Software Installation

Software Compatibility- Internet Explorer 7- ZIP Utilities- Hardware Requirements- How to Install Office from a Network Server - How to Install Office from a Custom CD-ROM - How to Include Office on a Hard Disk Image - Create Multiple Hard Disk Images

### Unit-8: Installation of MS Office and Anti Virus

Silent Installation - Installing MS Office 97 -Installing MS Office 2000 Professional for Windows 98/2000/XP - Installation Guide for Service Release 1a (Sr-1a) - Installing Anti-Virus- Installing and Playing Network Capable Games- Uninstalling Windows software- How to change or remove a program in Windows XP- Virus Management

## Block -5:Data Recovery

### Unit-9: Data and File Recovery

Hard Disk Basics- Storing the Data- Understanding Tracks, Sectors, Cylinders- Scan Disk Error levels- Surviving Data Disasters - Creating Emergency Rescue Disk- Recovery Software - Restoring Files from a Backup- Partitioning the Hard Drive using FDISK - Repairing a Macintosh Diskette- Recovering Files from a Macintosh Diskette - Desperate Measures -- Directory Errors and Physical D - Common Types of Data Loss - Disk Defragmenter Utility

### Unit-10: Windows Registry and Disk Image/ Cloning

What is the Registry- The Structure of the Registry - Importing and Exporting Registry Settings- Maintaining the Registry - Preventing registry backup failures - Solving Registry entry conflicts - Field of the invention- Disk Cloning -Issues to consider before cloning a drive-How to prepare for disk cloning- System Disk Cloning- Disk Cloning Using GHOST - Disk Cloning Software



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### **Name of the Programme- Vocational Diploma in Computer Hardware Servicing - Syllabus (Flexible Skill Training Mode)**

<b>Course Title</b>	<b>Hardware and Network Lab</b>
<b>Course Code</b>	<b>VDHS-P1</b>
<b>Course Credit</b>	<b>4</b>

#### **i. Hardware**

1. Intro, passive elements, transistors, gates
2. Boolean algebra and combinational logic
3. Logic minimization Lab
4. Programmable and steering logic
5. Arithmetic Lab
6. Sequential logic design
7. Design of Finite State Machines (FSMs)
8. Sequential Circuits
9. Memory and bussing