* 1. Computer Hardware

# NIELIT Courses

Level Code: Vertical Name:

L2

Computer Hardware

Course ID: Course Name:

3.8.1 Assembly and Maintenance of Personal

Computer

Objective of the Course:

To train students in the area of Assembling of Computer, Troubleshooting, Installation of Software and Peripherals.

Learning Outcomes:

After completing the course the person should be able to

Assembled & Dissembled the computers installing the peripherals devices Repair of Computer up to Card label

Install different software of computers Data recovery

Maintenance & formatting the computers Password breaking

Protect the computer from virus

Expected Job Roles:

Act as Computer Hardware Technician

Starting his own Computer Assembling and Maintenance Shop

Duration of the Course (in hours)

240 Hrs

Minimum Eligibility Criteria and pre-requisites, if any

Polytechnic Diploma/Graduation/ ITI/12th/10

th

Professional Knowledge:

Basic parts of Computer system

Studies of Different types of Mother Board Power Supply

Different types of Cards Different types of Monitors

Different types of Printers and Scanners and their installation procedures

Professional Skill:

Identification of Desktop Motherboard IC’s and tracing of North Bridge Section Identification of Desktop Motherboard IC’s and tracing of RAM/ROM/Clock Section Identification of Desktop Motherboard IC’s and tracing of PS/2/Audio Section

Practical on Diagnostics Card Error Code

Fault finding of Desktop Computer Motherboard Card level Test along with error code Mother Board Practical Test

Diagnostics Card Level Test

Fault Tracing through CRO Test Different Drivers Loading Test

Soldering and De-soldering Test

BGA Chip Replacement and Rebolling Test

Core Skill:

Fault Diagnostic Skill

Soldering and De-soldering Skill Motherboard Repair Skill Operation of BGA Machine Skill Software Installation Skill

BIOS Programming Skill

Partition making without Formatting Skill How to make Multi boot Pen Drive Skill

How to Recover window by Command Prompt Skill

Detailed Syllabus of Course

|  |  |  |
| --- | --- | --- |
| Module. No | Module. Name with detailed syllabus | Minimum No. of Hours (Theory/Practical) |
| * Module-I | Introduction to Computer, Uses of Computer, Different between Hardware & Software, Different types of computers inside PC and its peripherals devices, Booting concept of computer in DOS and Windows environment, Different input and output devices/ cables, connectors identifications, Identifications of different types of motherboard, controller cards, display cards, sound card AGP cards FAX/Modem Cards, TV Tuner Cards, LAN Cards, Ethernet cards, Different types of RAM used in PC’s. | 40 Hrs |
| * Module-II | BIOS setting, Formatting of Hard Disk, Installation of Operating System i.e. DOS/Windows, Off-line drive installation / online drive installation / Driver backup / restore / partition formatting / Windows file repairing / BIOS password break / Administrative password break / Data recovery / Pen Driver bootable / Sound Problem / USB Problem / LAN problem etc. | 30 Hrs |
| * Module-III | Application Software Installation/ Different types of Application Software/ Antivirus Software Installation/ different types of Antivirus Software/ Protect PC from Virus / Hard Disk utility Software / Dual Booting Installation etc | 40 Hrs |

|  |  |  |
| --- | --- | --- |
| * Module-IV | System integration of different types of computers, such as PC,PC- XT, PC –AT etc. upto Pentiem-4 label, Trouble shooting of shooting of different types of faults, Different computer cards identifications and trouble shooting, Power supplies installation and trouble shooting, Different types of SMPS identifications, Hard Disk driver installation and configuration setting, Use of CD ROM and DVD Drivers, Using of FDD drives, Different types of keyboards, repairing and maintenance, different types of monitors, Monitors Repairing / Maintenance / Mouse repairing and Installation | 50 Hrs |
| * Module-V | Different types of printers, working of printers, working / repairing of DMP printers, working / repairing of inkjet printer, working / repairing of LaserJet printer, Checking of printer interface cable and dip switch setting, self test and loading of printer drives, introduction to UPS, different types of UPS maintenance and servicing of UPS, battery replacement of UPS | 30 Hrs |
| * Module-VI    | Assembly and dismantling of PCs front panel connection, preventing maintenance and Cleaning, servicing of computer, Type of Backup, Taking Backup files and fine tuning the system, running diagnostics tool, running of virus protection programme, FAQ and feedback. | 50 Hrs |
|  |  |  |
| Total Theory / Lecture Hours: Total Practical / Tutorial Hours:  Total Hours: | |  |
|  |
|  |

Recommended Hardware(minimum batch size 10):

Different types of Mother Board

Desktop Different types of Cards

VGA AGP NIC

Audio

Different types of Tools and instrument BGA Machine

Soldering and Disordering Station Oscilloscope 25-100 Mhgz Multi-meter

Digital IC Tester Analog IC Tester Function Generator

Power Supply 0-30 V Small screw Driver kit

Different types of small Plair set De-soldering pump

Soldering wire Twizer,

Bond make liquid flux 0% some respective components etc.

Recommended Software:

Operating System

Diagnostic Card for Desktop and Laptop

Text Books:

Modern Computer Hardware Course

Computer Hardware Course

Reference Books:

Inside Module 13 Motherboard 14 GT Publishers Author S K Gupta

Tablet PC Servicing Manual GT Publishers Author S K Gupta Circuit Diagram Books of different types of Mother Boards