

**CERTIFICATE COURSE IN  
COMPUTER MAINTENANCE & REPAIR  
(6 Months duration)**



**STATE BOARD OF TECHNICAL EDUCATION & TRAINING  
Sankethika Vidya Bhavan, Masab Tank, Telangana, Hyderabad**

# **CERTIFICATE COURSE** **IN** **COMPUTER MAINTENANCE & REPAIR** (6 Months duration)

SUB CODE	NAME OF THE SUJECT	PERIODS/WEEK		TOTAL PERIODS PER 6 MONTHS	SCHEME OF EXAMINATION			
		Theory	Practicals		Duration Hours	Sessional Marks	End Exam Marks	Total Marks
<b>CMR-101</b>	<b>PC HARDWARE &amp; COMPONENTS</b>	<b>03</b>	<b>--</b>	<b>50</b>	<b>02</b>	<b>--</b>	<b>100</b>	<b>100</b>
<b>CMR-102</b>	<b>INSTALLATION OF PC &amp; MAINTENANCE</b>	<b>03</b>	<b>--</b>	<b>50</b>	<b>02</b>	<b>--</b>	<b>100</b>	<b>100</b>
<b>CMR-103</b>	<b>PC HARDWARE ASSEMBLING (PRACTICAL)</b>	<b>--</b>	<b>06</b>	<b>75</b>	<b>03</b>	<b>40</b>	<b>60</b>	<b>100</b>
<b>CMR-104</b>	<b>PC SOFTWARE INSTALLATION (PRACTICAL)</b>	<b>--</b>	<b>06</b>	<b>75</b>	<b>03</b>	<b>40</b>	<b>60</b>	<b>100</b>
	<b>TOTAL</b>	<b>06</b>	<b>12</b>	<b>250</b>	<b>10</b>	<b>--</b>	<b>--</b>	<b>400</b>

## COMPUTER MAINTENANCE & REPAIR COURSE

**SUBJECT TITLE : PC HARDWARE & COMPONENTS**  
**SUBJECT CODE : CMR-101**  
**PERIODS/WEEK : 03**  
**PERIODS/YEAR : 50**

S.NO.	MAJOR TOPICS	NUMBER OF PERIODS
01	PC HARDWARE AND ITS COMPONENTS	05
02	PC HARDWARE & SPARE PARTS	05
03	PROCESSORS, & RAM	10
04	MASS STORAGE DEVICES	10
05	ASSEMBLY AND DISASSEMBLY OF PC	10
06	INPUT AND OUTPUT DEVICES	10
	TOTAL	50

### **Unit-1 :**

**PC HARDWARE AND ITS COMPONENTS:** Hardware and software- the BIOS hardware interaction , importance of BIOS, BIOS functions configuration of a general purpose computer ( P-IV Compatible) ,identification of various components on the motherboard.

### **Unit-2 :**

#### **PC HARDWARE & SPARE PARTS:**

**Mother Board-** motherboards based on the form factor : such as AT,ATX, micro ATX,mini ATX , Baby AT,BTX,NLX ,various I/O ports available on the motherboard

### **Unit-3 :**

**Processors-** various processors used in the system : INTEL P4, Celeron, XEON, Itanium processors, AMD athelon, chipset,components of INTEL chipset 915,945,965, AMD , processor sockets Like ZIF,SEC and PGA, processors Like P-IV,P-IV with HT Technology ,Dual core, Core 2 Duo ,Quad core and i-series (i3,i5 and i7), features of above chipset and their advantages ,importance of SMPS over linear voltage power supply, connectors from SMPS and list the voltage levels of each wire in various connectors based on the standard color of the wire

**RAM-** static and dynamic RAM, RAM slots such as SIMM, DIMM, RIMM and their specification

**Unit-4 :**

**Mass storage devices** - Hard disk Drive, jumper settings , hard disk interfacing standards like IDE/SCSI /SATA / PATA, various disk drives CD-ROM,CD- Writer, Combo drive , DVD Drive , Pen drive.

**Unit-5 :**

**Assembly and Disassembly of PC:** Identification of motherboard components and its compatibility – Assembly and Disassembly of PC- Up gradation of PC by adding extra RAM and additional Hard Disk

**Unit -6 :**

**Input and output devices :**Input Devices- various input devices used with a general purpose computer, installation of Keyboard, optical and opto mechanical mouse , flat bed scanner, Webcam,

**Output Devices-** working principle of CRT Monitor ,working principle of LCD/ TFT, printers (Impact and Non-Impact) working principle of Dot matrix printer, inkjet printer, Laser printer

**COMPUTER MAINTENANCE & REPAIR COURSE**

**SUBJECT TITLE : INSTALLATION OF PC & MAINTENANCE**  
**SUBJECT CODE : CMR-102**  
**PERIODS/WEEK : 03**  
**PERIODS/YEAR : 50**

S.NO.	MAJOR TOPICS	NUMBER OF PERIODS
01	INSTALLATION OF PC SYSTEM SOFTWARE	05
02	INSTALLATION OF PC APPLICATION SOFTWARE	05
03	PC MAINTENANCE : DIAGNOSTICS & TROUBLESHOOTING	10
04	PC MAINTENANCE : HARDWARE PROBLEMS	10
05	PC MAINTENANCE : HARD DISK PARTITION	10
06	PC MAINTENANCE& TROUBLESHOOTING	10
	<b>TOTAL</b>	<b>50</b>

**Unit -1 :**

**INSTALLATION OF PC SYSTEM SOFTWARE**

Windows Setup, Partitioning of hard disk , Formatting and its types FAT/NTFS ,create a DOS boot disk , installation of OS software such as Windows XP / Windows7, installation of Application software such as MS Office 2007 / Office 2010

**Unit -2 :**

**INSTALLATION OF PC APPLICATION SOFTWARE**

installation of Application software such as MS Office 2007 / Office 2010, Photoshop, Page maker, etc.

**Unit -3 :**

**PC MAINTENANCE : DIAGNOSTICS & TROUBLESHOOTING:**

PC Diagnostics - Diagnostics Software - Types of Viruses, Anti Virus Software - The Power On Self Test (POST) - Hardware Diagnostics - Operating System Diagnostics - Special Tools for the Testing and Maintenance- Preventive Maintenance - Procedures - Basic Troubleshooting

**Unit -4 :**

**PC MAINTENANCE : HARDWARE PROBLEMS:**

Guidelines - Problems During POST - Hardware Problems after Booting - Problems Running Software

## **Unit -5 :**

### **PC MAINTENANCE : HARD DISK PARTITION:**

Master Partition Boot Record - Primary and Extended Partitions - FDISK - Root Directory - The RECOVER Command - SCANDISK - Disk Defragmentation - Third-Party Programs –NTFS Features - NTFS Architecture - Creating NTFS Drives.

## **Unit -6 :**

### **PC MAINTENANCE& TROUBLESHOOTING:**

Familiarize with various troubleshooting and measuring equipment such as multimeter, CRO, Logic probe, Logic Analyzer, precautions to be taken while troubleshooting the hardware, systematic steps in troubleshooting: Visual inspection, Layman checks, measurement of voltage levels, Beep sounds, Error codes and Use of Advanced Diagnostic tools, various recovery tools for data recovery from Hard disk, No display on monitor, core dump, keyboard error, flickering on the monitor.

### **COMPUTER MAINTENANCE & REPAIR COURSE**

**SUBJECT TITLE : PC HARDWARE ASSEMBLING (PRACTICAL)**  
**SUBJECT CODE : CMR-103**  
**PERIODS/WEEK : 06**  
**PERIODS/YEAR : 75**

S.NO.	MAJOR TOPICS	NUMBER OF PERIODS
01	SELECTION OF PC COMPONENTS	10
02	INSTALLATION OF CABINET & POWER SUPPLY	10
03	PROCESSORS, & RAM	10
04	MASS STORAGE DEVICES	10
05	ASSEMBLY AND DISASSEMBLY OF PC	15
06	INPUT AND OUTPUT DEVICES	20
	<b>TOTAL</b>	<b>75</b>

#### **Unit-1 :**

**SELECTION OF PC COMPONENTS:** Cabinet, assembly of Power supply Unit and Identify the other spare parts

#### **Unit-2 :**

##### **PC HARDWARE & SPARE PARTS:**

**Mother Board-** Installation of motherboards based on the form factor : such as AT,ATX, micro ATX,mini ATX , Baby AT,BTX,NLX ,various I/O ports available on the motherboard with power supply

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

**Processors-** Installation of Processors with Fan on Motherboard

**RAM-** Assemble of static and dynamic RAM, RAM slots such as SIMM, DIMM, RIMM and their specification on motherboard

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

**Mass storage devices** – Assemble of Hard disk Drive, jumper settings , hard disk interfacing standards like IDE/SCSI /SATA / PATA, various disk drives CD-ROM,CD- Writer, Combo drive , DVD Drive , Pen drive.

## **Unit-5 :**

**Assembly and Disassembly of PC:** Identification of motherboard components and its compatibility – Assembly and Disassembly of PC- Up gradation of PC by adding extra RAM and additional Hard Disk

## **Unit -6 :**

**Input and output devices :** Connection of PCs Input Devices- various input devices used with a general purpose computer, installation of Keyboard, optical and opto-mechanical mouse , flat bed scanner, Webcam,

**Output Devices-** Installation of Drivers of CRT Monitor , LCD/ TFT, printers (Impact and Non-Impact) working principle of Dot matrix printer, inkjet printer, Laser printer



### **COMPUTER MAINTENANCE & REPAIR COURSE**

**SUBJECT TITLE : PC SOFTWARE INSTALLATION(PRACTICAL)**  
**SUBJECT CODE : CMR-104**  
**PERIODS/WEEK : 06**  
**PERIODS/YEAR : 75**

S.NO.	MAJOR TOPICS	NUMBER OF PERIODS
01	INSTALLATION OF PC SYSTEM SOFTWARE	10
02	INSTALLATION OF PC APPLICATION SOFTWARE	10
03	PC MAINTENANCE : DIAGNOSTICS & TROUBLESHOOTING	10
04	PC MAINTENANCE : HARDWARE PROBLEMS	10
05	PC MAINTENANCE : HARD DISK PARTITION	15
06	PC MAINTENANCE& TROUBLESHOOTING	20
	TOTAL	75

#### **Unit -1 :**

##### **INSTALLATION OF PC SYSTEM SOFTWARE**

Windows Setup, Partitioning of hard disk , Formatting and its types FAT/NTFS ,create a DOS boot disk , installation of OS software such as Windows XP / Windows7, installation of Application software such as MS Office 2007 / Office 2010

#### **Unit -2 :**

##### **INSTALLATION OF PC APPLICATION SOFTWARE**

installation of Application software such as MS Office 2007 / Office 2010, Photoshop, Page maker, etc.

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

##### **PC MAINTENANCE : DIAGNOSTICS & TROUBLESHOOTING:**

PC Diagnostics - Diagnostics Software - Types of Viruses, Anti Virus Software - The Power On Self Test (POST) - Hardware Diagnostics - Operating System Diagnostics - Special Tools for the Testing and Maintenance- Preventive Maintenance - Procedures - Basic Troubleshooting

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

##### **PC MAINTENANCE : HARDWARE PROBLEMS:**

Guidelines - Problems During POST - Hardware Problems after Booting - Problems Running Software

## **Unit -5 :**

### **PC MAINTENANCE : HARD DISK PARTITION:**

Master Partition Boot Record - Primary and Extended Partitions - FDISK - Root Directory - The RECOVER Command - SCANDISK - Disk Defragmentation - Third-Party Programs –NTFS Features - NTFS Architecture - Creating NTFS Drives.

## **Unit -6 :**

### **PC MAINTENANCE& TROUBLESHOOTING:**

Familiarize with various troubleshooting and measuring equipment such as multimeter, CRO, Logic probe, Logic Analyzer, precautions to be taken while troubleshooting the hardware, systematic steps in troubleshooting: Visual inspection, Layman checks, measurement of voltage levels, Beep sounds, Error codes and Use of Advanced Diagnostic tools, various recovery tools for data recovery from Hard disk, No display on monitor, core dump, keyboard error, flickering on the monitor.