

## Certificate in Computer Hardware Maintenance (CCHM)

Course Module	Module Details
Fundamental	<ul style="list-style-type: none"> <li>• History and Generations of Computer.</li> <li>• Advantage and disadvantage of Computer Block Diagram of a Computer.</li> <li>• Description of Different parts of a Computer. System Software and Application Software.</li> <li>• Identification of Different parts of a Computer System. Turning a computer system on and off</li> </ul>
Basic Electronics	<ul style="list-style-type: none"> <li>• Punctuality and Discipline expected of trainees. Course duration, methodology and structure of the training program.</li> <li>• About the institute and infrastructure.</li> <li>• Safety in moving and shifting heavy and delicate equipments.</li> <li>• Artificial respiration, Electrical safety.</li> <li>• Concept of current and voltage. AC, DC Supply indicating lamps. Different types of Fuses and their applications. Different types of connectors used in electrical and electronic applications. Different types of switches used in electrical and electronic applications.</li> <li>• Measuring instruments, MC, MI type, Ammeter, Voltmeter, Multi meter for measuring voltage and current. Construction, characteristics/ features and specification.</li> <li>• Digital Multi meter</li> <li>• Meaning of resistance, continuity and continuity testers. Multi meter for checking continuity.</li> <li>• Concept of Power and measurement using V&amp;I meter and Power meter.</li> </ul>
Digital Electronics	<ul style="list-style-type: none"> <li>• Number systems and conversions. Classification of digital IC's. Use of data book for identification of digital IC's.</li> <li>• Basic LOGIC GATES and truth table. Boolean algebra.</li> <li>• Logic families, logic levels, propagation delay. Multiple input gates.</li> <li>• XOR, XNOR gates and application.</li> <li>• Simplification of Boolean equations.</li> <li>• Combinational logic circuits.</li> <li>• Identify the specifications of given digital IC's referring to data books.</li> <li>• Verify the truth table of two input OR, NOR, AND, NAND, NOT gates.</li> <li>• Verify of truth table of multiple input logic gates.</li> <li>• Verify the truth table of XOR and XNOR Gates.</li> <li>• Realization of different gate type using NAND gates.</li> <li>• Verification of Boolean laws.</li> </ul>

<p>Basic Hardware and Computer Parts</p>	<ul style="list-style-type: none"> <li>• Types of I/O devices and ports on a standard PC for connecting I/O devices.</li> <li>• Function of keyboard, brief principle, types, interfaces, connectors, cable.</li> <li>• Function of Mouse, brief principle, types, interfaces, connectors, cable.</li> <li>• Function of monitor, brief principle, resolution, size, types, interfaces, connectors, cable.</li> <li>• Function of Speakers and Mic, brief principle, types, interfaces, connectors, cable.</li> <li>• Function of serial port, parallel port, brief principle of communication through these ports, types of devices that can be connected, interface standards, connectors, cable.</li> <li>• Precaution to be taken while connecting/removing connectors from PC ports. Method of ensuring firm connection.</li> </ul> <p><b>Types of Processors and their specifications (Intel: Celeron, P4 family, Xeon, and AMD).</b></p> <ul style="list-style-type: none"> <li>• Memory devices, types, principle of storing. Data organization 4 bit, 8 bit, word.</li> <li>• Semiconductor memories, RAM, ROM, PROM, EPROM, EEPROM, Static and dynamic.</li> <li>• Example of memory chips, pin diagram, pin function of</li> <li>• Concept of track, sector, cylinder. FD Drive components- read write head, head actuator, spindle motor, sensors, PCB.</li> <li>• Precaution and care to be taken while dismantling Drives.</li> <li>• Drive bay, sizes, types of drives that can be fitted. Precautions to be taken while removing drive bay from PC.</li> <li>• HDD, advantages, Principle of working of Hard disk drive, cylinder and clusture, types, capacity, popular brands, standards, interface, jumper setting. Drive components- hard disk platens, and recording media, ,air filter, read write head, head actuator, spindle motor, circuit board, sensor, features like head parking, head positioning, reliability, performances, shock mounting capacity. HDD interface IDE, SCSI-I/2/3 comparative study. Latest trends in interface technology in PC and server HDD interface.</li> <li>• Precautions to be taken while fitting drives into bays and bay inside PC cabinet.</li> <li>• CMOS setting (restrict to drive settings only).</li> <li>• Meaning and need for using Scan disk and defrag.</li> <li>• Basic blocks of SMPS, description of sample circuit.</li> </ul> <p><b>Hardware Identification</b></p> <ul style="list-style-type: none"> <li>• Identify the front and rear panel controls and ports on a PC</li> <li>• Cases</li> <li>• Cooling</li> <li>• Power Supplies</li> <li>• Power Supply Connections</li> <li>• Motherboard Connections</li> <li>• Motherboard Components</li> <li>• CPU (Processor)</li> <li>• RAM (Memory)</li> <li>• Hard Drive Connections</li> <li>• Mechanical vs. Solid State Drives</li> <li>• ROM Drives</li> <li>• Video Cards</li> <li>• Sound Cards</li> </ul> <p><b>Hardware Remove-Test-Replace/ Install</b></p> <ul style="list-style-type: none"> <li>• Removing RAM</li> <li>• Installing RAM</li> <li>• Removing a ROM Drive</li> <li>• Installing a ROM Drive</li> <li>• Removing a Hard Drive</li> <li>• Installing a Hard Drive</li> <li>• Defects related to SMPS, its cable, connector and servicing procedure.</li> </ul>
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<p>Basic Hardware and Computer Parts</p>	<ul style="list-style-type: none"> <li>• Removing Fans</li> <li>• Installing Fans</li> <li>• Removing the Motherboard</li> <li>• Installing the Motherboard</li> <li>• Removing the Processor</li> <li>• Installing the Processor</li> <li>• Installing a CPU Cooler</li> <li>• Troubleshooting Checking the Power Switch</li> <li>• Removing the CMOS Battery</li> <li>• Seating Expansion Cards</li> </ul>
<p>Software Installation</p>	<ul style="list-style-type: none"> <li>• Types of software. System software Operating System, Compiler. Application software like MS office. Functions of an operating system. Disk operating system.</li> <li>• Concept of GUI, Modes of starting on different occasions.</li> <li>• Desktop, Icon, selecting, choosing, drag and drop.</li> <li>• My computer, network neighborhood / network places.</li> <li>• Recycle bin, briefcase, task bar, start menu, tool bar, and menus.</li> <li>• Windows Explorer.</li> <li>• Properties of files and folders.</li> <li>• Executing application programs.</li> <li>• Properties of connected devices.</li> <li>• Applications under windows accessories.</li> <li>• Windows Help.</li> <li>• Finding files, folders, computers.</li> <li>• Control panel. Installed devices and properties. Utilities for recovering data from defective/bad hard disks.</li> <li>• Introduction to removable storage devices, Bulk data storage devices-magnetic, optical, magneto optical drives, WORM drives.</li> <li>• CD ROM drives- Technology, Types of CD drives, working principle application.</li> <li>• Minor repairs and maintenance of CD ROM drives.</li> <li>• Technology, working principle, capacity, media of DVD ROM drive.</li> <li>• Important parts and functions of DVD ROM drive.</li> <li>• Minor repair works on a DVD ROM drive.</li> <li>• Technology, working principle, capacity, media of CD WRITER and use different modes of writing on a CD. Using of utility for CD writing.</li> <li>• Minor repair works on a CD WRITER.</li> <li>• Latest trends in backup devices/media</li> </ul> <p><b>Windows Installation</b></p> <ul style="list-style-type: none"> <li>• A walkthrough of installing Windows 7 / 8</li> <li>• A walkthrough of installing Windows XP</li> <li>• Imaging: create a Windows system image</li> <li>• How to Backup/Restore your Windows partition with the bootable image disk</li> <li>• Duplicating a partition (creating a multi boot system)</li> <li>• A multi boot system: the Windows boot manager vs. an alternative boot manager</li> <li>• Setting up a multi boot/dual boot system</li> <li>• Dual Boot Ubuntu and Windows</li> <li>• Windows XP registry tweaks</li> </ul>

Software Installation	<b>Software Installation</b> <ul style="list-style-type: none"><li>• Installing a software program in windows</li><li>• How to run a file from MS-DOS</li><li>• Extracting or uncompressing a compressed file</li><li>• How to compress or make files into one file</li><li>• Extracting files from the Windows cabinets</li><li>• Uninstalling Windows software</li><li>• Unable to remove a program from Windows Add/Remove programs</li></ul>
Troubleshooting	<ul style="list-style-type: none"><li>• The danger in not diagnosing problems first</li><li>• Learn how to test your RAM</li><li>• Check your hard drive for errors</li></ul>