

Course Code: EITG - 107		
Course Title: Computer Maintenance and Troubleshooting- Hardware		
Number of Credits: 03	Total Hours: 42	Total Marks: 75
Prerequisites for the course		
Students should know the basics of computer Hardware		
Objectives of Course		
Computer Maintenance and Troubleshooting is frequently required for smooth functioning of computer system. The Objective of this subject is :		
1. To make the students capable to understand the functioning of hardware parts 2. To develop skills in diagnosing the faults 3. To troubleshoots the computer system.		
Course Content		
Unit I	Safety Measures	6 Hours
Hand Tools Basics and Specifications. Types of cabinets: relation with mother board form factor. Precautions to be taken while opening and closing PC cabinet. Main devices: components- Cards- boards inside a PC (to card or device level only).		
Unit II	Introduction to PC Hardware	10 Hours
Basic terms, concepts, and functions of system modules (System board, firmware, storage devices, monitor, boot process, ports). CMOS and BIOS, Overview of system components, Motherboard: definition, Components/connections in motherboard, Knowing motherboard of PC, Identifying types of motherboard, SMPS: Circuit diagrams and pin assignments, working of SMPS Input and load requirements.		
Unit III	Assembling Hardware 05Hrs	10 Hours
Specifications of processors, Memory devices- types- principle of storing. Data organization 4bit- 8 bit- word. Semiconductor memories- RAM- ROM- PROM- EPROM- EEPROM- Static and dynamic. Example of memory chips, pin diagram, pin function. Concept of track- sector- cylinder. HDD Drive components read write head, head actuator, spindle motor, sensors, PCB. Precaution and care to be taken while dismantling Drives. Drive bay: sizes, types of drives that can be fitted. Precautions to be taken while removing drive bay from PC. Concept of SATA and PCI INTERFACE SSD. Precautions to be taken while fitting drives into bays and bay inside PC cabinet CMOS setting (restrict to drive setting only). Meaning and need for Using Scan disk and defrag Basic blocks of SMPS- description of sample circuit. Vendor/sources of PC hardware components.		
Unit IV	Introduction to Hard disk Partition, formatting and installation	10 Hours
Introduction to hard drive, working of hard disk: Hard Drive Motherboard Desktop Hard Drive Buyer's Guide, RAID, Using Multiple Hard Drives for Performance and Reliability Partitioning a hard disk (primary and extended partitions). Bad Sectors in Hard disk- Master Boot Record- in-place installation- Registry fixing- performance level check- Shortcut fixing- Fixing Start up process- log- difference between MBR and GPT etc. Cloning of Secondary Storage.		
Unit V	Troubleshooting and Preventive Maintenance	6 Hours
Troubleshooting basics, Troubleshooting by visual Inspection, Preventative Maintenance, Using Preventative Maintenance Tools, POST : Functions, Test Sequence, Error messages, Troubleshooting Procedures and Preventative Maintenance: Identifying Troubleshooting Tools, Hardware tools, Diagnostic software, Materials and equipment, Software utilities, Maintaining Environmental Controls, Ventilation and airflow, Humidity and liquids, Dirt and dust, Power, UPS, and suppressors, Completing Maintenance Tasks, Case and components, Power supplies		
Pedagogy		
Lectures/Tutorial/Assignments		
Course Outcome		
On completion of the course, students will be able to:		
1. Understand Basics of Hardware Components. 2. Acquire knowledge of Finding Faults in Components 3. Install, Configure and maintain various components in computer system and peripherals. 4. Diagnose faults of Different Component 5. Repair and maintain computer system and its peripherals.		
References/Readings		
1. IBM PC & Clones: Hardware Trouble Shooting and Maintenance by B.Govindarajalu, Tata McGraw Hill 2. PC Upgrade & Repair Bible , Wiley India. 3. PC Systems, Installation and Maintenance, Second Edition by R. P. Beales, 4. PC Upgrade & Repair Black Book by Ron Gilster. 5. Computer Installation and Servicing by D Balasubramanian 6. IT Essentials PC Hardware and Software Companion Guide Third Edition by David Anfinson and Ken		

Quamme. – *CISCO Press, Pearson Education*.

7. IT Essentials PC Hardware and Software Labs and Study Guide Third Edition by Patrick Regan – CISCO Press, Pearson Education.
8. The Complete Computer upgrade and repair book, 3rd edition Cheryl A Schmidt, *WILEY Dreamtech*
9. Introduction to Information Technology, ITL Education Solutions limited, *Pearson Education*.
10. IBM PC & Clones: Hardware Trouble Shooting and Maintenance by B.Govindarajalu, Tata McGraw Hill
11. Computer Installation and Servicing by D Balasubramanian