

5195 - PERSONAL COMPUTER HARDWARE & MAINTENANCE									
Teaching Schedule Per Week			Progressive Assessment		Examination Schedule (Marks)				
Lectures	Practical	Credits			Theory		Practical Ex.	Total	
3	2	5	25	25	3 Hrs	100	50	200	
Pre-requisite		Source	Semester	Theory	Test	Total	TW	PR	Gr Total
Nil		COM							

Rationale: One of the basic tasks of a computer technician is to troubleshoot and set right a faulty computer system. Without knowing in detail the internal working of a system, maintenance is not possible. This course in Personal Computer Hardware & Maintenance covers up the internal hardware of the PC and also introduces basic Troubleshoot & Maintenance so as to reduce the down time of the equipment.

COURSE CONTENTS		Hrs	Mks
1. PRIMARY SYSTEM COMPONENTS			
Motherboards, CPU types & specifications. 8085, 8086, 80286, 386SX, 386SL, 386DX, 486DX, 486SX, 486DX2 / DX4, Pentium, MMX. Clock doublers, tripleRS, super scalar & instruction pipeline architecture.	2	5	
PC Bus System: - Bus types, Expansion slots, ISA, EISA, MCA, Local Bus, VESA Local Bus, PCI, PCMCIA.	2	5	
PC Memory: - Conventional Memory, UMA, HMA, Extended Memory, ROM BIOS, SIMMS, DIMMS, EDO SD RAM's, Memory Map, Cache Memory, L1 & L2 Cache, Memory Testing.	2	5	
System Clock, (CMOS Chip), System Controller, SMPS Rating Connection ROM BIOS Setup.	2	5	
2. INPUT DEVICES	5	10	
Keyboard: - Keyboard components, Keyboard interface, Type of key switches, the keyboard connector. Keyboard troubleshooting and repair, defective cables, sticky keys, error code.			
Mouse: - Working principle of a mouse, Mouse types, Mouse cleaning & maintenance.			
3. OUTPUT DEVICES			
How the video board works, CPU & video images, Video Memory, Video board characteristics, Resolution, Colour, Vertical & horizontal scan frequencies, Interlaced / non-interlaced monitors, Video cards - MDA, HGA, CGA, EGA, VGA, SVGA, Multi-frequency monitors, video troubleshooting.	5	10	
Printers: - Impact & Non impact Printers, Principle of operation of dot matrix, Inkjet, Laser & Line printer. Printer maintenance and troubleshooting.	2	5	
4. MEMORY PERIPHERALS			
Floppy Disk (FDD): - Drive components, Types of floppy disks and drives, Floppy disk construction - Physical & Logical. FDD installation. FDD errors, troubleshooting and maintenance.	5	10	
Hard Disk Drive (HDD): - HDD components, HDD drive operation, HDD interface - ST506 / 412, ESDI, IDE SCSI, hard disk installation, HDD problem & troubleshooting.	5	10	
CDROM Drive: - How CD's store data, Anatomy of compact disk, CD data modes, CD ROM drive operation & specification, CD ROM standards, CD ROM installations and troubleshooting.	5	10	
5. AUDIO HARDWARE	5	10	
The recording process, Playback Process, Sampling, Databits & sound quality MIDI sound board Bench Marks - Decibels, frequency response, S/N ratio, Harmonic distortion, Sensitivity, gain			

6. MODEMS	5	10
Modem construction & operation, Internal/External modem, Modem features, Modem Commands, Modem Initialisation strings, Modem Modes, Band rate, Modulation Schemes, Signalling Standards – Bell, CCITT, MNP.		
7. SERIAL & PARALLEL PORT	3	5
Asynchronous communication: The data frame, signal level, baud rate, Serial Port address & interrupt, DTE & DCE. Serial Port Signals: TX, RX, RTS, CTS, DTR, DSR. Parallel (Centronics) Port Signal, Addresses & Interrupts. Port operation & troubleshooting.		
Total	48	100

REFERENCE BOOKS:

1. Upgrading & Repairs by Scott Mueller
2. IBM PC advanced troubleshooting & repair by Robert C. Brenner.
3. Microcomputer servicing – Practical systems & troubleshooting by Stuart M. Asser, R. F. Barenberg, V. J. Stigliano
4. Microcomputer & Interfacing by Douglas Hall.
5. Troubleshooting, Maintaining & Repairing PC's by Stephen J. Bigelow (TMH)

