

Program : Diploma in Computer Engineering	
Course Code : 3139	Course Title: Computer System Hardware Lab
Semester : 3	Credits: No Credit
Course Category: Program Core	
Periods per week: 4 (L:0 T:0 P:4)	Periods per semester: 60

Course Objectives:

- Familiarise the hardware components of the computer system.
- Assemble and disassemble a computer system.
- Install and configure various expansion cards, peripherals, BIOS, operating system and device drivers
- Provide skill in troubleshooting computers and the peripherals.

Course Pre-requisites:

Topic	Course code	Course name	Semester
Basic IT skills		Introduction to IT Systems lab	I

Course Outcomes :

On completion of the course, the student will be able to:

CO _n	Description	Duration (Hours)	Cognitive level
CO1	Identify hardware components of a computer system	12	Understanding
CO2	Assemble a desktop PC and install operating system	16	Applying
CO3	Install various peripherals and device drivers.	16	Applying
CO4	Apply troubleshooting methods & system diagnostic tools	12	Applying
	Lab Exam	4	

CO-PO Mapping

Course Outcomes	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO1	2						
CO2			3	3			
CO3			3	3			
CO4		3	3	3			

3-Strongly mapped, 2-Moderately mapped, 1-Weakly mapped

Course Outline

Module Outcomes	Name of the Experiment	Duration (Hours)	Cognitive Level
CO1	Identify hardware components of a computer System		
M1.01	Identify Front panel indicators & switches, Front side & rear side connectors, marking positions of SMPS, Motherboard, FDD, HDD, CD, DVD and add-on cards.	2	Understanding
M1.02	Identify Motherboard components of desktop & laptop computer – CPU Socket, Chipset, ROM, RAM slots, Expansion slots/bus, Interfaces-PATA, SATA & SCSI, Ports & Connectors, Power connectors, CMOS Backup battery.	4	Understanding
M1.04	Identify components of Power Supply – Power Connectors, Voltage levels and other signals, Form factor, Backup power supplies	2	Understanding
M1.05	Identify Secondary Storage devices – HDD, FDD, CDD, DVD, Blu-ray, Flash - data and power connectors for storage devices	2	Understanding
M1.06	Identify Input/output Devices – Keyboard, Mouse, Touchpad, TrackPoint, Trackball, Scanner, BCR, OCR, MICR, OMR, Camera – VDU, printer, plotter, projector	2	Understanding
CO2	Assemble a desktop PC and install operating system		
M2.01	Demonstrate fixing System case / Cabinet – fixing IO templates, setting cooling fans, preparing drive bays	2	Applying

M2.02	Experiment with fixing Motherboard – fixing CPU & Heat sink assembly, Fixing RAM modules, Adding HDD/DVD, FDD	4	Applying
M2.03	Experiment with fixing up of SMPS – power connection to various components - motherboard, drives, Add-on card, cooling fans, etc.	4	Applying
M2.04	Experiment with installing and configuring expansion cards like NIC, Graphics card, Sound card, etc	2	Applying
M2.05	Experiment with BIOS Setup & Configurations - system date & time, security passwords, boot options & priorities - Factory reset, hardware configurations	4	Applying
	Lab Exam – I	2	
CO3	Install various peripherals and device drivers.		
M3.01	Install and configure Webcam, Biometric devices, etc	4	Applying
M3.02	Install and configure DVD writer and recording in DVD/Blue ray disc	4	Applying
M3.03	Install and configure various types of Scanners and printers	8	Applying
CO4	Apply troubleshooting methods & system diagnostic tools		
M4.01	Experiment with System diagnostic tools, creating Start-up disk, Disk Cleanup, Disk defragment, Disk management, Backup and Restore	4	Applying
M4.02	Identify problems using BIOS beep codes and error codes	2	Applying
M4.03	Apply troubleshooting methods to identify problems related to SMPS, Processor, Motherboard components, RAM, Expansion cards, drives.	2	Applying
M4.04	Experiment with Printer Troubleshooting – clearing paper jams, head cleaning, cartridge replacement/ink refilling, configuring printer properties and preferences.	4	Applying
	Lab Exam – II	2	

Text / Reference

T/R	Book Title/Author
T1	James K.L, Computer Hardware: Installation ,Interfacing, Troubleshooting and Maintenance , PHI
T2	Complete A+ Guide to IT Hardware and Software: AA CompTIA+Core 1(220-1001) & CompTIAL+Core 2(220-1002)textbook , 8 th edition
R1	Stephen J.Bigelow, Troubleshooting, Maintaining and Repairing PCs , TMH, New Delhi Fifth Edition
R2	Joel Rosenthal, PC Repair and Maintenance , Fire wall Media,First Edition
R3	Vikas Gupta, Comdex Hardware and Networking Course Kit , DreamTech Press-2011
R4	Manahar Lotai,Pradeep Niar, Modern Computer Hardware Course , BPB Publication, 2011
R4	Robert Bruce and Co O' Reilly, PC Hardware in a nutshell , Shroff Publishers and Distributors -2008

Online Resources

Sl.No	Website Link
1	https://oli.cmu.edu/courses/pc-hardware
2	https://www.tutorialspoint.com/computer_fundamentals/computer_hardware.htm
3	https://www.itfundamentals.in/