Program : **Diploma in Computer Hardware Engineering**	
Course Code : **3158**	Course Title: **Computer Hardware Lab 1**
Semester : **3**	Credits: **1.5**
Course Category: **Program Core**	
Periods per week: **3 (L:0 T:0 P:3)**	Periods per semester: **45**

Course Objectives:

- To get thorough knowledge of components of desktop computers
- To assemble & disassemble personal computer systems, install and configure OS and peripherals.
- To obtain basics of network cabling

Course Prerequisites:

Topic	Course code	Course name	Semester
Introduction of Computer hardware and software		Introduction to IT System Lab	1

Course Outcomes :

On completion of the course student will be able to:

COn	Description	Duration (Hours)	Cognitive Level
CO1	Identify hardware components of a desktop computer	10	Applying
CO2	Demonstrate assembling of computer system with the given components , peripherals and setting up BIOS	12	Applying
CO3	Apply troubleshooting methods & system diagnostic tools	11	Applying
CO4	Construct straight through, cross over and roll over network cabling .	9	Understanding
	Lab Exam	3	

CO – PO Mapping:

Course Outcomes	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7
CO1	3						
CO2	3	2		2		2	
CO3	3	2		2		2	
CO4	3						

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

Course Outline

	Name of the Experiment	Duration (Hours)	Cognitive Level
CO1	Identify hardware components of a desktop computer		
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.	1	Applying
M1.02	Identify Motherboard components Of desktop computer – CPU Socket, Chipset, ROM, RAM slots, Expansion slots/bus, Interfaces-PATA, SATA & SCSI, Ports & Connectors, Power connectors, CMOS Backup battery.	3	Applying
M1.03	Identify components of Power Supply – Power Connectors, Voltage levels and other signals, Form factor, Backup power supplies	2	Applying
M1.04	Identify Secondary Storage – HDD, FDD, CDD, DVD, Blu-ray, Flash- data and power connectors using with storage devices	2	Applying
M1.05	Identify Input/output Devices – Keyboard, Mouse, Touchpad, TrackPoint, Trackball, Scanner, BCR, OCR, MICR, OMR, Camera – VDU, printer, plotter, projector	2	Applying
CO2	Demonstrate assembling of a desktop computer system with the given components and peripherals and setting up BIOS.		
M2.01	Demonstrate fixing System case / Cabinet – fixing IO templates, setting cooling fans, preparing drive bays	1	Applying
M2.02	Demonstrate fixing Motherboard – fixing CPU & Heat sink assembly, Fixing RAM modules, Adding HDD/DVD, FDD	2	Applying
M2.03	Demonstrate fixing up of SMPS – power connection to various parts like motherboard,	1	Applying

	drives, Add-on card, cooling fans, etc.		
M2.04	Demonstrate Installation and configuration of Webcam, Scanner, Printer, Biometric devices, etc	2	Applying
M2.05	Demonstrate Installation and configuration of expansion cards like NIC, Graphics card, Sound card, etc	2	Applying
M2.06	Demonstrate BIOS Setup & Configurations 1. system date & time, security passwords, boot options & priorities, 2. Factory reset, hardware configurations	4	Applying
	Lab Exam – I	1.5	
CO3	Apply troubleshooting methods & system diagnostic tools		
M3.01	Experiment with System diagnostic tools, creating Start-up disk, Disk Cleanup, Disk defragment, Disk management, Backup and Restore	4	Applying
M3.02	Troubleshoot problems using BIOS beep codes and error codes	2	Applying
M3.03	Troubleshooting of SMPS, Processor, Motherboard components, RAM, Expansion cards, drives.	2	Applying
M3.04	Printer Troubleshooting – re installation, clearing paper jams, head cleaning, cartridge replacement/ink refilling, configuring printer properties and preferences.	3	Applying
CO4	Construct straight through, cross over and roll over network cabling.		
M4.01	Construct straight through cabling and check connectivity status	3	Understanding
M4.02	Construct crossover cabling and check connectivity status	3	Understanding
M4.03	Construct Rollover Crimping and check connectivity status	3	Understanding
	Open Ended Project		
	Lab Exam – II	1.5	

** - Sample Open Ended Projects

(Not for End Semester Examination but compulsory to be included in Continuous Internal Evaluation. Students can do open ended experiments as a group of 2-3. There is no duplication in experiments between groups.).
Students can demonstrate open ended question experiments after the lab hours

1) Upgradation of RAM chip size and see the performance of the system
2) Troubleshoot components of Desktop PC ‘s available in the college under maintenance cell and report type of errors in each component.

Text/ Reference

T/R	Book Title/Author
T1	Computer Hardware: Installation ,Interfacing, Troubleshooting and Maintenance by James K L,PHI
T2	Complete A+ Guide to IT Hardware and Software: AA CompTIA+Core 1(220-1001)&CompTIAL+Core 2(220-1002)textbook , 8th edition
R1	Troubleshooting, Maintaining and Repairing PCs Stephen J.Bigelow TMH, New Delhi Fifth Edition
R2	PC Repair and Maintenance Joel Rosenthal- Fire wall Media,First Edition
R3	Comdex Hardware and Networking Course Kit Vikas Gupta DreamTech Press -2011
R4	Modern Computer Hardware Course Manahar Lotai,Pradeep Niar,BPB Publication ,2011
R5	PC Hardware in a nutshell Robert Bruce and Co O' Reilly, Shroff Publishers and Distributors -2008

Online Resources

S.No	Website Link
1	https://ebooks.lpude.in
2	https://oli.cmu.edu/jcourse/
3	https://online.crbtech.in/certifications/hardware-networking-certification/
4	https://study.com/academy/lesson/computer-system-components-computer-parts-functions.html