Program : **Diploma in Computer Engineering**	
Course Code : **4159**	Course Title: **Computer Hardware Lab-II**
Semester : **4**	Credits: **0**
Course Category: **Program Core**	
Periods per week: **3 (L:0 T:0 P:3)**	Periods per semester: **45**

Course Objectives:

- To troubleshoot & repair laptops.
- To Install & set up different types of servers in different platforms.
- To configure various storage management systems.

Course Prerequisites:

Topic	Course code	Course name	Semester
Basic knowledge in Computer Hardware		Computer System Architecture	3
		Computer Hardware Lab-I	3

Course Outcomes

On completion of the course student will be able to:

COn	Description	Duration (Hours)	Cognitive Level
CO1	Configure and Troubleshoot Laptops	10	Applying
CO2	Configure and setup NAS system.	12	Applying
CO3	Demonstrate different types of server installations .	10	Applying
CO4	Implement different RAID configurations, Web Server & FTP server.	10	Applying
	Lab Test	3	

CO – PO Mapping

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

CO3	3			3			
CO4	3			3			

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

Course Outline

	Description	**Duration (Hours)**	**Cognitive Level**
CO1	Demonstrate Laptop hardware setups /configurations of peripherals. Troubleshooting and repairing Laptops		
M1.01	Configure and Troubleshoot Laptops	2	Applying
M1.02	Demonstrate BIOS Setup and configuration operations in laptop systems	2	Applying
M1.03	Experiment with troubleshooting of laptop components	3	Applying
M1.04	Demonstrate Repairing Laptop components	3	Applying
CO2	Configure and setup NAS system.		
M2.01	Illustrate NAS facilities,interfaces and types.	1	Applying
M2.02	Demonstrate the procedure to configure and install the NAS.	3	Applying
M2.03	Illustrate the methods for remote connection to NAS	2	Applying
M2.04	Demonstrate the RAID configuration setup for NAS	4	Applying
M2.05	Construct and configure an example NAS system.	4	Applying
	Lab Exam 1	1 ½	
CO3:	Demonstrate different types of server installations .		
M3.01	Classify servers - Server form factors- tower,rack & blade	1	Understanding
M3.02	Experiment with the installation of server into rack with optional slide rails	3	Applying
M3.03	Install cable management assembly	2	Applying
M3.04	Demonstrate powering on and off the Server and connecting routing cables .	4	Applying

CO4	Implement different RAID configurations , Web Server & FTP server.		
M4.01	Demonstrate RAID configurations using software methods in Linux & Windows	3	Applying
M4.02	Demonstrate RAID configurations using hardware in Linux & Windows	3	Applying
M4.03	Configuring Web Server,FTP server	3	Applying
M4.04	Demonstrate Port forwarding in Web server	1	Applying
	Lab Exam 2	1 ½	

Text / Reference

T/R	Book Title/Author
T1	Garry Romaneo : Laptop Repair Complete Guide: Including Motherboard and Component Level Repair.
R1	Managing RAID on Linux by Derek Vadala, Publisher(s): O'Reilly Media, Inc.
R2	Using SANs and NAS by W. Curtis Preston, Publisher(s): O'Reilly Media, Inc.
R3	DIY NAS Guide: NAS Configuration Guide with Open Source Software on Raspberry Pi or PC for Network Hard Disk Drive, Backup and Data Share.
R4	CompTIA Linux+ Certification All-in-One Exam Guide: Exam XK0-004 By Ted Jordan, Sandor Strohmayer · 2020.

Online Resources

Sl.No	Website Link
1	https://www.howtogeek.com/208030/how-to-set-up-a-nas-network-attached-storage-drive/
2	https://mediaexperience.com/nas-storage-guide/
3	https://docs.oracle.com/cd/E19121-01/sf.x4200m2/819-1155-17/819-1155_CH01.html#0_84417

4	https://www.tecmint.com/understanding-raid-setup-in-linux/
5	https://www.thegeekstuff.com/2010/08/raid-levels-tutorial/
6	https://www.tomshardware.com/news/how-to-set-up-raid-windows-10,36783.html
7	https://winscp.net/eng/docs/guide_windows_ftps_server
8	https://www.linux.com/training-tutorials/install-and-configure-ftp-server-redhatcentos-linux/
9	https://opensource.com/article/18/2/how-configure-apache-web-server
10	https://httpd.apache.org/docs/2.4/platform/windows.html
11	https://www.tecmint.com/create-ssh-tunneling-port-forwarding-in-linux/
12	https://embracethered.com/blog/posts/2020/windows-port-forward/