Program : **Diploma in Computer Hardware Engineering**	
Course Code : **4151**	Course Title: **Computer Networks-II**
Semester : **4**	Credits: **4**
Course Category: **Program Core**	
Periods per week: **4 (L:4 T:0 P:0)**	Periods per semester: **60**

Course Objectives:

- To illustrate different networking components, switching and routing technologies and to outline domain level administration.

Course Prerequisites:

Topic	Course code	Course name	Semester
Fundamentals of Electrical and Electronics Engineering		Fundamentals of Electrical and Electronics Engineering	2
Computer system hardware		Computer system hardware	3
Fundamentals of networking		Computer networks-I	3

Course Outcomes

On completion of the course student will be able to:

COn	Description	Duration (Hours)	Cognitive Level
CO1	Outline network control devices and IEEE standards.	14	Understanding
CO2	Demonstrate active directory and security.	14	Understanding
CO3	Illustrate the fundamentals of IOS, Switch and Router Configuration	16	Understanding
CO4	Outline Static and dynamic routing protocols.	14	Understanding

	Series test	2	

CO – PO Mapping

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

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

Course Outline

	Description	Duration (Hrs.)	Cognitive Level
CO1	Outline network control devices and IEEE standards.		
M1.01	Compare IPV4 and IPV6 addressing.	1	Understanding
M1.02	Explain the network control devices.	3	Understanding
M1.03	Illustrate wireless network technologies.	3	Understanding
M1.04	Extend IEEE 802.XX standards.	3	Understanding
M1.05	Illustrate requirements and working of DNS and DHCP.	4	Understanding
Contents: Compare IP addresses-IPV4 and IPV6:--Understanding subnet mask. Familiarization of networking Control Devices. Current networking scenario- Commonly used networking devices- Switch, Hub and Router- Repeaters, VPN devices and Modem- wireless network technologies (Wi-Fi, Bluetooth, Wi-max). IEEE standards 802.X, 802.XX Concept of DNS DHCP server -Working of DNS and DHCP-Installation requirement of DNS and DHCP			
CO2	Demonstrate active directory and security.		
M2.01	Illustrate Domain controllers and Active directory.	3	Understanding
M2.02	Explain domain and workgroup users.	4	Understanding
M2.03	Illustrate securing files and folders and setting permissions.	4	Understanding
M2.04	Outline Security and firewall.	3	Understanding
	Series Test-1	1	

Contents: Domain controllers and Active directory. Domain and workgroup network architecture - client server architecture -the requirements of domain network. Domain and workgroup users:-Managing user, group accounts-Adding group memberships-Physical and logical components of domain-Understanding child domain-additional domain controller. Securing files and folders: - setting share permission-setting security permission. Security and encryption:-firewall-general concepts and types -system backup- active directory backup.			
CO3	Illustrate the fundamentals of IOS,switches and Router Configuration.		
M3.01	Illustrate Switch and Router hardware and memory.	2	Understanding
M3.02	Outline Router and switch interfaces.	2	Understanding
M3.03	Summarize Internetwork Operating Systems.(IOS)	3	Understanding
M3.04	Identify the basic configurations of a Switch.	3	Understanding
M3.05	Illustrate router configuration.	4	Understanding
M3.06	Explain Register setting, clock, various logging.	2	Understanding
Contents: Introduction to Switch and Router. Switch and Router Hardware-Router and Switch Interfaces - Internetwork Operating System (IOS) - Basic configurations of a Switch-setting and configuring commands– Saving and Erasing Configurations-Memory on Routers-Basic Router Configuration- Configuring Router with <copy> and TFTP-Setting the Bootstrap Behavior-Configuration Register Settings-upgrading Router's IOS- Configuring the Router's Clock-IOS Message Logging.-Setting up Buffered Logging-Setting up Trap Logging.			
CO4	Outline Static and dynamic routing protocols.		
M4.01	Explain IOS upgrading, disaster recovery.	2	Understanding
M4.02	Extend Authentication and accounting	1	Understanding
M4.03	Elaborate TCP/IP static and dynamic routing.	3	Understanding
M4.04	Illustrate IGP and EGP routing protocols.	4	Understanding
M4.05	Choosing the right protocol and routing information.	2	Understanding
M4.06	Extend Route Control and redistribution	2	Understanding
	Series Test-2	1	
Contents: Backing up and restoring configurations-upgrading Router's IOS-Disaster Recovery-IOS Authentication and Accounting. General Routing Concepts and Terms-TCP/IP Static Routing- TCP/IP Dynamic Routing Protocols: TCP/IP Interior Gateway Protocols-TCP/IP Exterior Gateway Protocols-Configuring IP Routing Protocols on Routers: Choosing the Right protocol - Route Selection-General Routing Information-Managing Static Routing-Route Control and Redistribution.			

Text / Reference:

T/R	Book title/Author
T1	Understanding the Network A Practical Guide to Internetworking , Michael J. Martin New Riders Publishing
R2	Richard Mc Mohan Introduction to Networking Tata McGraw Hill
R3	Behrouz A. Forouzan – Local Area Networks McGraw Hill Edn.
R4	Todd Lammle- CiscoCertified Network Associate 3/E Wiley India Pvt. Ltd/Sybex Jill Spealman,Planning, Implementing, and Maintaining a Windows Server, Microsoft Press

Online resources

Sl. No	Website Link
1	https://www.oreilly.com/library/view/understanding-the-network/0735709777/
2	https://www.computernetworkingnotes.com/
3	https://www.cisco.com/c/en_in/training-events/networking-academy-program.html