NIRMA UNIVERSITY

Institute:	Institute of Technology
Name of Programme:	Master of Computer Application (2-Years Programme)
Course Code:	3MCAD368
Course Title:	Network Administration
Course Type:	Departmental Elective
Year of Introduction:	2021-22

Credit Scheme

L	T	Practical Component				C
		LPW	PW	W	S	
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Course Learning Outcomes (CLO):

At the end of the course, students will be able to –

1. interpret the functions of various LAN components and devices
2. configure and manage the domain server, users and routers for various networks
3. illustrate, configure and manage secure wired and wireless computer networks and network servers
4. analyze the working and performance of computer networks using various network monitoring tools

Syllabus: **Total Teaching hours: 45**

Unit	Syllabus	Teaching hours
Unit-I	**LAN Component:** Study of LAN components and devices, configuring switch, Setting of Subnet domain, setting of IPv4 and IPv6 network.	06
Unit-II	**Server and User Management:** Introduction to Windows and Unix server, Installation and configuration of servers, User & Group Managements in Unix NTFS & share permissions. Domain user account, configuring user account properties. Domain groups. Viewing a user's effective permission. Creating and managing shares.	07
Unit-III	**Device Management:** Using device manager, Drivers signing& signature verification. Managing Ports, Disk Management Tools & Tasks, File Systems, Configuring Active Directory. Implementing files and folder NTFS & share permission, Special permission, inheritance. Implementing Shadow copies. Implementing and Managing the Distributed File system (DFS). Auditing Access to Resources.	06
Unit-IV	**Terminal Services**: Installing and Configuring Terminal Services. Managing servers remotely using terminal services (Remote desktop). Backup restoring data.	03
Unit-V	**Network Services:** Installing DNS. Implementing DNS in windows networks. Installing and configuring DHCP. Monitoring and Managing Internet information services (IIS 0.) Remote Access server. Configuring & Implementing VPN. Configuring & Implementing Remote Access services.	07

Unit-VI	**Routing services**: Configuring & implementing routing services. Configuring & implementing Internet connection sharing (ICS). Active directory services. Implementing active directory services forest.	06
Unit-VII	**Wireless Network and Security:** Setting up wireless networks and defining secured access on wired and wireless network **Security:** Local and domain security policies. Working with group policy setting up NAT and PAT, network security policies, Firewall	06
Unit-VIII	**Case study:** Linux and Windows network Server	04

Self-Study: The self-study contents will be declared at the commencement of semester. Around 10% of the questions will be asked from self-study contents.

Suggested Readings/ References:

1. Rusen, Network your computers and devices, step by step, PHI learning.
2. Kenneth D. Stewart III, Aubrey Adams, Designing and supporting computer Networks CCNA Discovery Learning Guide, Pearson Education.
3. Barrie Sosinsky, Networking Bible, John Wiley & Sons.
4. Thomas A. Limoncelli, Christina J. Hogan, Strata R. Chalup, The Practice of System and Network Administration, Addison Wesley.

Suggested List of Experiments:

Sr.	Title	Hours
1	To demonstrate various Network cables and RJ-45 Connecter (Straight and cross over cables) and their interconnections	02
2	To configure Virtual LAN using Cisco packet tracer (single switch and double switch) through CLI using the given switch and port configuration, VLAN set up, IP-address	02
3	To set up Domain controller & Application Server Roles [Domain and User account Management] [Network Server Configuration] in Windows and Linux Operating system	04
4	To study and implement of Sub-netting and Super-netting in Cisco packet tracer	04
5	To introduce router and configuration of router using Cisco packet tracer. with Single and Multiple Router like static and dynamic routing: RIP, OSPF Minimum Four routers and minimum four different network	02
6	To demonstrate Network Server Configuration (HTTP, FTP, DNS) and also implement the Cisco packet tracer To implement Mail Server using Cisco Packet Tracer	04
7	To implement Network Address Translation - Static mode (NAT) and PAT To implement Network Address Translation – Dynamic mode (NAT) and PAT	02

	8	To introduce Wireless Network and demonstrate Access point To configure Linksys wireless router using Cisco Packet Tracer	04
	9	To study and implement Spanning tree protocol	02
	10	To demonstrate NETTOOLS for Linux network administration and evaluate the performance	04
	11*	To demonstrate working of the firewall and proxy servers	-
	12*	To introduce Virtual Private Network and implement using Cisco packet tracer.	-

* optional

Suggested Case List: -NA-