Specialized Programme on Internetworking Design and LAN WAN Administration (8 Weeks)

OBJECTIVE OF THE PROGRAMME –

- The main objective of the programme is to build capacity of the professionals drawn from industry, Academia and government under ITEC Programme.

- The purpose of the programme is to introduce to the participants about System Administration, on setting up of server, management of networks, type of networks and communication concepts.

The course will have the following objectives –

→ **System Administration Part**
  - To understand Windows and Linux OS and its features
  - Intricacies of installing and setting up OS
  - Administering system as per requirement.

→ **Network Management Part**
  - To understand various types of Networks
  - Utilization and importance of Networks
  - Setting up of Network Environment

The Programme is decomposed into two parts –
  a) **System Administration**
  b) **Network Management**

The **System Administration** focuses on Windows/Linux environment and its installation and server features.
  - OS Concepts
  - Installation in Windows / Linux
  - Setting up and managing users in Windows / Linux
  - Configuring server in Windows / Linux

The **Network Management** focuses on Networks, Components of Networks and Management of Networks.
  - Network Concepts
  - Importance of OSI Reference Model

- Components of Networking
- Understanding and Configuring TCP/IP
- Router Management

Course Content

NETWORK MANAGEMENT

1. **Introduction to Internetworking**

- Internetworking Basics
- Networking media, cables & connectors
- Types of Networks
- OSI reference model
- Ethernet and wireless LANS
- ATM and ISDN

2. **TCP/IP addressing**

- What is TCP/IP
- Comparison of OSI layer and TCP/IP suite
- What is Network Addressing
- Functionality of IP, TCP, UDP, ICMP protocols
- Understanding FTP, Telnet, SMTP
- IP addressing scheme
- What is subnetting
- Configuring Subnet mask

3. **Routing Basics**

- Routing Internal & External components
- Booting up process
- Different modes of Router
- Routing algorithms
- Routing tables/routing protocols
- IP Routing, Static Routing, Dynamic Routing

4. Routing Protocols

- Introduction to Routing Protocols
- Configuring RIP
- Configuring IGRP
- Configuring EIGRP
- Use of CISCO IOS trouble Shooting Commands
- Using TFTP for taking Backup of IOS and configurations

5. Understanding LAN & Switching

- LAN Basics
- Switching Ethernet, Forwarding & Filtering
- Switching Methods(MAC, LLC)
- Virtual LAN's
- STP, VTP

6. WAN Technologies

- Fundamentals of WAN PROTOCOLS
- Introduction and configuration of PPP
- Introduction to Frame Relay, PVC, SVC, ATM
- Introduction to ISDN BRI, PRI

WINDOWS ADMINISTRATION

1. Introducing Windows Server

- Windows Server Editions
- New Features of Windows Server
- Installing and Configuring Windows Server
- Windows Deployment Methods & Installing Deployment Services

2. Using Windows Server Roles and Features

- Adding and Removing Roles and Features
- Remote management

3. Monitoring and Maintaining Network Infrastructure Servers

- Internet Protocol
- Dynamic Host Configuration Protocol
- Domain Name System

4. Monitoring and Maintaining Active Directory

- Installing and Removing Active Directory Roles
- Active Directory Rights and Permissions
- Active Directory Users and Group Management
- Group Policy
- Active Directory Backup and Recovery
- Configuring Trust Relationship
- Configuring Forest and Domain

5. Monitoring and Maintain File Servers

- File Servers
- Distributed File System

6. Planning Windows Server Security

- Encrypting File System
- Auditing for Server Security
- Configuring Windows Firewall

7. Internet Information Services

8. Managing Windows Registry

9. Configuring and Managing Backup

LINUX Administration

1. Linux Essentials
- Overview
- Command Line File system Browsing

- Users, Groups, and Permissions
- vi and vim Editor Basics
- The Linux File system
- Standard I/O and Pipes
- Introduction to String Processing
- String Processing with Regular Expressions
- Bash Shell Scripting

2. Linux System Administration

- Installation
- System Initialization and Services
- File system Management
- Network Configuration
- RPM
- User Administration
- Troubleshooting

3. Configuration and management Of Servers

- Web Server (Apache)
- Mail Server
- File Transfer protocol(FTP) Server
- Domain Name Server(DNS)
- Samba Server
- Network File System (NFS)
- IP table configuration