Specialized Programme on Internetworking Design and LAN WAN Administration

A. NAME OF INSTITUTE	Centre For Development of Advanced Computing
B. NAME/TITLE OF THE COURSE	**Specialized Programme on Internetworking Design and LAN WAN Administration**
C. COURSE DATES WITH DURATION IN WEEKS	**From Jan 9th , 2012 to Mar 30th ,2012** **In weeks: 12 Weeks**
D. ELIGIBILITY CRITERIA FOR PARTICIPANTS: 1. EDUCATIONAL QUALIFICATIONS 2. WORK EXPERIENCE required, if any 3. AGE LIMIT 4. Target Group *[Level of participants and target ministries/departments etc. may be indicated]*	1) Two years technical course or Graduate in any Stream after 12 years of schooling. 2) ------- 3) ------ 4) Should meet the above educational requirements and should know English language
E. AIMS AND OBJECTIVES OF THE COURSE	Objective: 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.
F. MODE OF EVALUATION OF PERFORMANCE OF THE TRAINEE	Lab Work

Start Date: Jan 9th, 2012 **Duration: 12 weeks**
End Date: Mar 30th , 2012

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
- Back up and restoring files 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
- Wireless LAN

Course Content

WINDOWS ADMINISTRATION

1. Windows 2003 Administration

- Microsoft Windows Operating System Family
- Windows 2003 New Features
- Windows 2003 User Interface
- Installation of Windows 2003 Server & its services

2. Active Directory Services

- Introduction to Active Directory Services (ADS)
- Active Directory Logical Structure
- Active Directory Physical Structure
- Methods for Administering a Windows 2003 Network
- Introduction to Creating a Windows 2003 Domain
- Installing Active Directory
- The Active Directory Installing Process
- Examining the Default Structure of Active Directory
- Performing Post Active Directory Installation Task
- Troubleshooting the Installing of Active Directory
- Removing Active Directory

3. User management

- Understanding groups and Accounts
- Managing Accounts
- Understanding and Assigning Rights
- Group Policies management

- Authentication, Authorization, and Auditing Strategies
- Troubleshooting Domain User Accounts and Groups
- Managing user profiles
- Setting up disk Quotas

4. DHCP

- Networking with TCP/IP
- TCP/IP into the windows Model
- IP Addressing
- Understanding DHCP
- DHCP Communication
- Name Registration and Resolution

5. Domain name Server (DNS)

- Installing DNS
- Configuring DNS
- Maintaining and troubleshooting DNS
- Configuring DHCP to Support DNS

6. Backup and Recovery

- Backing & Restoring Data: Overview
- Functional description Of Removable Storage management
- Types of Backup
- Using safe Mode
- Restoring Files
- Restoring Functionality with the last Known Good Configuration
- Recovery console
- Recovery From disasters

7. Microsoft Internet Information Server

- Introduction To IIS
- HTTP vs.HTML
- Directory structures
- Authentication
- Administration to IIS

8. **MS-Exchange Server**

LINUX Administration

1. Red Hat Linux Essentials

- Overview
- Command Line File system Browsing
- GNOME and KDE Desktops
- The bash Shell
- Users, Groups, and Permissions
- vi and vim Editor Basics and Printing
- The Linux File system
- Configuring GNOME, KDE, and X-based Tools
- The bash Shell and Configuration
- Advanced Topics in Users, Groups, and Permissions
- Advanced Uses of the vi and vim Editors
- Standard I/O and Pipes
- Introduction to String Processing
- String Processing with Regular Expressions
- Introduction to Processes
- Bash Shell Scripting
- Basic Networking Clients
- Programming and Administration

2. Red Hat Enterprise Linux System Administration

- Installation
- System Initialization and Services
- Kernel Services and Configuration
- File system Management
- Network Configuration
- RPM
- User Administration
- The X Window System
- Advanced File system Management
- Troubleshooting

3. Red Hat Linux Networking and Security Administration

- Introduction to System Services
- Organizing Networked Systems
- Network File Sharing Services
- Electronic Mail Services
- The HTTP Service
- Security Concerns and Policy
- Authentication Services
- System Monitoring
- Securing Networks
- Securing Services
- Securing Data
- IP chain and IP table configuration

4. 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)

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, SNMP – upper layer protocols

- 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

7. Network Security

<u>Eligibility Criteria</u>

- Two years technical course or graduate in any Stream after 12 years of schooling