**Layered Models**

* OSI Reference Mode.
* Application Layer, Presentation Layer.
* Session Layer, Transport Layer.
* Network Layer, Data link Layer, Physical Layer.
* Cisco Three-Layer Model.

**TCP/IP**

* Introduction to TCP/IP.
* Transport Layer Protocols (TCP, UDP).
* Internet Layer Protocols (IP, ICMP, ARP).

**IP Addressing**

* IP Addressing Classes.
* Subnet Masks and Subnetting.
* Complex Subnet & Super netting.
* Determining Broadcast & Network Address.

**Configuring a Router**

* Starting up with a Router and Switch.
* Booting a Router and setup mode.
* The Command-line Interface.
* Passwords and Line Console Commands.
* Interface Configuration setting.
* Verifying & Debugging the Configuration.

**Building a Network**

* Configuring a Router and Switch.
* Verifying Configuration and Duplex Settings.
* Continued Router Configuration.
* Continued Switch Configuration.

**Managing CISCO in an Internetwork**

* Backing up and restoring startup configuration and IOS.
* Booting IOS from TFTP Server.
* Cisco Discovery Protocol.
* Ping and Trace.
* Understanding configuration register.
* Recovering the password.

 **IP Routing**

* Routing Basics.
* Managing static and Dynamic Routes.
* Configuring static IP Routing.
* Configuring Dynamic IP routing using RIP, IGRP.
* Managing and configuring OSPF & EIGRP.
* Avoiding Routing loops using split horizon, route poisoning.

**Switching**

* Bridging versus switching.
* Working concept of Switch.
* Spanning Tree Protocol (STP).
* LAN Switch Types.

**Virtual LANs**

* VLAN membership.
* VLAN Configuration and VTP.
* Assigning Ports.
* ISL Routing and Frame tagging.
* Perform LAN and VLAN troubleshooting.

**Access Lists**

* Access Lists Commands.
* Standard IP Access List.
* Wildcard Cards Implementing an Access List.
* Extended Access Lists.
* IPX access Lists.
* Securing a Network Site with Access list.

**WAN**

* WAN Connection Types ISDN, X.25, Leased line and Frame-Relay.
* Connection protocols.
* HDLC, PPP AND PPMP.
* Dial-on-Demand Routing.
* Frame Relay configuration.
* Sub interfaces in Frame-Relay.
* Troubleshooting and Debugging Tools.