

# A. Syllabus

## Network Engineering – Routing and Switching

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### Course Objectives:

1. To Understand the basic concepts of networking.
2. To identify the various components required to build different networks.
3. To configure routers using the various routing protocols.
4. To study about infrastructure services and security management.

### Unit-I Network Fundamentals (04)

Introduction to Computer Networks – Types of Networks – Network Topologies- Basic Hardware Networking Media- Types of Cables used to connect devices - OSI reference Layer

### Unit- II Routers and Routing Technologies (07)

Cisco Routers – Cisco IOS – Entering in to CISCO IOS- Configure Routers basic setup, IPv6 addressing- Configuring NIC- Identifying the classes of IP address – Ipv4 Ipv6 Configuration (Tool and Real Router), Configuring RIPv2 (Tool and Real Router), Configuring OSPFv2 (Tool and Real Router), Configuring OSPFv3 (Tool and Real Router).

### Unit-III Switching Technologies (06)

Switching Technologies – Functions of Switch, Switch function Learning (Tool and Real Switch) VLAN – Virtual LAN- Switch Port Modes – Layer 2 Protocols and Configuration – Switch Stacking Chassis and aggregation STP – Spanning Tree.

### Unit- IV Infrastructure Services and Security (07)

NAT and its configuration-NTP and its configuration, infrastructure security-access layer threats migration technique-cloud resources on enterprise network architecture-port security and its configuration-device hardening-local authentication-secure password-Telnet and SSP and its configuration

### Unit- V Infrastructure Management (06)

Infrastructure management-SNMPv2-SNMPv3-configuring SNMP-syslog and its configuration-backup and restore configuration-CDP- upgrading IOS-password recovery and configuration register-ping and trace route.

**Total Hours: 30**

**Credits: 2**

**Outcomes:**

By the end of this course, students should be able to:

1. Understand the basic concepts of Networking.
2. Understanding internetworking principles and how the Internet protocols IP,IPv6.
3. Aware of the routing protocols used on the Internet such as RIP,OSPF and BGP.
4. Know about infrastructure service and security management.

**REFERENCES**

1. Behrouz A. Forouzan, Data Communications and Networking, Fifth Edition, Tata Mc Graw Hill, 2013.
2. Cisco Routers for IP Networking Black Book: A Practical in depth Guide for Configuring Cisco Routers Internetworking IP- based networks- 2000 by Innokenty Rudenko.