



SILVER OAK UNIVERSITY

College of Technology

Bachelor of Technology

Information Technology

Course Name: Network Technology

Course Code:1010043317

Semester:5th

Prerequisite:

Basic Knowledge of Computer Network.

Course Objectives:

1. To comprehend the fundamental ideas of organization innovation and firm establishment for seeing how information correspondence happens utilizing networks.
2. It is based around the OSI Reference Model which manages the significant issues and related conventions concentrated in the different layers of the model.
3. This course gives the understudy essential information on the different parts of systems administration and empowers understudies to see the value in ongoing improvements nearby.

Teaching Scheme:

Teaching Scheme				
L	T	P	Contact Hours	Credit
3	0	2	5	4

Contents:

Unit	Topics	Teaching Hours	Weightage %
1	Network Fundamental: Uses of Computer Networks, Types Of Networks, Topologies, OSI Model, TCP/IP Model, Applications	4	10
2	Physical Layer: Analog And Digital Signals, Data Transmission Modes SIMPLEX, HALF DUPLEX and FULL DUPLEX Transmission Media- Guided and Unguided, Switching Methods, Modulation and Multiplexing	5	15
3	Data Link Layer: Data Link Layer Services-Error Detection And Correction, Data Link Protocols-, Noiseless Channels, Noiseless Channels, HDLC, Point-To-Point Protocol, Multiple Access Methods, Flow control mechanism – Sliding Window Protocol - GoBack - N - Selective Repeat - Multiple access Aloha - Slotted Aloha - CSMA, CSMA/CD, Channelization, Wired LANs: Ethernet & Token Rings, MAC Address	8	15
4	Network Layer: Network Layer Design Issues, IP Addressing-R, Routing Algorithms, IPv4 Addresses, Subnetting in Classful and Classless addressing, IPv6, DHCP, ICMP, IGMP, BGP, ARP	8	20

5	Transport Layer: Transport Service, The Internet Transport Protocols: UDP & TCP, Congestion Control Algorithms	7	15
6	Application Layer: Domain Name System, Electronic Mail- SMTP and POP3, World Wide Web, HTTP, FTP Networking Devices-HUB, ROUTER,BRIDGE,SWITCH,REPEATER,FIREWALL	8	15
7	Advanced Topics Access List, DHCP Snooping, Port Security, Network Security – Symmetric Key and Asymmetric key cryptography- Virtualization and Hypervisors, Optical Networks	3	10

Course Outcomes:

Sr. No.	CO Statement	Unit
CO-1	Explain the basic terminologies used in networking and layered architecture of computer network, analog signal, and digital signal transmission media and multiplexing technique.	1,2
CO-2	Illustrate different data link layer terminologies like error detection correction, Multiple access protocol and Link layer addressing used in the network.	3
CO-3	Design network architecture, assign IP addressing and apply various routing algorithms to find shortest paths for network- layer packet delivery.	4
CO-4	Describe and implement the essential principles of a connectionless and connection-oriented protocols used for reliable data transfer, flow control and Congestion control.	5
CO-5	Comprehend basic protocols of application layer and how they can be used to assist in network design and implementation.	6
CO-6	Security in Network , Virtualization in network	7

Teaching & Learning Methodology:

The various methods or tools to teach the above subject:

1. Problem-based Learning
2. PPT Presentation

List of Experiments:

Total Hours: 28

Sr. No.	Practical Name
1	To study different types of topologies and implement in Cisco Packet Tracer
2	To demonstrate Networking and Internetworking Devices (Switch, Hub, Router, Gateway, Repeater, Bridge, cables).
3	To demonstrate different networking commands.
4	Routing Technology and Protocols
5	Installation and Configuration of Two LAN using routers

6	Implementation NAT using Cisco Packet Tracer.
7	IPv6 Configurations.
8	Use of ACL and working
9	Perform a Port Security in switch.
10	DHCP Implementation.

Books Recommended:

1. Andrew S. Tanenbaum, "Computer Networks", Prentice Hall India.
2. Behrouz A. Forouzan, "Data Communication & Networking".
3. Tata McGraw Hill. , "Computer Networking- A Top-Down approach", Kurose and Ross, Pearson.
4. Fred Halsall, Addison Wesley, "Computer Networking and the Internet".

List of Open-Source Software/learning website:

1. Swayam.gov.in
2. Netacad.com
3. <http://silveroakuni.ac.in/video-lecture>

CO-PO-PSO Matrix:

Co. No.	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO-1	3	1	1	2	2							2	1	1
CO-2	3	2	1	2	2				2			2	1	2
CO-3	3	2	3	3	3	2			3	1	3	3	1	2
CO-4	3	2	3	2	3	2			3	1	3	2	1	1
CO-5	1	1	1	1	1							2	1	1
CO-6	1	1	2	2	3	3		2		1		2	1	2