COURSE TITLE	**NETWORK ESSENTIAL**
COURSE CODE	**05CA0104**
COURSE CREDITS	**2**

Objective:

1 At the end of this subject one has knowledge Network Basics and its importance.
2 Grab knowledge regarding Network Topologies.
3 OSI Model, types of Media, Networking Devices.
4 IPv4 and IPv6 Addressing, Subnetting. Ethernet importance.
5 Configure Routing protocols, NAT, Basics of Switching technology and basics of troubleshooting.

Course Outcomes: After completion of this course, student will be able to:

1 Introduction to Network.
2 Ethernet Specification & IP Addressing.
3 Basic of Routing & Switching.
4 Network Troubleshooting
5 Network Topologies and its devices.

Pre-requisite of course:NA

Teaching and Examination Scheme

Theory Hours	Tutorial Hours	Practical Hours	ESE	IA	CSE	Viva	Term Work
2	0	0	50	30	20	0	0

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Contents : Unit	Topics	Contact Hours
1	**Introduction to Networks & Ethernet Specifications & IP Addressing** What is Network? Local Area Network (LAN), Network Components, Virtual LANs (VLANs), Wide Area Network (WAN), Virtual Private Networks (VPNs), Architecture: Peer-to-Peer or Client/Server, Network Topologies: Bus Topology, Star Topology, Ring Topology, Mesh Topology, Point-to-Point Topology, Point-to-Multipoint Topology, Hybrid Topology, OSI Model, TCP/IP Stack, Types of Media, Networking Devices /Specialized Devices, Virtual Network devices, Network Basics, Ethernet Basics, Ethernet Switch Features, Collision Domain, Broadcast Domain, CSMA/CD, Half- and Full-Duplex Ethernet, Ethernet at the Data Link Layer, Binary to Decimal and Hexadecimal Conversion, Ethernet Addressing, Ethernet Frames, Channel Bonding, Ethernet at the Physical Layer. IPV4 Addressing, Assigning IPV4 addresses, Subnetting, IPV6 Addressing	15
2	**Basics of Routing and Switching & Basic Troubleshooting** Basic Routing Process, Types of Routing Protocol, Types of NAT, Multicast Routing, WAN Properties, WAN Technologies, WLAN Concept and Components, WLAN Standards, Deploying WLANs, Securing WLANs. Basics of Switching Process, Vlans, MAC Address, Maintenance Tools, Configuration Management, Monitoring Resources and Report, Security Fundamentals, Categories of Network Attacks, Defending Against Attacks, Remote-Access Security, Firewalls, Virtual Private Network, Intrusion Detection and Prevention, Troubleshooting Fundamentals, Physical Layer Troubleshooting, Data Link Layer Troubleshooting, Network Layer Troubleshooting, Wireless Troubleshooting	15
Total Hours		**30**

Textbook :

1 CompTIA Network+ Study Guide, Todd Lammle, Sybex, 2021

References:

1 CompTIA Network+ Study Guide, CompTIA Network+ Study Guide, Todd Lammle, Sybex, 2021

2 Computer Networking: A Top-Down Approach, Computer Networking: A Top-Down Approach, Jim Kurose & Keith W.Ross, Pearson, 2017

Suggested Theory Distribution:

The suggested theory distribution as per Bloom's taxonomy is as follows. This distribution serves as guidelines for teachers and students to achieve effective teaching-learning process

Distribution of Theory for course delivery

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Remember / Knowledge	Understand	Apply	Analyze	Evaluate	Higher order Thinking / Creative
20.00	30.00	25.00	15.00	10.00	0.00

Instructional Method:

1 Board work

2 PPT

Supplementary Resources:

1 https://www.geeksforgeeks.org/basics-computer-networking

2 https://www.javatpoint.com/fundamentals-of-computer-networking

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