Course Code: EITS - 205
Course Title: Computer Networking- III

Number of Credits: 03	**Total Hours: 42**	**Total Marks: 75**

Prerequisites for the course

Students should know the topics covered in Computer Networking I, II

Objectives of Course

1. To understand OSI and TCP/IP Models In depth
2. To understand IP Addressing
3. To understand Subnet mask
4. To understand VLAN
5. To understand STP, RSTP
6. To understand IP Routing

Course Content

Unit I	**OSI Model**	**5 Hours**
Application layer (layer 7), Presentation layer (layer 6), Session layer (layer 5), Transport layer (layer 4), Network layer (layer 3), Data Link layer (layer 2) and sublayers, Physical layer (layer 1). Data Encapsulation Protocols used at each layer		
Unit II	**TCP/IP Model**	**5 Hours**
Process/Application layer, Host-to-Host layer, Internet layer, Network Access layer, Protocols used at each layer		
Unit III	**IP Addressing**	**4 Hours**
Network addressing, Classes of IP Addressing. • Setting IP Address (IP4/IP6) & Subnet Mask, Private IP Addressing, IPv4 Address Types, Troubleshooting IP Addressing		
Unit IV	**Subnet Mask**	**7 Hours**
Subnet Mask, CIDR, Subnetting Class A, B, C Addresses		
Unit V	**VLAN**	**7 Hours**
VLAN basics, types of VLAN, VLAN Trunking protocol, Routing between VLAN, VLAN Configuration		
Unit VI	**STP, RSTP**	**7 Hours**
BPDU, Selecting the Root Switch, Port States, Timer, Topology change, Convergence, Configuration		
Unit VII	**IP Routing**	**7 Hours**
Routing basics, routing Table, Routing methods, Routing preference, Classful and classless routing, DVRP, Routing protocols, Routing configuration.		

Pedagogy

Lectures/Tutorial/Assignments

Course Outcome

On completion of the course, students will be able to:

1. Understand OSI and TCP/IP Models In depth
2. Understand IP Addressing
3. Understand Subnet mask
4. Understand VLAN
5. Understand STP, RSTP
6. Understand IP Routing

References/Readings

1. Bell, C. G., Habermann, A. N., McCredie, J., Rutledge, R., & Wulf, W. (1970). Computer networks. In *Computer* (Vol. 3, Issue 5).
2. TANENBAUM, A. S., & WETHERALL, D. J. (2005). Computer networks. In *Computers, Software Engineering, and Digital Devices*. https://doi.org/10.4337/9781784711603.00023
3. D-Link Certified, DCS Switching Training Guide
4. D-Link Certified, DCS Switching Lab Manual
5. Cisco Certified Network Associate Training Guide
6. James F. Kurose, Keith W. Ross, Computer Networking A Top down Approach, 7th Edition, Pearson, 2001.
7. Data communications and Networking, Behrouz A Forouzan, Tata Mc Graw-Hill 5th edition, 2013
8. Larry Peterson and Bruce S Davis "Computer Networks :A System Approach" 5 thEdition , Elsevier -2014
9. Douglas E Comer, **"** Internetworking with TCP/IP, Principles, Protocols and Architecture" 6th Edition, PHI - 2014
10. An Engineering Approach to Computer Networks-S. Keshav, 2nd Edition, Pearson Education
11. Data Communications and Networking – Behrouz A. Forouzan. Third Edition TMH.