

Subject Code: 1ET2030302	Subject Title: Advance Computer Network
Pre-requisite Subject	Computer Network

Course Objective: Understand the fundamental concepts of advance computer network. Students analyse and understand the topological and routing strategies for an IP based networking infrastructure. Also analyze traffic engineering. Students gain knowledge of simulator/tool and how to use simulator/tool for advance networking.

Teaching Scheme (Hours per week)				Evaluation Scheme (Marks)				
Lecture	Tutorial	Practical	Credit	Theory		Practical		Total
				University Assessment	Continuous Assessment	University Assessment	Continuous Assessment	
3	-	2	5	60	40	30	20	150

Subject Contents				
Sr. No	Topic	Total Hours	Weight (%)	
1	Protocols and Interfaces in Upper Layers of TCP/IP: Introducing TCP/IP suite, Explaining Network Layer Protocols, Explaining Transport Layer Protocol, Explaining Application Layer Protocol	12	25	
2	Routing in the Internet: Introduction to Intra-domain and inter-domain routings IP Routing: Routing Basics, The IP Routing Process, Configuration IP Routing in Our Network, Dynamic Routing Protocols: Routing Protocol Basics Routing Information Protocol (RIP) Interior Gateway Routing Protocol (IGRP), Verifying Your Configurations	6	10	
3	Introduction to the Cisco IOS: The Cisco Router User Interface, Command Line Interface (CLI) , Router and Switch Administrative Functions Router Interfaces, Viewing, Saving, and Erasing Configurations	4	10	
4	Traffic Engineering Basics: Introduction to traffic Engineering, Requirement Definition for Traffic, Engineering, Traffic Sizing, Traffic Characteristics, Protocols, Time and Delay Consideration, Connectivity, Availability, Reliability, and Maintainability, Throughput Calculation	4	10	
5	Software Defined Networks: Introduction, Why SDN? The Genesis of SDN, How SDN Works, The OpenFlow Specification, Alternative Definitions of SDN, SDN in the Data Center, SDN Applications	12	25	
6	Network virtualization, why NV?, Network Sharing, benefits of sharing, VLAN, VPN, Overlay Network, Content delivery networks (Akamai)	08	20	

Review Presentation: The student is expected to refer at least two peer reviewed journal papers related to this domain/subject. The student is expected to identify issues/challenges and emerging trends in the domain/subject. Student is supposed to explore various video lectures (E.g. NPTEL) available in the domain/subject. Student is required to make a review-presentation on the work carried out for the same.

Recommended sites for journal papers are (1) dl.acm.org (2) springer.com (3) sciencedirect.com (4) elsevier.com (5) ieeexplore.ieee.org (6) scholar.google.co.in (7) scopus.com or others of similar repute.

Course Outcome:

At the end of this course, the student would be able

- To understand the basic terminology used in computer network for data transmission.
- To have an understanding and fundamental knowledge on advance terminology for the networking.
- To analyze the traffic engineering.
- To explore, analyze and specify the topological and routing strategies for an IP based networking infrastructure.
- To have a detail about network simulator/tool.
- To develop network based application with the help of simulator/tool.

List of References:

1. Software Defined Networks A Comprehensive Approach by Paul Goransson and Chuck Black
ISBN: 978-0-12-416675-2
2. TCP/IP Protocol Suite by B A Forouzan
3. Advance Computer Network, By Dayanand Ambawade, Dr. Deven shah, Prof. Mahendra Mehra,
Wiley India
4. CCNA Intro – Study Guide – Todd Lammle, Sybex

e-Resources

<http://www.cs.princeton.edu/courses/archive/spring14/cos461/syllabus.html>
http://web.cs.wpi.edu/~rek/Adv_Nets/Fall2013/Fall2013.html
<http://www.sciencedirect.com/science/book/9780124166752>

Experiments:

Note: The course teacher may formulate it as per his/her methodology and requirement.