

Branch Name:	Information and Communication Technology
Program Code:	ET208
Subject Title:	Advanced Computer Networks
Subject Code:	2ET2080203T
Pre-requisite Course:	Basics of Computer Network

Course Objectives:

1. This course will provide better understanding on the fundamental concepts of advance computer network.
2. To learn a wide range of topics, e.g., routing, congestion control, network architectures, data center networks, network virtualization, software-defined networking, and programmable networks, with an emphasize on core networking concepts and understand the topological and routing strategies for an IP based networking infrastructure.
3. Also analyze traffic engineering.
4. Students gain knowledge of simulator/tool and how to use simulator/tool for advance networking.

Credit	Teaching Scheme Hours per week				Evaluation Scheme (Marks)								Total (Marks)
					Theory (Marks)				Practical (Marks)				
	L	T	P	Total	SEE		CCE		SEE		CCE		
					Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	
3	3	-	-	3	24	60	16	40	-	-	-	-	100

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)	8	20

Text Books:

1. TCP/IP Protocol Suite by B A Forouzan
2. Advance Computer Network, By Dayanand Ambawade, Dr. Deven shah, Prof. Mahendra Mehra, Wiley India

Reference Books:

1. Software Defined Networks A Comprehensive Approach by Paul Goransson and Chuck Black ISBN: 978 0-12-416675-2
2. CCNA Intro – Study Guide – Todd Lammle, Sybex

List of Open Source Software/learning website:

1. <http://www.cs.princeton.edu/courses/archive/spring14/cos461/syllabus.html>

2. http://web.cs.wpi.edu/~rek/Adv_Nets/Fall2013/Fall2013.html
3. <http://www.sciencedirect.com/science/book/9780124166752>

Course Learning Outcomes (CLO): On completion of this course, the students will be able to:

CLO	Description	Bloom's Taxonomy Level
CLO1	To understand the basic terminology used in computer network for data transmission.	2 Understanding
CLO2	To have an understanding and fundamental knowledge on advance terminology for the networking.	1 Remembering, 2 Understanding
CLO3	To analyze the traffic engineering.	5 Evaluate, 4 Analyze
CLO4	To explore, analyze and specify the topological and routing strategies for an IP based networking infrastructure.	5 Evaluate, 3 Applying, 4 Analyze
CLO5	To have a detail about network simulator/tool.	1 Remembering, 2 Understanding
CLO6	To develop network based application with the help of simulator/tool.	6 Creating

Mapping of CLOs with POs & PSOs

Course Learning Outcomes	Program Outcomes(POs)												Program Specific Outcomes(PSOs)			
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	PSO4
CLO1	H	H	M		M				L		M		M	L		
CLO2	M		L		M				M					L		
CLO3	L		L			L						M	M			
CLO4		M			L	L			M				L	L		
CLO5	L		L			L		L			L	M		L		

CLO6	M		L						M				L			
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H:High, M:Medium, L:Low