19CSE340	ADVANCED COMPUTER NETWORKS	L-T-P-C: 3-0-0-3

Pre-Requisite(s): 19CSE301 Computer Networks

Course Objectives

- This course focuses on advanced networking concepts for next generation network architecture and design
- It covers SDN and virtualization for designing next generation networks

Course Outcomes

CO1: Understand advanced concepts and next generation networks
CO2: Analyze TCP/IP variants, network Algorithm's, Protocols and their functionalities
CO3: Comprehend features of SDN and its application to next generation systems
CO4: Analyze the performance of various server implementations

CO-PO Mapping

PO/ PSO / CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	3	2		2		2	2						3	2
CO2	3	3	2	2	3			2					3	2
CO3	2	2	2		3	2	2	2					3	2
CO4	3	3	2	2	3	2	2	2					3	2

Syllabus

Unit 1
Overview of data communication model - Internet Multicasting, NAT, VPN - Routing Algorithms - BGP, RIP, OSPF – Differentiated and Integrated Services - SONET, ATM – MPLS -Next generation Internet architectures, Green Communication Networks, and Data Center Networking.

Unit 2
Analysis of Network congestion Mechanism, Routing algorithms, ARQ protocols Multimedia Networking; Implementation of multi-threaded Web Server/Web Proxy with Caching/Filtering features, Sliding Window protocol implementation, performance study of various TCP/IP variants.

Unit 3
Software Defined Network -Comparison between SDN and traditional networks -SDN controller, Switch design, SDN Controller-Switch Protocols, Open Flow Protocol, Control Overhead & Handoff algorithms. Network Function Virtualization -NFV Architecture, Use cases, NFV Orchestration and NFV for 5G.

Text Book(s)
Tanenbaum AS, Wetherall DJ. Computer Networks. Fifth edition, Pearson Education, Inc. 2011.

Reference(s)

Stallings W. Data and Computer Communications. Pearson Education India; 2006.
Douglas E Comer. Internet Working with TCP/IP Volume -1, Sixth Edition, Addison-Wesley Professional;2013.
Goransson P, Black C, Culver T. Software Defined Networks: a Comprehensive Approach. Morgan Kaufmann; 2014.
Chayapathi R, Hassan SF, Shah P. Network Functions Virtualization (NFV) with a Touch of SDN: Netw Fun Vir (NFV ePub_1. Addison-Wesley Professional; 2016 Nov 14.
Marschke D, Doyle J, Moyer P. Software Defined Networking (SDN): Anatomy of OpenFlow Volume 1. 2015.

Evaluation Pattern

Assessment	Internal	External
Periodical 1 (P1)	15	
Periodical 2 (P2)	15	
*Continuous Assessment (CA)	20	
End Semester		50

*CA – Can be Quizzes, Assignment, Projects, and Reports