Course related to Professional Ethics

Sem.	Course Code	Core 9: Computer Networks	Total Marks: 100		Hours Per Week	Credits
V	19UAKCT501		CIA: 25	ESE: 75	6	5

OBJECTIVE:

To inculcate knowledge on different networking concepts like Layers, Protocols, Wireless Concepts, Cryptography and Network Security.

COURSE OUTCOMES:

On successful completion of the course the students will able to:

CO1: Understand the basic Networking concepts and Reference Models (Understand)

CO2: Identify different types of Transmission Media for Networking (Remember)

CO3: Analyze Data link layer Protocols and Medium Access Control Sub layer (Analyze)

CO4: Compare different types of Routing Algorithms and Congestion Control Algorithms (Analyze)

CO5: Acquire knowledge on Application layer and use of Network Security (Apply)

UNIT - I

Network Hardware: Introduction-Local Area Networks-Metropolitan Area Networks - Wide Area Networks - Internetworks. Network Software: Introduction - Protocol Hierarchies - Design Issues for the Layers - Connection-Oriented Versus Connectionless Services - Service Primitives - The Relationship of Services to Protocols. Reference Models: OSI Reference Model - TCP/IP Reference Model - Comparison of OSI and TCP/IP.

UNIT – II

PHYSICAL LAYER: Introduction-Guided Transmission Media: Magnetic Media - Twisted Pair - Coaxial Cable - Fiber Optics. Wireless Transmission: Electromagnetic Spectrum - Radio Transmission - Microwave Transmission - Infrared Transmission - Light Transmission. Communication Satellites: Geostationary, Medium-Earth Orbit, Low Earth-Orbit Satellites.

UNIT - III

DATA LINK LAYER: Introduction - Data Link Layer Design Issues - Error Detection and Correction - Elementary Data Link Protocols - Sliding Window Protocols: A One-Bit Sliding Window Protocol. MEDIUM-ACCESS CONTROL SUBLAYER: The Channel Allocation Problem- Multiple Access Protocols:

ALOHA - Carrier Sense Multiple Access Protocols - Collision Free Protocols - Bluetooth: Architecture – Applications – The Bluetooth Radio Layer.

UNIT - IV

NETWORK LAYER: Introduction - Routing Algorithms: The Optimality Principle - Shortest Path - Flooding -Distance Vector - Link State - Hierarchical Routing – Congestion Control Algorithms: Approaches - Traffic Aware Routing. TRANSPORT LAYER: Introduction - Elements of Transport Protocols: Connection Establishment – Connection Release - Internet Transport Protocols: TCP - Introduction to TCP - Service Model - TCP Protocol - Segment Header - TCP Connection Establishment and Release.

UNIT – V

APPLICATION LAYER: Introduction – DNS: The DNS Name Space - Electronic Mail. NETWORK SECURITY: Cryptography: Introduction-Substitution Ciphers-Transposition Ciphers - Symmetric Key Algorithms - Public Key Algorithms - Digital Signatures: Symmetric and Public Key Signatures.

TEXT BOOK:

Andrew S. Tanenbaum, David J. Wetherall, "Computer Networks", Fifth Edition, Pearson Education, 2013.

REFERENCE BOOKS:

1. James F. Kurose, Keith W.Ross, "Computer Networking A Top-Down Approach" Fifth Edition, Pearson Education,

2. Achyut Godbole,"Data Communication and Networks", Tata McGraw Hill Publications,2007

3. Larry L.Peterson ,BruceS.Davie, "Computer Networks", Fourth Edition, Elsevier Inc.2007.

4. Uyless Black,"Computer Networks Protocols, Standards and Interfaces", Second Edition,PHI, 1993.

5. William Stallings,"Cryptography and Network Security", Third Edition, Pearson Education, 2006.

Question Paper Pattern					
Section A	10 x 1 = 10 Marks (Multiple Choice, Four options) Two questions from each unit	**Section B**	5 x 7 = 35 Marks (Either or choice) Two questions From each unit	**Section C**	3 x 10 = 30 Marks (Answer any three questions) One question from each unit