BCA 304: Computer Networks	
Teaching Scheme Lectures: 4 hrs/Week Tutorials: 2 hr/Week Credits: 6	**Examination Scheme** Class Test -20Marks Teachers Assessment - 10Marks Attendance – 20 Marks End Semester Exam – 100 marks

Prerequisite: -

1. Familiarity with the fundamentals of Digital Electronics.
2. A network simulation method.

Course Objectives:

1. Learn how computer network hardware and software operate.
2. Investigate the fundamental issues driving network design.
3. Learn about dominant network technologies.

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Detailed Syllabus

Unit-1 **Introduction to Computer Networks:** Data Communication System and its components, Data Flow, Computer network and its goals, Types of computer networks: LAN, MAN, WAN, Network topologies, ISO-OSI reference model, TCP/IP reference model
Unit-2 **Physical Layer:** Concept of Analog & Digital Signal, Bandwidth, Transmission Impairments: Attenuation, Distortion, Noise, Introduction to Transmission Media: Twisted pair, Coaxial cable, Fiber optics, Wireless transmission (radio, microwave, infrared), Switching methods, integrated services digital networks
Unit-3 **Medium Access sub layer:** Channel Allocations, LAN protocols -ALOHA protocols, Collision free Protocols-Token Passing, IEEE standards, Ethernet and Token Ring. Data Link Layer: Framing, Error detection and correction codes: checksum, CRC, hamming code, Sliding Window Protocols: Stop & Wait ARQ, Go-back-N ARQ, Selective repeat ARQ
Unit-4 **Network Layer:** Point-to Point networks, Routing algorithms, Congestion control algorithms, Internetworking Devices, IP protocol, IP addresses: IPv4 classful and classless addressing, Introduction to IPv6

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Unit-5 **Transport Layer:** Connection management: Three-way Handshaking. Introduction of User Datagram Protocol (UDP), Basics of Transmission Control Protocol. (TCP)
Unit-6 **Application Layer:** File Transfer Protocol, Domain Name System, Electronic mail, Intro of Client server model, Hyper Text Transfer Protocol, WWW, Example Networks - Internet and Public Networks
Text and Reference Books 1. 1. Database System Concepts, Henry Korth , A. Silberschatz, 5th Edition, 2005. 2. An Introduction to Database System, Bipin Desai, Galgotia Publications, 1991. 3. SQL, PL/SQL the Programming Language of Oracle, Ivan Bayross, BPB Publications, 4th Edition. 4. Schaum's Outline of "Fundamental of Relational Databases", Ramon A. Mata, Pauline K. Cushman, McGraw Hill, December, 2006.

Course Outcomes:

1. Explain and demonstrate the mechanics associated with IP addressing, device interface, association between physical and logical addressing, subnetting and supernetting
2. Understand the techniques and protocols used (DSL, SONET, ATM).
3. Know the principles of congestion control and trade-offs in fairness and efficiency
4. Distinguish between analog and digital signals and understand their characteristics (Fourier representation, signal corruption).