Course title : Data Communication	***Course Code : CS430***
Credits(L:T:P) : 3:0:0	***Core/Elective : Core***
Type of Course : Lecture	***Total Contact Hours : 39***
CIE Marks : 50	***SEE Marks : 100***

Course Outcomes: After completing this course, students should be able to:

CO1:	Understanding the importance of physical and data link layers of OSI model.
CO2:	Analyze and evaluate network topologies and protocols.
CO3:	Implementing different communication protocols.
CO4:	Exploring fundamental issues driving network design.

Unit No.	Course Content	No. of Hours
1	**Introduction:** Data Communications, Networks, Network Types, Standards and Administration, **Networks Models:** Protocol Layering, TCP/IP Protocol suite, The OSI model.	07
2	**Introduction to Physical Layer-1:** Data and Signals, Digital Signals, Transmission Impairment, Data Rate Limits, Performance. **Digital Transmission:** Digital to Digital Conversion (Only Line coding: Polar, Bipolar and Manchester coding), Analog to Digital conversion (only PCM), Transmission Modes.	08
3	**Bandwidth Utilization:** Multiplexing, **Transmission Media:** Guided Media, Unguided Media, **and Switching:** Introduction, Circuit Switched Networks and Packet switching, Structure of a Switch.	08
4	**Error Detection and Correction:** Introduction, Block Coding, Cyclic Codes: Cyclic Redundancy Checksum**,** Forward Error Correction: Hamming distance, XOR. **Network Layer:** Network Layer Performance, IPV4-Addresses	08
5	**Data link Layer: Introduction to Data-Link Layer:** Introduction, Link-Layer Addressing, **Data link Services:** DLC services, Data link layer protocols, Point to Point protocol (Framing, Transition phases only**). Media Access control:** Random Access, Controlled Access.	08

Text books:

1. Behrouz A. Forouzan, Data Communications and Networking 5E, 5th Edition, Tata McGraw-Hill, 2013.

Reference Books:

1. William Stallings: Data and Computer Communication, 10th Edition, Pearson Education, 2014.
2. Alberto Leon-Garcia and Indra Widjaja: Communication Networks - Fundamental Concepts and Key architectures, 2nd Edition Tata McGraw-Hill, Reprint 2017.
3. Larry L. Peterson and Bruce S. Davie: Computer Networks – A Systems Approach, 5th Edition, Elsevier, 2012.

Web Resources:

1. https://nptel.ac.in/downloads/106105080/
2. https://nptel.ac.in/courses/106105183/
3. https://nptel.ac.in/courses/106105081/