Prof. Dr. Md. Fazlul Kader

LECTURE PLAN: DATA COMMUNICATION

Weeks	Topic	CLOs
1	**Introduction:** Data Communications, components, Data Representation, Data Flow	1
2-3	**Data And Signals:** Analog and Digital, Periodic Analog signals, Digital Signals, Time and Frequency Domain, Composite Signal. Bandwidth, Digital Signal, Transmission of digital signal, Transmission Impairment, Noise, SNR. Data Rate Limits, capacity Theorem, Nyquist Bit rate, Shannon Bit rate. Performance, bandwidth Delay Product.	2
4-7	**Digital Transmission:** Digital-to-Digital Conversion, Baseline wandering, Self-synchronization Line coding schemes, Multilevel, multi transition, Block coding Concept, Scrambling Techniques, Analog-to-Digital Conversion, Sampling, Quantization, Encoding. DM, Transmission Modes. Parallel transmission, serial Transmission, Synchronous and asynchronous transmission	3
8-9	**Modulation and demodulation:** Amplitude modulation, frequency and phase Modulation Analog Transmission: Digital-to- Analog Conversion, Constellation Diagram.	3
10-11	**Bandwidth Utilization:** Multiplexing, Analog Hierarchy, Interleaving, Data Rate Management, Digital Hierarchy STDM, Spread Spectrum	2
12-13	**Error Detection and Correction:** Introduction, Single Bit Error, Burst Error, Detection Vs Correction, Forward Error correction Vs retransmission, Block Coding Hamming Distance, Linear Block Codes	5
14	Circuit and Packet Switching techniques, different communication protocols	4
14	**Review Class**	