CLUSTER UNIVERSITY SRINAGAR
(SYLLABUS)

Course Code	*BCA-CR3102*
Course Title	*Data Communication*
Semester	*BCA 3rd Semester*
Course Type & Credits	*Core Paper - 04 Credits (L) + 02 Credits (T) = 06 Credits*

Unit-I

Key components in data communication systems. Simplified model. Data transmission concepts. Simplex, Half-Duplex, Full-Duplex. Basic concepts of analog signals, digital signals. Characteristics of signals (amplitude, frequency, period, wavelength). Signal-to-Noise ratio. Concepts of Bandwidth and Channel Capacity, Nyquist's law for sampling and noiseless channel capacity, Shannon's Law for noisy channel.

Unit II

Transmission media- factors affecting distance and data rate. Guided transmission media: Twisted-Pair, Co-axial Cable, Optical Fiber. Unguided transmission media: Terrestrial Microwave, Satellite Microwave. Communication Interface examples: RS232.

Unit III

Reliable transmission of data: Asynchronous and Synchronous transmission. Parity and CRC-based error detection. Error control & recovery techniques. HDLC and X.25 protocols. Multiplexing concepts: FDM, TDM,WDM.

Unit IV

Data encoding and transmission concepts: Digital data transmission over digital and analog signals - NRZ encoding, Multilevel binary encodings , Biphase encoding. Transmission of digital data as analog signal- ASK, FSK, PSK. Amplitude Modulation.

Recommended Readings:

1. William Stallings, "Data and Computer Communications", 7th edition, Pearson.

2. Andrew Tanenbaum, "Computer Networks", 4th edition, Pearson Education.

3. Ulysses Black, "Principles of Data Communications", PHI. Morley, Gelber, "The Emerging Digital Future", Addison – Wesley.

4. Furouzan B, "Data Communication Networks",T.M.H