

Digital Communication

UNIT	TOPIC
Unit-1	INFORMATION THEORY:- Discrete Memoryless source, Information, Entropy, Mutual Information — Discrete Memoryless channels — Binary Symmetric Channel, Channel Capacity — Hartley — Shannon law — Source coding theorem — Shannon — Fano & Huffman codes.
Unit-2	WAVEFORM CODING & REPRESENTATION :- Prediction filtering and DPCM — Delta Modulation — ADPCM & ADM principles-Linear Predictive Coding- Properties of Line codes- Power Spectral Density of Unipolar / Polar RZ & NRZ — Bipolar NRZ — Manchester
Unit-3	BASEBAND TRANSMISSION & RECEPTION :- ISI — Nyquist criterion for distortion less transmission — Pulse shaping — Correlative coding — Eye pattern — Receiving Filters- Matched Filter, Correlation receiver, Adaptive Equalisation
Unit-4	DIGITAL MODULATION SCHEME:- Geometric Representation of signals — Generation, detection, PSD & BER of Coherent BPSK, BFSK & QPSK — QAM — Carrier Synchronisation — Structure of Non-coherent Receivers — Principle of DPSK.
Unit-5	ERROR CONTROL CODING :- Channel coding theorem — Linear Block codes — Hamming codes — Cyclic codes — Convolutional codes — Viterbi Decoder.

Recommended books:

- 1.Digital Communication by P Rao. Highlights: approach best suited at the undergraduate level—concepts are explained thoroughly using simple and lucid language
- 2.Digital Communications by Simon S. Haykin.
- 3.ANALOG and DIGITAL COMMUNICATION: SCHAUM'S OUTLINE SERIES" by Hwei Hsu and Debjani Mitra
- 4.Modern Digital and Analog Communication Systems" by B P Lathi and Zhi Ding