

IC-301: Syllabus of Analog & Digital Communication

Prerequisite: Knowledge of Signals and Information representation. Fourier Series Representation of signals. Fourier Transform, Representation of energy and power signal and its spectral density.

Introduction to AM, FM and PM; Generation and recovery of Information; Noise effects in AM, FM and PM and how to minimize its effect.

Introduction to Random Processes; Probability, Random Variables, Probability Density, Mean, Moments, Transforms, Stationary Process, Autocorrelation and Covariance functions, Ergodicity, Power Spectral Density, Response of linear systems to random signals.

Pulse Analog Modulation: Sampling theorem, Sampling of low pass signals, Aliasing effects, Aperture effect, PAM, PWM, PPM; Modulation and Demodulation; its spectral analysis and effects of noise.

Pulse Digital Modulation: Pulse Code Modulation, Quantization, SNR, Probability of error for PCM, DPCM, DM, ADM; Modulation and Demodulation; Inter-symbol Interference, Eye Diagram.

Digital Pass Band Transmission and Reception; Phase shift Keying, FSK, QPSK, QAM, Effects of noise and error probability.

Text Books:

Modern Digital and Analog Communication Systems by BP Lathi

Digital and Analog Communication by Couch

Communication Systems by Haykins

Probability, RV and Stochastic Processes by Popoulis