
ANALOG AND DIGITAL COMMUNICATION

Paper Code **CEN-305**

Course Credits **4**

Lectures / week **3**

Tutorial / week **1**

Course Description **UNIT – I**

Classification of signals, difference between analog & digital signals, elements of a communication system, Radio frequency spectrum, limitations in communications. Modulation: Needs & Methods. Analog Modulation, Frequency Modulation, Phase Modulation.

UNIT- II

Generation and detection of AM & FM signals. Radio transmitters and receivers. Introduction to transmitting & receiving Antennas. PLL, AGC, AFC, Tracking Diversity.

UNIT- III

Concept of BW, Noises & Channel Capacity of different communication systems such as two wires, Coaxial cable, Wave guides, wireless media, Microwave, satellite, Fibre-optics etc.

UNIT- IV

Information Capacity, sampling Theorem, pulse modulation, PAM, PPM, PWM, Pulse Code Modulation (PCM), Delta modulation, Comparison of PCM & DM, The Complete PCM system, Adaptive DM, Differential PCM (DPCM), Spread Spectrum, Communication Multiplexing(TDM, FDM), Switching (Circuit, Message, & Packet).

UNIT – V

PSK, FSK, DPSK, Synchronous & Asynchronous Communication, Start Stop bit data transfer. Bit level transfer & Byte level data transfer, data transfer efficiency. Modems (Synchronous & Asynchronous) Error detection and correction methods (Parity bit, Block Parity, VRC, LRC, hamming Code, Checksum error detection etc.)

**References / Text
Books:**

- Advanced Electronics Communication by Wayne Tomasi.
 - Introduction to Digital & Data Communication by Micheal A miller.
 - Communication Electronics by Louis E. Frenzel Jr.
 - Electronic Communication by John Kenedy.
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