**SYLLABUS**

**UNIT I**

**Introduction:** Overview of Communication system, Communication channels, Mathematical Models for Communication Channels

**Introduction of random Variables:** Definition of random variables, PDF, CDF and its properties, joint PDF, CDF, Marginalized PDF, CDF, WSS wide stationery, strict sense stationery, non stationery signals, UDF, GDF, RDF, Binomial distribution, White process, Poisson process, Wiener process.

**UNIT II**

**Analog Modulation:** Modulation- Need for Modulation, Amplitude Modulation theory: DSB-SC, SSB, VSB. Modulators and Demodulators. Angle Modulation, Relation between FM and PM Wave. Generation of FM wave- Direct and Indirect Methods. Bandwidth of FM (NBFM, WBFM)

**Pulse Analog Modulation:** Sampling-Natural and Flat top. reconstruction, TDM-Pulse Amplitude Modulation (TDM-PAM), Pulse Width Modulation (PWM), Pulse Position Modulation(PPM), Generation and Recovery.

**Pulse Digital Modulation:** Pulse Code Modulation (PCM), Differential Pulse Code Modulation (DPCM), Delta Modulation (DM), ADPCM.

**UNIT III**

**Digital Modulation and Transmission:** Advantages of digital communication. Modulation schemes: ASK, PSK, FSK. Spectral Analysis. Comparison. Digital Signaling Formats-Line coding.

**Information and Coding Theory:** Entropy, Information, Channel Capacity. Source Coding Theorem: Shannon Fano Coding, Huffman Coding.

**UNIT IV**

**Fiber Optical System:**  Basic Optical Communication System. Optical fibers versus metallic cables, Light propagation through optical fibers. Acceptance angle and acceptance cone, Fiber configurations. Losses in optical fibers. Introduction to Lasers and light detectors. Applications: Military, Civil and Industrial applications.

**Advanced Communication Systems**: Introduction to cellular radio telephones. Introduction to satellite Communication.

**Text Books:**

[T1] George Kennedy, “Electronics Communication System”, TMH 1993

[T2] B.P. Lathi, “Analog& Digital Communication”, Oxford University Press 1999.

**Reference Books**:

[R1] Simon Haykin, “Introduction to Analog & Digital Communication”, Wiley, 2000

[R2] Tannenbaum, “Computer networks”, PHI, 2003

[R3] K. Sam Shanmugam, “Digital & Analog Communication system”, John Wiley & Sons 1998.