**13EC3102-DIGITAL COMMUNICATIONS**

Credits: 4

Lectures/Week: 4Hrs Sessional Marks: 40

End Exam Duration: 3Hrs End Exam.Marks:60

**UNIT-I**

**Digital Communication System & Information Theory:** Model Of A Digital Communication System – Unit Of Information – Entropy – Mutual Information – Channel Models And Channel Capacity – Shannon’s Theorem – Shannon-Hartley Theorem –Bandwidth – S/N Trade-Off – Source Encoding Of Discrete Memory Less Source – Shannon-Fanon coding – Huffman Coding – Coding Efficiency.

**UNIT-II**

**Source Coding for Analog Signals:** Review of Sampling Theorem – PCM System –Quantization Noise – Companding – B.W requirements of PCM – Differential PCM –Delta Modulation – Adaptive delta Modulation – Noise in PCM & Delta Modulation.

**UNIT-III**

**Base Band Data Transmission:** Characterization Of Band Limited Channels – Design of band limited signals for no Inter Symbol Interference (ISI) – The Nyquist criterion –Design of band limited signals with controlled ISI – Partial response signals –Transmitting & Receiving Filters for Optimum Performance– M-ary signaling scheme – Binary Vs M-ary – Equalization schemes – Eye diagrams.

**UNIT-IV**

**Digital Carrier Modulation Schemes:** ASK, FSK(coherent & Non coherent) – PSK –DPSK – Baseband signal receiver – Optimum & Matched Filters – Correlator – Comparison of Digital Modulation Schemes – Bandwidth requirement – Power requirement – Immunity to channel impairments – Equipment complexity – M-ary signaling schemes – synchronization methods.

**UNIT-V**

**Error Control Coding :** Linear Block Codes – Matrix Description – Hamming Codes – Decoding – Binary Cyclic Codes – Algebraic Structure – Encoding Using Shift Register – Syndrome Calculation – BCH Codes, Burst & Random Error Correcting Codes – Convolution Codes – Tree Diagram –State Diagram –Trellis Diagram– Encoders and Decoding Algorithms.

**TEXT BOOKS:**

1. Digital Communications – Simon Haykin 2nd Edition, Tata McGraw-Hill Publishers.
2. Analog & Digital Communication Systems –Sam Shanmugam,K, John Wiley & Sons

**REFERENCE:**

1. Principles of Communication System – Taub, H & Schilling D.L, Mc Graw Hill.
2. Communication Systems, Analog & Digital –R.P. Singh & S.D.Sapre,TMH Publishers
3. Digital Communications –Proakis, J.G- Mc Graw Hill.