13-EC501 **MODERN DIGITAL COMMUNICATION**

SYLLABUS

Modern Digital Modulation Techniques:
Introduction, Information Capacity, Bits, Bit Rate, Baud rate & M-ary Encoding, ASK, FSK, PSK QAM Bandwidth Efficiency Carrier Recovery, Clock Recovery, DPSK, Trellis Code Modulation, Probability of Error & Bit Error Rate, Error Performance. **Baseband Data Transmission:** Introduction – Baseband Binary PAM Systems – Baseband Pulse Shaping, Optimum Transmitting and Receiving Filters – Duobinary Baseband PAM System – Use of Controlled ISI in Duobinary Signaling Schemes, Transmitting and Receiving Filters for Optimum Performance **– M-ary Signaling Schemes** – Analysis and Design of M-ary Signaling Schemes, Binary Versus M-ary Signaling Schemes - Shaping of the Transmitted Signal Spectrum – Effect of Pre coding on the Spectrum, Pulse Shaping by Digital Methods - Equalization - Transversal Equalizer, Automatic Equalizers **Block and Convolutional Channel Codes:** Linear Block Codes - The Generator Matrix and Parity Check Matrix, Cyclic Codes, Bounds on Minimum Distance of Linear Block Codes, Non Binary Block Codes – Convolutional Codes – Transfer Function of a Convolutional Code, Optimum Decoding of Convolutional Code –Distance Properties of Binary Convolutional Codes **Spread Spectrum Signals for Digital Communication:** Model of Spread Spectrum Digital Communication System – Direct Sequence Spread Spectrum Signals – Error Rate Performance of the Decoder, Some Applications of DS Spread Spectrum Signals, Generation of PN Sequences – Frequency Hopped Spread Spectrum Signals – Performance of FH Spread Spectrum Signals in an AWGN Channel, CDMA System Based on FH Spread Spectrum **Signals Emerging Digital Communication Technologies**.: The North American Hierarchy, Digital Services, Broad band Digital Communication: SONET, Digital Switching Technologies, Broadband Services for Entertainment and Home office Applications, Video Compression, High Definition Television(HDTV)

TEXT BOOKS
1. Advanced Electronic Communications Systems, by Wayne Tomasi, 6 Edition Pearson Education.
2. K Sam Shanmugam, Digital and Analog Communication Systems, John Wiley and sons (Asia) Pvt Ltd.

REFERENCES
1. Simon Haykin, Digital communications, John Wiley and sons, 1998
2. Wayne Tomasi, Advanced electronic communication systems, 4th Edition Pearson Education Asia, 1998
3. B.P.Lathi Modern digital and analog communication systems, 3rd Edition, Oxford University press
4.Ravindranathan" Communication Systems Modeling Using Matlab & Simulink" Universities Press