

**Model Curriculum format by Curriculum Cell**  
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**EE301 COURSE TITLE FONT BOLD TNR 14**

**Teaching Scheme : 04 L + 01 T Total 05 Credit : 05**  
**Evaluation Scheme : 15 CT1 + 15 CT2 +10 TA+ 60 ESE Total Marks :100**  
**ESE duration : 2 hrs 30 min.**

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**Digital communication system:** Introduction to digital signal, difference between analog and digital system, advantage of digital system over analog, elements of digital communication system, source encoder, decoder, channel encoder, decoder, modulator, and demodulator.

**Information and channel capacity:** Measure of information, entropy and Information rate of independent and dependent sequences, source encoding , Shannon’s encoding algorithm, Huffman encoding algorithm, discrete communication channel, capacity of discrete communication channel. Shannon’s theorem on channel capacity.

**Base band transmission:** Discrete PAM signals, power spectra of discrete PAM signals, baseband binary data transmission system, inter symbol interference, Nyquist’s criteria for distortionless baseband binary transmission, correlative coding, duobinary signaling, modified duobinary technique, equalization, eye diagram, self synchronization for baseband PAM system, scrambler and unscrambler.

**Digital modulation techniques :** Digital carrier modulation schemes, binary ASK, PSK, FSK coherent scheme, probability of errors, comparison of digital modulation systems, basics of DPSK, QPSK, MSK. Synchronization, carrier synchronization, symbol synchronization.

**Error controlling and coding :**Introduction to error control coding, methods of controlling errors, type of errors and code, linear block codes, matrix description of linear block code, error detection and error correction capabilities of linear block code, cyclic code.

**Modern techniques of communication:** Introduction to mobile communication, cellular mobile telephone architecture, frequency assignments, frequency reuse, cell splitting, call initialization, call termination, handover. Multiple access schemes TDMA, FDMA, CDMA, spread spectrum communication, D.S. spread spectrum, frequency hopping spread spectrum, comparison.

**Text Books:**

1. Digital and Analog Communication Systems, Shanmugam K.S, John 2<sup>nd</sup> edition, Wiley and Sons, 1996 .
2. Digital Communication, Simon Haykin, 1<sup>st</sup> edition, John Wiley and Sons, 1996.

**Reference Books:**

1. Digital Communication, Proakis J. K, 2<sup>nd</sup> edition , Mc-Graw Hill Book Co., London, 2008.
2. Title, Author, Edition, Publisher, Year of Publication