GUJARAT TECHNOLOGICAL UNIVERSITY

M.E Semester: 1

Communication Engineering

Subject Name: **Information Theory and Coding**

Sr.No	Course content
1	Basic concept of coding, Unique decodable codes and instantaneous decodable codes (IDC) Construction of IDC, Krafts inequality and MC Millan's theorem. Huffman and Shannon-fano code.
2	Entropy, Entropy of sources and their extension. Loss less image compression.
3	Arithmetic Coding
4	Basic of channel coding and Hamming distances, channel capacity and shannon's fundamental theorem
5	Linear block codes ; Systematic linear codes and optimum decoding for the binary symmetric channel; Generator and parity Check Matrices Syndrome decoding on symmetric channels; Hamming codes, cyclic code, Burst errors, BCH Code, Reed-solomon Codes.
6	Convolution codes; Wozencraft's sequential decoding algorithm, Fann's algorithm and other sequential decoding algorithms Viterbi decoding algorithm, BCH code.
7	Cryptography

Reference Books:

1. Jiri Adamek, Foundation of coding, John Wiley and sons.
2. A.J. Viterbi and J.K.Ormura, Principal of Digital Communication and Coding, McGraw Hill
3. Bernard Sklar, Digital communication fundamental and Application, PE India.
4. N. Abramson, Information and Coding, McGraw Hill
5. M Mansurpur, Introduction to Information Theory, McGraw Hill
6. R.B.Ash, Information Theory, Prentice Hall
7. Shu Lin and S.J.Costello Jr., Error Control Coding, Prentice Hall