K. J. Somaiya College of Engineering, Mumbai-77

(A Constituent College of Somaiya Vidyavihar University)

Department of Information Technology

Course: Information Theory and Coding

Term: Even (2023-24) **Class / Sem: SY BTECH (IT) IV**

Course Outcomes (COs)

CO1	Understand basics of Information Theory, Information Source and Channel
CO2	Illustrate different Data Compression algorithms.
CO3	Demonstrate the concepts and techniques for error detection and correction
CO4	Apply basic number theory concepts for securing information

List of Tutorials

Sr. No.	Tutorial Title	Outcomes achieved
1.	Basic concepts of Self Information, Entropy, Information Rate	CO1
2.	Channel Models, Conditional and Joint Entropy and Mutual Information	CO2
3.	Source Coding Part1: Classification of codes, Kraft's Inequality, Image Compression, Shannon-Fano Coding	CO2
4.	Source Codig Part2: LZW Coding, Arithmetic Coding, RunLength Encoding	CO1
5.	Linear Block codes: Generator matrix, Parity check matrix, Error detection and correction, Hamming distance	CO3
6.	Cyclic Codes: Syndrome Computation and error detection, decoding	CO3
7.	Convolutional Codes: Trellis Codes and Viterbi Decoding	CO3
8.	Cryptography: Chinese remainder theorem and Ciphers,	CO4
9.	Program: Any concept from syllabus/ Case study: Any topic from cryptography	CO4

Recommended Books:

1. Arijit Saha, Nilotpal Manna, Surajit Mandal, "Information Theory ,Coding and Cryptography", First Edition,Pearson Education,2013
2. Ranjan Bose, “Information Theory, Coding and Cryptography”, Second Edition,TMH 2008
3. Khalid Sayood, “Introduction to Data Compression” Third Edition, Elsevier 2006

.

Course In-charge
Dr Nandana Prabhu
1/02/2024