PE-EC603D	**Information Theory and Coding**	**3L:0T:0P**	**3 credits**

Basics of information theory, entropy for discrete ensembles; Shannon's noiseless codingtheorem; Encoding of discrete sources.

Markov sources; Shannon's noisy coding theorem and converse for discrete channels;Calculation of channel capacity and bounds for discrete channels; Application to continuous channels.

Techniques of coding and decoding; Huffman codes and uniquely detectable codes;Cyclic codes, convolutional arithmetic codes.

Text/Reference Books:

1. N. Abramson, Information and Coding, McGraw Hill, 1963.
2. M. Mansurpur, Introduction to Information Theory, McGraw Hill, 1987.
3. R.B. Ash, Information Theory, Prentice Hall, 1970.
4. Shu Lin and D.J. Costello Jr., Error Control Coding, Prentice Hall, 1983.

Course Outcomes:

At the end of the course, students will demonstrate the ability to:

1. Understand the concept of information and entropy
2. Understand Shannon’s theorem for coding
3. Calculation of channel capacity
4. Apply coding techniques