Information Theory and Coding

Written by Administrator
Saturday, 07 November 2009 05:30 -

Subject Code		:

IA Marks		: 25

No. of Lecture Hrs/Week		: 04

Exam Hours		: 03

Total no. of Lecture Hrs.		: 52

Exam Marks		: 100

PART - A

Unit - 1

Information Theory: Introduction, Measure of information, Average information content of symbols in long independent sequences, Average information content of symbols in long dependent sequences. Mark-off statistical model for information source, Entropy and information rate of mark-off source.

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6 Hours
Unit - 2

Source Coding: Encoding of the source output, Shannon's encoding algorithm. Communication Channels, Discrete communication channels, Continuous channels.

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6 Hours

Unit - 3

Fundamental Limits on Performance: Source coding theorem, Huffman coding, Discrete memory less Channels, Mutual information, Channel Capacity.

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6 Hours

Unit - 4

Channel coding theorem, Differential entropy and mutual information for continuous ensembles, Channel capacity Theorem.

6 Hours

PART - B

Unit - 5

Introduction to Error Control Coding: Introduction, Types of errors, examples, Types of codes Linear Block Codes: Matrix description, Error detection and correction, Standard arrays and table look up for decoding.

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7 Hours

Unit - 6

Information Theory and Coding

Binary Cycle Codes, Algebraic structures of cyclic codes, Encoding using an (n-k) bit shift register, Syndrome calculation. BCH codes.

　　
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7 Hours

Unit - 7

RS codes, Golay codes, Shortened cyclic codes, Burst error correcting codes. Burst and Random Error correcting codes.

　　
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7 Hours

Unit - 8

Convolution Codes, Time domain approach. Transform domain approa

　　　

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7 Hours

Text Books:

1. **Digital and analog communication systems**, K. Sam   Shanmugam, John Wiley, 1996.
2. **Digital communication**, Simon   Haykin, John Wiley, 2003.

Reference BookS:

1. **ITC and Cryptography**, Ranjan   Bose, TMH, II edition, 2007
2. **Digital Communications** - Glover and Grant**;**   Pearson Ed. 2nd Ed   2008