EE624 Information and Coding Theory for Wireless Communications

Aditya K. Jagannatham
Electrical Engineering

Introduction

- **Instructor: Prof. Aditya K. Jagannatham**
- Coordinates
- ACES 205D
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Lecture Timings

Monday	8:00 AM – 9:00 AM	L17
Wednesday	8:00 AM – 9:00 AM	L17
Friday	8:00 AM – 9:00 AM	L17

Text Books

- Error Control Coding
  - Shu Lin and Daniel Costello
  - Prentice Hall
- Elements of Information Theory
  - Thomas M. Cover and Joy A. Thomas
  - Wiley Interscience, 2006
  - Second Edition

Supplementary Books

- Fundamentals of Wireless Communication
  - David Tse and Pramod Viswanath
- A First Course in Information Theory
  - Raymond Yeung
- Error Control Coding: Mathematical Methods and Algorithms
  - Todd K. Moon

Points Division

15%	Assignments, Theory + MATLAB
20%	Mid-Sem I
20%	Mid-Sem II
10%	Term Paper
35%	End-Sem

Pre-Requisites

- Basic idea of Digital Communications
- Probability and Stochastic Processes
- Linear Algebra, Matricecs
- Mathematical Maturity

Aims

- Has a theoretical and practical flavor.
- Channel Coding Schemes and their relevance to wireless communications.
- Elaborate discussion and analysis of Hamming Codes, Convolutional Codes, Turbo Codes, LDPC Codes etc.
- Performance Analysis of Codes in Wireless Systems.
- Information Theoretic aspects of Coding and applications in practical systems such as JPEG.
- Channel capacity and Applications in Various Wireless Communication Scenarios.