

University of Colorado at Denver
Departments of Computer Science (Engineering) and Electrical Engineering

CSC 5217/EE 5250

Information Theory (3.0 Credit Hours)

Fall Semester 2009 (MW 4:00p.m. to 5:15p.m.)

Instructor: Dr. Titsa Papantoni
Office: NC 2422
Phone: 303-556-3915
Email: titsa.papantoni@cudenver.edu

Office Hours: Mondays, 5:30p.m. to 6:30p.m.
Wednesdays, 1:30 p.m. to 3:30p.m.
Or by appointment

Textbook: Thomas M. Cover and Joy A. Thomas, Elements of Information Theory, John Wiley & Sons, 1991, ISBN 0-471-06259-6

Prerequisites: CSC 4535 or EE5617 or MATH3800

Course Topics: Entropy, Relative Entropy and Mutual Information
Entropy rates of Stochastic Processes
Data Compression (Noiseless Coding Theorem, Huffman Codes, Arithmetic Coding, Ziv-Lempel compression)
Channel Capacity (Fundamental Theorem of Shannon/Channel Coding Theorem, Hamming Codes)
Error Correcting Codes (Parity Check Codes)
Differential Entropy (Capacity of the Gaussian Channel)
Rate Distortion Theory
Network Information Theory

Course Logistics: Homework will be given weekly. Homework solutions will be provided one week after. There will be two midterm and one final exams. There may be a no-risk makeup exam, after the first midterm (highest among the two exams grade maintained). The grade distribution is as follows: Homework, 25%. Midterm 1, 25%. Midterm 2, 25%. Final , 25%.