UTA EE5364   Information Theory and Coding — Spring 2013

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                   Professor
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Lecture: TTh 11:00am-12:20pm, NH109

Office Hours: TTh: 1:00pm-2:00pm

Course Webpage: http://www-ee.uta.edu/Online/liang/EE5364/

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TA Office Hours: TTh 9:30am-11:00am and 1:00pm-2:30pm

Pre-req: EE3330 Probabilities

Other Requirements: Basic programming skills in MATLAB

Grading (On-Campus Students):
      5% Homework
      15% Quizzes
      30% Midterm Exam I
      30% Midterm Exam II
      20% Final Project

Grading (ETV Students):
      5% Homework
      35% Midterm Exam I
      35% Midterm Exam II
      25% Final Project

Exam Dates:
Midterm Exam I: Thursday, February 28, 2013 11:00am-12:20pm, NH109
Midterm Exam II: Thursday, April 25, 2013 11:00am-12:20am, NH109

Course Objective
Students will be able to understand the basic concept in information theory and apply it to data compression, channel capacity, rate distortion, and network information theory.

Final Project (Due: Monday, May 6, 2012).
It's a team project for up to 3 graduate students per team (i.e., 1, 2, or 3 students per team). The course project will be Wireless Channel Capacity Analysis (fading versus static channel, power allocation for optimizing channel capacity, etc).

Grading Policies:
- **Final grades** will be assigned by a combination of student score distribution (histogram) and the discretion of the instructor.
- **Homework** will not be graded, but checked.
- **Late Homework** will not be accepted.
- **Make-up Exams: No make-up exams will be given**. If you can't make the above exam dates, you must drop the class.
- **Academic Integrity Policy:** As per university rules and guidelines.

Textbook
Thomas Cover and Joy Thomas, *Elements of Information Theory*, 2nd Edition, John Wiley & Sons, Inc, 2006, ISBN: 0-471-224195-4.

Reference Books:
David Tse and Pramod Viswanath, *Fundamentals of Wireless Communication*, ISBN 0521845270, Cambridge University Press, 2005.

Course Material:
1. Entropy, Relative Entropy, and Mutual Information (Chapter 2 of Textbook)
2. Asymptotc Equipartition Property (Chapter 3 of Textbook)
3. Entropy Rates of a Stochastic Process (Chapter 4 of Textbook)
4. Data Compression (Chapter 5 of Textbook)
5. Channel Capacity (Chapter 7 of Textbook)
6. Differential Entropy (Chapter 8 of Textbook)
7. Gaussian channel (Chapter 9 of Textbook)
8. Wireless Channels Capacity (Chapter 5 of Reference Book)
9. Rate Distortion Theory (Chapter 10 of Textbook)
10. Network Information Theory (Chapter 15 of Textbook)

Academic Dishonesty

It is the philosophy of The University of Texas at Arlington that academic dishonesty is a completely unacceptable mode of conduct and will not be tolerated in any form. All persons involved in academic dishonesty will be disciplined in accordance with University regulations and procedures. Discipline may include suspension or expulsion from the University. "Scholastic dishonesty includes but is not limited to cheating, plagiarism, collusion, the submission for credit of any work or materials that are attributable in whole or in part to another person, taking an examination for another person, any act designed to give unfair advantage to a student or the attempt to commit such acts." (Regents' Rules and Regulations, Part One, Chapter VI, Section 3, Subsection 3.2, Subdivision 3.22).