EE 744 Coding Theory and Spread Spectrum
Fall 2007

Class Info: Meeting time: 2:20-3:40 Tuesday and Thursday
Location: EB 219

Instructor: Laurie Joiner
Email: ljoiner@ece.uah.edu
Office: EB 217-B
Phone: 824-6126

Office Hours: Tuesday and Thursday 10:00-12:00, 4:00-5:00 or by appointment

Prerequisites: Undergraduate course in probability, undergraduate course in communications (recommended, not required).

Required Text: S. Lin and D. J. Costello. *Error Control Coding, 2ed*., Prentice Hall, 2004.
Assorted journal and conference papers (will be provided).

References: S. B. Wicker. *Error Control Systems for Digital Communication and Storage*. Prentice Hall, 1995..
R. J. McEliece. *Finite Fields for Computer Scientists and Engineers*. Kluwer, 1987.
E. Biglieri, et. al. *Introduction to Trellis-Coded Modulation with Applications*. Macmillan, 1991.
R. Moerlos-Zaragoza. *The Art of Error Correcting Coding*. Wiley, 2002.
S. Wicker and S. Kim. *Fundamentals of Codes, Graphs, and Iterative Decoding*, Kluwer, 2003.

Objectives: By the end of the semester you should be able to:

- Develop block error control coding systems using cyclic, BCH, and Reed-Solomon codes.
  - Determine the performance of these systems.
  - Develop efficient encoding and decoding algorithms.
- Design a system using a convolutional code
  - Determine the distance properties of a convolutional code
  - Implement Viterbi decoders for convolutional codes
  - Analyze the performance of the decoder over binary symmetric and additive white Gaussian noise channels.
- Understand the development of and decoding algorithms for concatenated convolutional codes

Grading:

Homework	20%
Course Project	15%
Midterm	30%
Final exam	35%

Final average of:	
90 – 100	A
80-89	B
70-79	C
60-69	D
< 60	F

Final Exam: The final exam is on Thursday, December 6 from 3:00-5:30pm.

Projects: Several small projects will be assigned to implement various encoding/decoding algorithms.

Academic Honesty: All work submitted for the tests and final must be your own unaided work. Collaboration on homework is permitted, but solutions must be your own. Academic honest is defined in your student handbook. The penalties for cheating and plagiarism are defined in the handbook.

Web Site: A web site for this course will be maintained at http://www.ece.uah.edu/~ljoiner/ee744. Any course handouts and all homework assignments will be posted to this page.