

# EE521: Advanced Communications (3 Credits)

Fall 2011

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**Instructor:**

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**Course Description:**

This course is a first-year graduate level course on digital communication systems. It covers the fundamental principles underlying the design and analysis of digital communication systems that will allow you to understand modern digital communication techniques.

Primary topics for the course are:

- Signal Representation
- Optimum Receiver Principles
- Performance of Digital Modulations
- Channel Capacity
- Channel Coding
- Fading Channels
- Diversity
- Spread-Spectrum Communications

As part of the course work, students are required to write a term paper on a topic relevant to digital communications. This paper can be either a thorough literature search on a specific topic, or a study presenting an original research contribution in the field. Papers should demonstrate understanding of the material taught. More information about the project requirements is in a separate handout.

**Prerequisite:**

An undergraduate course in digital communications (EE422 or equivalent)

**Textbook:**

J.Proakis and M.Salehi, Digital Communications, 5<sup>th</sup> ed., McGraw-Hill, 2008

**References:**

B.Sklar, Digital Communications: Fundamentals and Applications, 2<sup>nd</sup> ed., Prentice Hall, 2001.

M.K.Simon and M-S Alouini, Digital Communication over Fading Channels, 2<sup>nd</sup> ed., John Wiley, 2005.

**Grading:**

Homeworks: 20%

Exam I: 30%

Exam II: 30%

Project: 20%

**Disability Statement:**

If you have a documented disability and anticipate needing accommodations in this course, please request that a Disability Resources (DR) staff send a Student Academic Accommodation Request (SAAR) form verifying your disability and specifying the accommodations you will need. DR is located in Room 1076 of the Student Services Building.