Course Syllabus

ELCT 562 – Wireless Communications

Course Coordinator:	Dr. Guoan Wang
Catalog Description:	Second and third generation wireless networks, wireless local area networks (WLANs), Bluetooth, cellular concepts, mobile radio propogation, modulation techniques, multiple access techniques, wireless networking, wireless systems and standards. Restricted to graduate students and senior undergraduate students.
Credit Hours	3
Prerequisite(s) by course	ELCT 332 and 361
Prerequisite by topics	Fundamentals of Communication Systems, Electromagnetics
Required Textbook	Andreas F. Molisch, *Wireless Communications,* 2nd ed., Wiley-IEEE, 2010. ISBN-10: 0470741864
Other Materials	Additional reading from other sources (books, journals) will be provided as handouts

Course Outcomes:
Students who successfully complete this course will be able to:

- Identify terms, symbols and units used in wireless system design, such as TDMA, EIRP, mixer, etc.
- Understand issues with large-scale path loss, shadowing, and small-scale fading, Doppler shifts
- Analyze transceiver structures, modulation, demodulation, and effects of noise, interference
- Perform basic design computations for wireless system hardware, including filters, antennas, amplifiers
- Assess tradeoffs in multiple access, diversity

Course Topics:

- Technical challenges of conveying information digitally across a wireless channel
- Multiple access techniques
- Large and small-scale wireless propagation characteristics, how to model them
- Basic digital modulation and demodulation
- Basic principles of antennas
- Basic principles of diversity

Course Contribution to Program Outcomes:
ELCT 562 contributes to an achievement of:

- Outcome A – an ability to apply knowledge of mathematics, science and engineering
- Outcome E -- an ability to identify, formulate, and solve engineering problems
- Outcome C – an ability to design a system, component or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability
- Outcome G -- an ability to communicate effectively
- Outcome K -- an ability to use the techniques, skills and modern engineering tools necessary for engineering practice

General Course Policies

Academic Integrity
Most assignments will be individual efforts, but there may be some group assignments. Academic dishonesty of any kind will result in a failing grade, and possible referral to university authorities. Students are expected to follow the University of South Carolina Honor Code and they should expect that every instance of a suspected violation will be reported. Students found responsible for violations of the Code will be subject to academic penalties under the Code in addition to whatever disciplinary sanctions are applied.

Accommodating Disabilities
Reasonable accommodations are available for students with a documented disability. If you have a disability and may need accommodations to fully participate in this class, contact the Office of Student Disability Services: 777-6142, TDD 777-6744, email sasds@mailbox.sc.edu, or stop by LeConte College Room 112A. All accommodations must be approved through the Office of Student Disability Services.

Diversity
When scheduling exams, I have attempted to avoid conflicts with major religious holidays. If, however, I have inadvertently scheduled an exam or major deadline that creates a conflict with your religious observances, please let me know as soon as possible so that we can make other arrangements.

Recommended Study Habits

- Think about the main goals, i.e. the big picture, frequently
- Read the book before lectures; read from additional sources, especially for difficult topics
- Prepare your own summaries from texts and notes, after lectures.
- Work in groups for mastering concepts; quizzing each other is useful.

Deviations
Minor deviations from the syllabus are a normal part of any adaptive teaching and learning process.