**ECE 7600 – Advanced Topics in Wireless Networks**

**Syllabus – Fall 2016**

**Instructor**: Dr. Rose Qingyang Hu

**Office:** EL 178

**Phone: Office:** 435-797-7968, **Mobile:** 214-205-7968

**E-mail Address:** rose.hu@usu.edu

**Office Hours**: T/H 10:00 am – 11:00 am

**Lecture Time**: M/W/F 1:30 – 2:20 pm

**Lecture Place:** EL 109

**References:** Papers and book chapters from the literature will be distributed and posted on-line during the semester.

**Course Content (subject to change)**: In this course, we will discuss issues that better define and characterize wireless links and their implications for higher-layer protocol design and optimization. Specifically, we will study the following issues: (T1) control knobs for improving wireless network capacity, including interference management, power control, physical carrier sense tuning, radio resource management, temporal/spatial diversity, and scheduling; (T2) mobility management; (T3) energy efficiency and QoS in wireless networks; and (T4) case studies: wireless heterogeneous networks.

**Prerequisite**: Students are expected to have a good understanding of probability and random processes. An undergraduate course on Computer Networks is also needed.

**Course Accessibility:** In cooperation with the Disability Resource Center, reasonable accommodation will be provided for qualified students with disabilities. Please meet with the instructor during the first week of class to make arrangements. Alternate format print materials (large print, audio, diskette or Braille) will be available through the Disability Resource Center.

**Homework**: Each student is required to turn in a two-page review for the paper assigned. The review should clearly state the problem addressed, the technical approaches taken, the major contribution made, and most importantly the places that can be further improved. These reviews will be graded, and counted toward 30% of the grades.

**PRESENTATION**: Each student is required to make at 3-4 presentations throughout the semester. Students have to thoroughly digest the paper assigned to him/her, prepare adequate handouts, and deliver the lecture as if he/she were the instructor. The PowerPoint/postscript/PDF file for the handout should be given to the instructor at least one day before the presentation, so that she can post on-line and students can download the material prior to the class presentation. The length of each presentation should be kept to approximately 40 minutes (1 presentations per class), unless otherwise specified.

**Projects** Students are required to either (1) conduct in-depth research on an advanced topic, or (2) develop a wireless network software system (individually or as a team). A 3-page term project proposal will be submitted on **Sep 23, 2016**. To help students to formulate the project topic and proceed with project research, the instructor will be available during her office hours or by appointment throughout the semester. Midterm milestone of the project report is due on **October 31, 2016**. Students are encouraged to discuss their potential topics with the instructor early in the semester. A term paper that documents the research findings or the design/implementation is due on **December 09, 2016**.

**Grading**

Homework 30%

Class presentation 30%

Project 30% (project proposal: 10%, capability of following the proposed schedule and demonstrating milestones: 5%, significance and completeness of results: 15%)

Final Exam: 10%

Total 100%