CSE 6300: Research Topics in Computer Networks

--- Advanced Wireless Networks and Systems

Course Information

Time and location: Monday 6:30pm – 9:00pm, Bronwell 124

Instructor: Jun-Hong Cui (jcui@engr.uconn.edu)
Office: ITEB 267
Phone: (860) 486-8951

Instructor office hours: Monday 4:00pm – 5:00pm or by appointment

Class online: Check HuskyCT (https://learn.uconn.edu/)

Course Description

This course will focus on advanced wireless networks and systems. State-of-the-art techniques in a couple of frontiers, including cognitive radio networks, underwater wireless networks, and underground wireless networks, will be reviewed and discussed. Through this course, students will be well educated in wireless networks and systems. It will help graduate students understand the design challenges, current approaches and possible future directions on wireless networking. It aims to introduce graduate students to research, and exploit potential areas for MS comprehensive projects or PhD research directions. This course is intended for graduate students at ALL levels.

This course has a research seminar style. It consists of the instructor’s overview lectures, invited external talks, and students’ presentations. Each student is expected to read research papers and give presentations. In-class discussions and peer-critiques are especially encouraged. Along the course, there are term projects. Students can form groups in 2-3 persons and choose projects, which can be of a taste of implementation, simulation, measurement, or even literature survey.

Course Prerequisites

- CSE3300 or equivalent with permission of the instructor.

List of Topics (Tentative)

- Overview of General Networking
o Reliable Data Transfer
o Congestion Control
o Routing, Forwarding
o Medium Access Control (MAC)
o Localization, Synchronization

• Underwater Wireless Networks
  o Applications
  o Underwater Acoustic Communications
  o MAC, Routing, Reliable transfer
  o Synchronization, Localization
  o Platforms, and Testbeds

• Underground Wireless Networks
• Cognitive Radio Networks
• New Directions and Trends

Recommended Readings

Most of the reading for this course will be papers from the Reading List (to be posted in HuskyCT). Some reference books that might be of interest are:


Grading

There will be 8 required paper reviews, two class presentations, and one term project. There will be NO exams.
The final course grade will be computed as follows:

- Class participation: 10%
- Class presentation: 20%
- Paper reviews: 20%
- Term project: 50% (5% proposal, 10% progress report, 15% presentation, and 20% final report)

**Paper Reviews**

The objective of paper reviews is to help the graduate students develop some basic networking research skills and explore some interesting research topics in networking. We will have 8 paper reviews. Before each class, a graduate student should read the required paper and prepare a one to two-page long written critique for the paper. Requirements and submission instructions will be posted separately.

**Late Policy**

Paper reviews and term projects must be turned in before the specified due date and time. Late paper reviews and projects will NOT be accepted.

**Academic Integrity**

We will follow the University Policy on Academic Integrity regarding any cheating and plagiarism. Take the time to familiarize yourself with the contents of this page, as you are responsible for its contents.