

Fall 2005

# CEG 499/699: Mobile Computing

Yong Pei

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# CEG 499/699 Mobile Computing

4 Credits, Fall Quarter 2005

## Syllabus

**Time/Place:** Lecture: 8:00 – 9:15 PM, M. & W., 150 Russ Engineering Center

**Instructor:** Dr. Yong Pei, 340 Russ Engineering Center  
Tel. 937-775-5111, Email: yong.pei@wright.edu  
Office Hours: 2:30-4:30pm, Tu.

**Prerequisites:** CEG402/602 (or equivalent)

### Textbooks:

#### Required:

D. Agrawal and Q. Zeng, "Introduction to Wireless and Mobile Systems", 2<sup>nd</sup> Edition, Thomson, ISBN 0-534-493033.

Lecture slides will be posted through WebCT.

### References:

1. T.S. Rappaport, "Wireless Communications: Principle and Practice", 2<sup>nd</sup> Edition, Prentice Hall, 2002.
2. S. Keshav, "An Engineering Approach to Computer Networking: ATM networks, the Internet, and the Telephone Network", Addison-Wesley, 1997.
3. P. Nicopolitidis, *et al.* "Wireless Networks", Wiley, 2003.

**Course Webpage:** Through WebCT

### Course Objective:

This senior/graduate course provides an in-depth study of networking protocol and system design in the area of wireless networking and mobile computing. It will help CEG students establish a solid foundation in wireless networking architecture, protocols, fundamental concepts and principles, network congestion control and flow control design. It will also introduce students to a few hot topics in wireless networking and mobile computing research.

The course will start with a review over fundamental design challenges, architectural principles and philosophy for the Internet and heterogeneous networks. The focus will then move on to an in-depth examination of wireless networking protocols, and system design techniques for mobile computing environments. This is followed by several topical studies in wireless and mobile networking system design. The course material consists primarily of technical papers published on major networking conferences and journals, which will be posted on the web.

## Topical Outline

- Networking Fundamentals
  - Fundamental Design Issues
  - Design Principles and Philosophy
  - Overview of Wireless & Mobile Networks
- Wireless Networking Protocols
  - MAC Protocols
  - Packet Scheduling
  - Mobility Support
  - Ad hoc routing
  - Wireless TCP
- Topical Studies
  - Energy-efficient Design
  - Sensor Networks
  - Pervasive Computing
  - Analytical Tools and Performance Evaluation

### Grading: (Tentative)

Homework = 20%

Midterm Exam = 30%;

Final Exam = 30%;

Project/Term Paper = 20%.