

# **EEL6935: Wireless Ad Hoc Networks**

*Spring 2007*

**Catalog Description:** This course is an advanced research-oriented course designed for graduate students with computer and wireless networks background. It will cover various topics relevant to a cutting-edge technology, namely, *Wireless Ad Hoc Networks*, which include Mobile Ad Hoc Networks (MANETs), Wireless Sensor Networks (WSNs) and Wireless Mesh Networks (WMNs). Through this course, students can learn the state of art of wireless ad hoc networks research, and enhance their potential to do research in this exciting area.

**Credits:** 3.

**Prerequisites by Topics:** EEL 5718 and EEL 5544, or by consent of the instructor.

**Coordinator:** Yuguang “Michael” Fang, Professor of ECE.

**Goals:** To provide more advanced in-depth networking materials to graduate students in networking research. Upon completion of this course, students will be able to apply the materials in their networking research.

**Textbook:** No textbook is required for this course. The material covered in the lectures is mainly derived from research papers published in top journals and conferences.

## **Outline:**

1. Introduction to wireless ad hoc networks, including Mobile ad hoc networks (MANETs), Wireless sensor networks (WSNs) and Wireless mesh networks (WMNs).
2. Medium access control (MAC) protocols for MANETs
3. Routing protocols for MANETs
4. Transport protocols and congestion control for MANETs
5. Security issue in MANETs
6. Power-efficient MAC protocols for WSNs
7. Routing and data dissemination in WSNs
8. Flow and Congestion control in WSNs
9. Topology control in WSNs
10. Node deployment and localization in WSNs
11. Security issues in WSNs

12. Architecture and design issues of WMNs
13. Medium access control and scheduling for WMNs
14. Routing and security for WMNs

**Grading:** The students are required to write a half-page summary for every paper covered in the classes. In addition, each student is asked to do one class presentation and finish one course project. The final grades will account for:

- Paper summaries (35 %)
- Class presentation (15 %)
- Class participation (10 %)
- Course project (40 %)