MOBILITY-DRIVEN EMBEDDED SYSTEMS

EECS 480Y

COURSE DESCRIPTION: Foundations of reliable, energy-efficient and secure design of embedded systems. Fundamentals of mobility in embedded systems including wireless technology, location awareness, sensors, and actuators. Design consideration for processors, DSP, memory, and interfaces under mobility constraints (connectivity, power, and data management). Systems software for embedded computing, device management, and real-time I/O. Software design under constraints of size, performance, availability, and reliability. Software development techniques and practices (compliers, OS, and runtime systems). Case studies of mobility driven real-time embedded systems and software. Applications of mobility driven embedded systems, for example in biomedical implant systems. (3 credit hours)

FACULTY: To be announced

TEXTBOOK: Reading references posted on the Blackboard site. There is no suitable, recent textbook.

COURSE OBJECTIVES: This course is designed to provide a strong foundation in design of mobile embedded systems.

COURSE GRADE:

Exams (30%): 3 Exams, 1 every 3-4 weeks

Homework (40%): 4 assignment, ~ biweekly

Project (30%): Building on the homework to integrate and instill the learning experience.

WEEKLY COURSE SCHEDULE:
1. Fundamentals of mobility in embedded systems
2. Mobility Constraints: energy-efficiency, form factor, security, reliability
3. Overview of design considerations
4. Design choices of processors, DSP, memory
5. Wireless technology
6. Energy issue
7. Reliability issue
8. Security and privacy
9. Software design under mobility constraints
10. System software for embedded computing
11. Device management and real-time I/O
12. Software development techniques and practices
13. Applications of mobility-driven embedded systems
14. Case studies
15. Case studies

University Student Ethics Policy
http://studentaffairs.case.edu/al/policy.html

Violations of the Student Ethics Policy will result in failure in the assignment in question or the course, or referral to the academic integrity board as per university policy.

All forms of academic dishonesty including cheating, plagiarism, misrepresentation, and obstruction are violations of academic integrity standards. Cheating includes copying from another's work, falsifying problem solutions or laboratory reports, or using unauthorized sources, notes or computer programs. Plagiarism includes the presentation, without proper attribution, of another's words or ideas from printed or electronic sources. It is also plagiarism to submit, without the instructor's consent, an assignment in one class previously submitted in another. Misrepresentation includes forgery of official academic documents, the presentation of altered or falsified documents or testimony to a university office or official, taking an exam for another student, or lying about personal circumstances to postpone tests or assignments. Obstruction occurs when a student engages in unreasonable conduct that interferes with another's ability to conduct scholarly activity. Destroying a student's computer file, stealing a student's notebook, and stealing a book on reserve in the library are examples of obstruction.