MOBILITY-DRIVEN COMPUTING

EECS 480X

COURSE DESCRIPTION: Fundamental concepts in computing and architecture for mobile devices, mobile operating systems, mobility and mobile data management. Application of technologies for location awareness, context awareness, integrated sensors, mobile Internet, displays, pattern recognition and natural language processing, and touch/gesture based user interaction. Understanding of the tradeoffs in design (smartphones, tablets) due to resource constraints such as wireless connectivity, application processing, power management, and graphics. Integration of near- and wide-area wireless communication technologies (Bluetooth, Wireless WAN). Exploration of emerging technologies and services for the mobile platform. Integration of the foregoing concepts in a specific mobile context application (home/office, pedestrian, vehicular). (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 mobile computing paradigm.

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. Introduction to the fundamental concepts in mobility-driven computing
2. Architecture of mobile devices
3. Mobile operating systems
4. Mobile data management
5. Technology for location and context awareness
6. Integrated sensors and processing of sensed data
7. Mobile internet and displays
8. Pattern recognition and natural language processing
9. Design trade-offs due to resource constraints
10. Power and resource management
11. Integration of diverse wireless communication technologies (Bluetooth, WAN, NFC)
12. Exploration of emerging technologies
13. Exploration of emerging services and needs
14. Computing concepts in specific mobile context: home/office
15. Computing concepts in specific mobile context: pedestrian, vehicular

University Student Ethics Policy http://studentaffairs.case.edu/ai/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.