WEARABLE COMPUTING DESIGN

EBME 480T

COURSE DESCRIPTION: Learning about wearable devices using flexible/conformal electronics designed for convenience and uninterrupted wearability. Examining related design challenges from the technology, human and business points of view. Understanding wearable product design for general and special-purpose tasks in information processing, media operations, and information extraction from sensed data. Learning about the technological challenges for design, including miniaturization, power delivery and management, data storage, and wireless networking. Learning about wearable designs centered on the human experience, including sensing and interfacing with the human body, as well as user interaction, convenience, and support for non-intrusive social appearance. Case studies tying the business requirements with the technology and design issues.

(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 wearable computing.

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. Overview of wearable computing: application space, system design needs, and challenges
2. Bringing together technology, human, and business models
3. Miniaturization, power delivery and management, data storage, and wireless networking
4. Overview of wearable product design
5. General or special-purpose tasks in information processing, information extraction from sensed data
6. Product user experience considerations
7. Implantable device design, body area network
8. Overview of wearable hardware design
9. Hardware choices, e.g., processor, field programmable gate array (FPGA) and custom ASICs
10. Software architecture and algorithms
11. Overview of large data storage and processing
12. Data collection and data processing techniques
13. Emerging technologies and applications
14. Case studies
15. Case studies

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.