

CPE 556 Computing Principles for Embedded Systems

Course Syllabus

Course Objective: The objective of this course is to introduce students to understand applied computing principles in emerging technologies and applications for embedded systems. This course will focus on emerging computing paradigms in the areas of context-aware pervasive systems, spatio-temporal access control with distributed software agents, vehicular computing, information systems cryptography, trust and privacy in mobile environments, location-aware services, RFID systems, wireless medical networks, and urban sensing. The students will be proficient with computing methods by studying the programming aspects in sensor networks and learn how to program with sensor nodes.

Prerequisite: some knowledge of C

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(To shorten turn-around time, please include "CPE556" in the subject line for all the emails.)

Reference Books:

- Fundamentals of Mobile and Pervasive Computing by Frank Adelstein, Sandeep K.S. Gupta, Golden G. Richard III, and Loren Schwiebert, Publisher: McGraw-Hill Education, 2005, ISBN-10:0071412379, ISBN-13: 978-0071412377.
- Context-Aware Pervasive Systems: Architectures for a New Breed of Applications by Seng Loke, Publisher: AUERBACH, 1st edition (December 7, 2006), ISBN-10: 0849372550, ISBN-13: 978-0849372551.

Course Website: http://www.ece.stevens-tech.edu/~ychen/cpe556_fall2009.htm

Main Topics:

- Principles of real-time embedded systems
- Wireless sensor networks and urban sensing applications
- Wireless localization and location-based services (LBS)
- Methodology of distributed systems and access control computing paradigm
- Vehicular computing
- Computer and network security
- Privacy techniques
- RFID systems
- Wireless medical networks

Grading:

- Presentation: (35%) Each student is expected to present 2 papers and lead the discussion.
- Project: (30%) A team (2 students) project involves sensor network programming.
- Midterm Exam: (20%) Each student needs to write a term paper as the midterm exam.
- Active Class Participation: (15%) Each student needs to actively participate in asking questions and involve in the class discussion.