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CSE 599U - Advanced Topics in Ubiquitous Computing - Winter 2012

Instructor Information

Prof. [Shwetak N. Patel](#)

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Office hours: Wednesday 10am-11am

TA: N/A

Course Information and Syllabus:

Time: Monday and Wednesday, 2:30-3:50pm

Lecture: EE 031

class email: cse599u_wi12 (AT) uw [d0t] edu

Course Description:

The aim of the class will be to explore the area of ubicomp and allow students to work on a variety of small technology projects. Students will be exposed to the basics of building ubicomp systems, emerging new research topics, and advanced prototyping techniques. This course will focus more on class discussions and hands on demonstrations, while formal lectures will be conducted only as needed. Students will be evaluated on their class participation, reading summaries, and mini projects.

This course incorporates a combination of topics covering a wide variety of disciplines that impact ubiquitous computing. These include human-computer interaction (HCI), distributed systems, embedded systems, software engineering, networking, and electrical engineering. While there is no explicit set of pre-requisite courses for this class, a basic introduction to a subset of these disciplines will benefit you in this class. Feel free to contact the instructor if you have any questions.

Example topics that may be covered:

- Introduction, Overview, and History of ubicomp
- Advance Prototyping (3d-printer, sensors, PCB layout, software radio, etc)
- Emerging application themes
 - Home health and elder care
 - Energy monitoring and sustainability
- Activity sensing and location tracking
- Wearable computing
- Low-power and wireless power transfer systems
- Wireless technologies
- Input for ubicomp
- Evaluation techniques
- Software engineering issues
- Security and privacy

This class is intended to be highly interactive and students will be asked to lead the discussion for that day's topic. Groups of 2 will be assigned a particular reading topic for that day and will be asked to present an overview of the selected papers and pose discussion questions back to the class. Prior to class, all students are required to post a brief summary of the readings and questions or discussion points that he/she would like the leaders to bring up to the message

board. The highlighted papers on the schedule the required papers, but additional optional papers are also listed that you can use for reference either in this class or in the future.

You will also be working on a longer mini project (groups of 2-3) that will culminate in a simple prototype at the end of the class. Students will have some guidance on the kind of project to work on, but the project will be left open for students to explore their particular ubicomp interests. More details will be given in class.

There will also be smaller mini project assignments throughout the quarter to practice some of the advanced prototyping techniques and tutorials that will be discussed in class.

Texts:

- [*Ubiquitous Computing Fundamentals*. Ed. John Krumm. ISBN: 1420093606. Chapman & Hall/CRC 2009.](#) (Optional, but Very Highly Recommended)
- We will also use material provided on this website

Grading:

Students will be evaluated based on their mini projects/assignments, class participation, and final project. Students are expected to have the readings completed prior to class (see class schedule). Note that class discussion will largely be based on these readings. Class participation includes submitting reading summaries prior to class, active engagement in class discussion, and leading at least one topic during the quarter. Also, students should inform the instructor on any conference travel or other academic activities that might arise during the quarter.

Final project: 15%

Mini assignments: 35%

Class participation: 50%

[Gradebook](#)

[Assignment grades and feedback](#)

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