FIS2241
Critical Making: information studies, social values, and physical computing
Winter 2009

Instructor Information
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Home: http://www.criticalmaking.com

Schedule: TBA

Course Description
The focus of this class is on evaluating and exploring current critical themes in Information Studies through both literature and hands-on work. The course is organized around values that have been identified as key in regards to the design and implementation of socially and culturally sensitive information systems, in particular the values of privacy, autonomy, community, democracy, and social justice. Using design-based research on physical computing as an adjunct to critical scholarship in this area, we will explore how these values are expressed, debated, and resisted within the development and use of information systems. The class has three goals:

- to critically explore the social issues inherent in technical systems;
- to acquaint students with some of the possibilities and problems of new physical and ubiquitous information technologies;
- third, to help them develop basic skills in designing, making, and evaluating information systems that use these new technologies.

The class is designed as a combination of seminar and lab. We will meet 3 hours a week, with the first 1 ½ hours devoted to lecture and discussion of course themes and readings. The second 1 ½ hours will involve hands-on work involving the design and construction of physical computing systems.

Please note: No previous technical knowledge is required to take this course. While we will be engaging in project work that involves basic programming, electronic circuitry, and technical design, the course will provide tutorials and assistance in these areas. Students will be expected to work on projects within and outside of class hours and to develop some skills in these areas. Students with little
or no technical background but with an interest in developing basic skills are encouraged to attend.

**Assignments**
Course deliverables include written work that reflects on course readings and lectures and technical projects. These projects involve the joint design and creation of physical computing artifacts or systems that a) provides resources for thinking and reflecting on the tropes, themes, and social values described in the class, or b) intervene in existing social systems in a way that calls attention to tropes, themes, and social values described in the class.

Students will be graded on 5 assignments; two 4-5 page reflection papers that address key issues raised in the course readings, lectures, and project work (20% each); the successful completion of the weekly group projects (20%); a group final project (20%); and an individually-written 10 page paper (20%).

<table>
<thead>
<tr>
<th>Assignment</th>
<th>Due</th>
<th>%</th>
<th>Group grade?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reflection paper 1</td>
<td>Week 4</td>
<td>20%</td>
<td>NO</td>
</tr>
<tr>
<td>Reflection paper 2</td>
<td>Week 10</td>
<td>20%</td>
<td>NO</td>
</tr>
<tr>
<td>Weekly Project</td>
<td>weekly</td>
<td>20%</td>
<td>YES</td>
</tr>
<tr>
<td>Final Project</td>
<td>Week 14</td>
<td>20%</td>
<td>NO</td>
</tr>
<tr>
<td>Final Paper</td>
<td>Week 14</td>
<td>20%</td>
<td>YES</td>
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**Group Projects**
The first three weekly projects are intended to familiarize students with the basic technologies of physical computing. In these initial sessions students will experiment with basic programming and setup of the software and hardware environment (week 1), use of sensors and actuators (week 2), and serial communication between devices (week 3). In the projects following these initial sessions, students will construct a specifically biased electronic voting system of their own design (week 4 and 5), a physical analogue to digital rights management systems (week 6 and 7), and a wearable device that extends the human body (week 8 and 9). The remainder project time will involve the development and creation of a final project that either extends earlier work or takes course themes in a new direction.

**Group Dynamics**
It is expected that students will self-organize into groups that leverage the skills and expertise that each student brings to the course. To assist with this process, we will devote class time during the first week to sharing backgrounds and setting up associations. Problems with group dynamics that emerge during the course will be addressed at the discretion of the instructor.
Space
The course will take place in the Critical Making lab, a shared space for opening up the practice of experimentation with embedded and material digital technology to students and faculty in the Faculty of Information. The lab provides tools, materials, and training for building devices such as wearable computers, RFID systems, ubiquitous computing networks, and other physical computing technologies. The lab will also be available at select times for students to do project work outside course hours.

Readings

All other readings will be available in electronic form on the web or on the course Sakai site.

Guest lectures from professionals or faculty with specific expertise will be scheduled throughout the term.

Schedule
Week 1 (Jan 5-9): SECTION I: Introduction: themes, materials, and tools
Readings:
Week Project: Blinky-blinky – Hello World of physical computing.

Week 2 (Jan 12-16): SECTION I: Introduction: Social Values and Technology
Readings:
Week Project: Sensors and actuators: an introduction

Week 3 (Jan 19-23): SECTION I: Introduction: Critical Information Studies/Critical Design
Readings

Week Project: Serial Communication and networks

Week 4 (Jan 26-30): SECTION II: Institutions: Systems, Control, infrastructure
Readings:

Week Project: Voting System I

Week 5 (Feb 2-6): SECTION II: Institutions: Designing Democracy
Readings:
Stark, Elizabeth. Semiotic democracy and cultural transformation (or) the transformative power of semiotic democracy,
(http://www.re-public.gr/en/?p=102)

Week Project: Voting system II

Week 6 (Feb 9-13): SECTION II: Institutions: Digital Rights (management)
Readings:

Week Project: Physical DRM system I (RFID)

Week 7 (Feb 16-20): READING WEEK

Week 8 (Feb 23-27): SECTION III: Communities: Ubiquitous Computing I: Surveillance & Privacy
Readings:


Something by Andrew on RFID

Project: Physical DRM system II (RFID)

Week 9 (Mar 2-6): SECTION III: Communities: Social capital, communities, and technology
Zurlo, F., Apolloni, G., Castelli, A. The “everyday feature” of designing: The project in terms of a new social capital, http://www.re-public.gr/en/?p=342

Project: Final Project I

Week 10 (Mar 9-13): SECTION IV: Selves: Ubiquitous Computing II: Spatiality and Selves
Readings:

Project: Extending the body (wearables I)

Week 11 (Mar 16-20): SECTION IV: Selves: Bodies and Technology I

Last date to drop class: Feb 27

Readings:

Project: Extending the body (wearables II)

Week 12 (Mar 23-27): SECTION V: Methods and methodologies: Redesigning the Link between Critical Information Studies and Critical Design I.
Readings:

**Project: Final Project II**

**Week 13 (Mar 30- Apr 3): SECTION V. Methods and methodologies: Redesigning the Link between Critical Information Studies and Critical Design II.**

**Readings:**

**Project: Final Project III**

**Week 14 (Apr 6-10): Final Projects**
No readings
**Project: In class presentation and review of final projects**

**END**

(Apr 13-17): Class show and poster session - Location and time: TBD