

# Syllabus: Interactive Prototyping in Design and Design Research

Module Spring II, 2008

Instructors: Ilpo Koskinen (course coordinator), Petra Ahde (UIAH), Jussi Mikkonen (Tampere University of Technology)

## Description

This research-oriented module teaches how one can study design ideas through building building prototypes. Interactive prototyping has become one of the main tools in design research over the last few years. An ability to work in the interface of electronics and user-centered design provides designers an ability to construct and test interactive product ideas in an environment which takes theory as its starting point. The module is aimed at two different audiences: design students who want to learn to build simple interactive prototypes to illustrate and study their ideas. For research-oriented students, the module gives skills needed in design research, and ability to illustrate their ideas with simple interactive prototypes, and an ability to develop those ideas using user-centered methods.

The module addresses various roles prototyping plays in design research, a practical exercise, and a technical module, which has a theoretical and practical part. The technical module introduces students to the basics of electronics, to microcontroller and its use, to the basics of programming necessary for building embedded systems, and to debugging. The practical exercise is research-driven: prototypes serve as design hypotheses to be studied, not ends as such.

## Objectives

Objectives are to:

- understand the role of prototyping in pursuing ideas
- get an idea of the most important philosophies of prototyping
- understand the basics of microcontroller and programming its use needs
- learn to study the prototyped ideas in field conditions
- learn cross-disciplinary research in a challenging environment

## Requirements

Note! It is warmly recommended that participants take the module User-Inspired Design before coming to this class.

## Getting Credits

To get credits from this class, students must participate in the class, do the exercises, participate in creating, constructing, and testing an interactive prototype, and participate in final presentation. No formal report is needed, but of course is encouraged.

In addition, every participant has to

- read two articles from the readings and present these in front of the class in groups **25**

### **March**

- write a max. 1 page summary of the paper, with 1/3 of the page used for critical remarks
- these are "published" at the class web site for everyone, and presented for 5 minutes

### **on 3 April**

- at the end of the class, each participant has to write a 2-page description of the design process using the ACM conference paper format

## **I OPENING PERIOD**

Week 1: Learning week. Introduction to Prototyping in Design Research \*

March 18:

Intro - 10-12, room 857 (IK, PA, JM)

- 13-14, room 891, workshop: (a) class brief: (b) user research brief

- 14-16, kick-off, room 885 (playing with Wii)

March 19: Prototyping in design research

- 10-15, room 891: Design research traditions in prototyping

Week 2. Learning & user research week

March 25: Intro, wrap up - 10-13, room 857

March 26: Introduction to electronics, sensor and actuator technology, elementary software

- 9-17, room 891

March 27: Intro to electronics

- 9-12, room 891

- 13-17, room 869, wrapping up design concepts

March 28: Finishing ideas, presentations

- 9-12, MA students' place: finishing idea presentations

- 13-17, room 857, idea presentations and feedback for audience

Week 3: Software and concept development week

March 31, 9-17:

- various places: benchmarking existing products and concepts

April 1:

- 9-12, room 891, Intro to electronics

- 13-17, room 869, intro do electronics continued

April 2:

- 9-12, room 891, intro to electronics

- 13-17: summary of benchmarking, presentations

April 3:

- 9-12, room 857, choosing concepts for prototyping

## **II CONSTRUCTION PERIOD**

Weeks 4-6: PROTOTYPING ((Construction period. No specific schedule. Just hard work))

April 24, 9-12, room 857: planning user tests

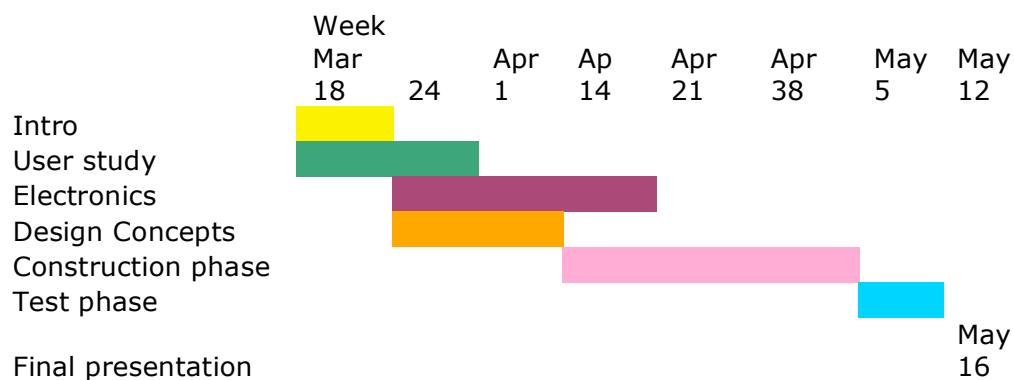
## **III FINAL PERIOD**

Week 7: Preparing user testing  
 - May 5, 9-16: preparing the prototypes

Week 7: user test and analysis

Week 8: Wrap up  
 - May 12, 9-17, room 857, analyzing data workshop  
 - May 12-15: creating presentations  
 - May 16, 9-17, room 885: Final presentations: user research, concepts, processes, prototypes, user tests

### Schedule in Brief



### Readings:

*How to get readings:*

Either through class web site or from Library. All readings are on Reserve in UIAH Library

*Content readings, required from everyone:*

- + Katja Battarbee. Defining co-experience.
- + Katja Battarbee and Ilpo Koskinen. Co-Experience.

*Required methodological readings from everyone:*

- + Ilpo Koskinen, Thomas Binder and Johan Redstrom. Lab, Gallery, Field and Beyond. (Manuscript, please do not quote outside the class)
- + Esko Kurvinen, Ilpo Koskinen and Katja Battarbee. Prototyping Social Interaction.

*Required methodological readings for groups, presented for the class 25 March*

*Group 1: Lab ( , , , )*

+ Frens, Joep 2006b. Designing for Rich Interaction. Integrating Form, Interaction, and Function. Proceedings of the 3rd symposium of design research: Drawing new Territories, Swiss Design Network, Zürich, Switzerland, 2006. Pp. 91-109.

+ Stephan Wensveen, Kees Overbeeke, Tom Djajadiningrat. Push Me, Shove Me and I Show You How You Feel.

*Group 2: Gallery/Showroom ( , , , )*

- + Marianne Graves Petersen, Ole Sejer Iversen, Peter Gall Krogh, Martin Ludvigsen. Aesthetic Interaction — A Pragmatist's Aesthetics of Interactive Systems.
- + Phoebe Sengers, Bill Gaver: Staying Open to Interpretation: Engaging Multiple Meanings in Design and Evaluation.

*Group 3: Field ( , , , )*

- + Ilpo Koskinen, Kristo Kuusela, Katja Battarbee, Anne Soronen, Frans Mäyrä, Jussi Mikkonen, Mari Zakrzewski. Morphome: A Constructive Field Study of Proactive Information Technology in the Home.
- + Esko Kurvinen, Ilpo Koskinen, Katja Battarbee. Prototyping Social Interaction.
- + Andy Crabtree. Design in the Absence of Practice: Breaching Experiments.

*Other readings, potentially useful, access through IP07 website!*

- + Geneviene Bell, Mark Blythe, Phoebe Sengers. Making by Making Strange: Defamiliarization and the Design of Domestic Technologies
- + Andrew Boucher, William Gaver. Developing the Drift Table.
- + Preben Mogensen. Towards a Prototyping Approach in Systems Development.
- + Giulio Iacucci, Kari Kuutti and Mervi Ranta. On the Move with a Magic Thing: Role Playing in Concept Design of Mobile Services and Devices
- + Alan R. Hevner, Sudha Ram. Design Science in Information Systems Research.