

COMM 440/640

Advanced Human-Computer Interaction Design

Teaching staff

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Times and Locations

Lecture: Tuesday, 10:10 – 11:25, 211 Kennedy

Small group discussions: Thursday, 10:10 – 11:25

Undergraduate students – large conference room, in IS building, 301 College Ave.

Graduate students – 461 Mann Library

Course Overview

The objective of this upper-level and graduate course in advanced human-computer interaction design is to further develop in-depth skills in HCI research and design. This class will be project-oriented, and you will be working in small groups for much of the semester.

The course will be structured around a Tuesday lecture that includes undergraduates and graduates, and a Thursday session dedicated to small-group labs and research activities for undergraduates. For graduate students, the Thursdays will serve as seminar discussion and each graduate student will be responsible for leading discussion for one or two sessions during the course of the semester.

Course Learning Objectives

- To develop an advanced understanding of the principles and concepts in the study of human-computer interaction design and research

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- To enhance your skills as a researcher and author by developing a research project that will be submitted for public dissemination. Undergraduates will develop a project for exhibition at BOOM and graduate students will prepare a paper for submission to DIS, CHI, or CSCW conferences.

Required readings

All readings will be available on electronic course reserve and Blackboard.

Course Website

Announcements, course information, assignments, and links to external sources will be posted on the course website via blackboard (<http://blackboard.cornell.edu>). It is your responsibility to check the Blackboard website regularly.

Course Grading:

Course grades will be based on the following distribution:

- Participation and Attendance: 10%
- Graduates only: Leading discussion on selected readings and paper critique: 10%
Undergraduates: Weekly assignments: 10%
- Project proposal: 15%
- Progress report: 15%
- Final Presentation: 10%
- Final submission to BOOM (undergraduates) or DIS (graduates): 40%

Participation and Attendance (10%):

Class Attendance - On-time class attendance is required. Please e-mail the TAs if you are unable to attend class. Absences without satisfactory explanation will result in reduction of the participation portion of your grade.

Class Discussions - You are expected to complete all required readings before each class discussion. Active participation in class discussions is expected and will be reflected in your participation grade.

Grads only: Leading a discussion on selected readings and paper critique (10%):

During the course of the semester, each graduate student will be responsible for leading one or two seminar session on Thursday meetings. In the seminar, the students will present selected readings of the current week topic, and lead a

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discussion based on these readings. You are expected to clearly summarize the readings, introduce few questions for discussion, and moderate the discussion around those questions.

At one time you will be required to write a discussion paper responding to a given article. The discussion should go beyond a mere summary of the paper. For instance, you might discuss some weaknesses in the paper, and suggest alternative approaches; formulate different hypotheses than the paper and suggest experiments that could be used to validate the hypotheses; discuss related work from a different field that the authors were not aware of, or a potential application of the work to a different field.

Undergrads only: Weekly assignments (10%):

Short assignments will be handed out on a weekly basis on Tuesdays, to be submitted on Thursday of the same week. In these 1-page assignments you will summarize or reflect on the topic studied during that week.

Project Proposal (15%):

In order to ensure your success in completing your final submission, your team will be developing your group's research or design proposal. The proposal should define your group's plan to design and/or evaluate a technology.

The project proposal should include

- 1) A brief review of relevant literature and existing study as it relates to your group's research topic,
- 2) An explicit description of the contribution and benefits of the proposed project to the HCI community,
- 3) A project plan, including a **timeline with major milestones** for completing your project in time for the conference and class deadlines, and
- 4) Graduate students only: a Human Subjects application.

The research proposal is due to the instructors on **Tuesday, October 4.**

Progress Report (15%):

Halfway through the project work, you team will be reporting on the steps you have accomplished in your project, as well as parts that have yet been completed.

The progress report should include

- 1) A thorough literature review, possibly in the form of an introduction section to a paper,
- 2) For design projects, an early prototype that will present the concept of your design, and

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- 3) A description of the projects components that have been completed, and of the components that still require working on, with a plan on how to fulfill them.

The progress report is due to the instructors on **Thursday, October 27**.

Final Presentation (10%)

The last week of the semester will be dedicated to presenting the projects that were developed during the semester. You will present to the class and the instructors the work you have completed and be expected to answer questions from the audience.

Final Project Submission (40%):

40% of your grade will be the quality of the submission that you produce for BOOM or DIS/CHI.

FOR GRADUATE STUDENTS

Monday, December 5: Abstract and paper to the instructors for review and feedback. Your paper will adhere to the submission guidelines for DIS 2006 or CHI 2006. You will receive feedback in two days.

Thursday, 15 December: After completing any necessary revisions based on the instructors' review, you will be responsible for submitting the final paper to DIS by its deadline of Thursday, December 15. Papers should be prepared in accordance with the conference submission guidelines. You are encouraged to request reviews from additional scholars, e.g. your advisors.

FOR UNDERGRADUATES

Monday, December 5: Your final project will be submitted to the instructors and shall include:

- 1) A final writeup in the format of a research paper,
- 2) A website with the project abstract, and
- 3) A scholarly poster for display. If applicable, a demo of your project will be exhibited as well.

You will receive feedback for the website and poster within a week. You will be responsible for submitting the final project to BOOM2006 according to the published deadlines and submission instructions.

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Weekly Schedule

Note: Readings are subject to change. Please consult Blackboard for the most up-to-date assignments.

Wk	Tuesdays	Thursdays
1		Aug 25 Topic: Course overview/History of interaction Readings: 1. Course Syllabus 2. Myers, B. (1998). A brief history to human-computer interaction technology.
2	Aug 30 Topic: Design Panel Guests: TBD Due: Background questionnaire Reading: 1. Dix, Finlay, Abowd, and Beale (1998). Human-Computer Interaction, 2nd ed., ch. 5. 2. Greenberg, S. (1992). A Taxonomy of Human Computer Interaction, ACM.	Sept 1 Topic: Iterative design Undergraduates <ul style="list-style-type: none"> • Receive group assignments • Brainstorm topics for project Graduate student seminar <ul style="list-style-type: none"> • Focus on DIS • Bring one article from previous DIS / CHI / CSCW proceedings for discussion.

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3	Sept 6	<p>Topic: Technology, Design and Critical Theory</p> <p>Readings:</p> <ol style="list-style-type: none"> 1. McCarthy, J. & Wright, P. (2004). "A Pragmatist Approach to Technology as Experience." Chapter 3 in Technology as Experience. 2. Jim Gerrie. "Was Foucault a Philosopher of Technology?" Techné 7:2 Winter 2003 14-26. 3. Andrew Feenberg. "Marcuse or Habermas: Two Critiques of Technology." Inquiry 39, 1996, 45-70. 	Sept 8	<p>Undergraduates</p> <ul style="list-style-type: none"> • Decide on Project • Begin general work plan <p>Graduate student seminar Technology, Design and Critical Theory</p> <p>Readings:</p> <ol style="list-style-type: none"> 1. John Dewey. "Having an Experience." Chapter III in Art as Experience, 35-57. 2. Martin Heidegger. "The Question Concerning Technology." in The Question Concerning Technology and Other Essays. Harper & Row, 1977. 13-35 3. Walter Benjamin. "The Work of Art in the Age of Mechanical Reproduction" In Illuminations. Harcourt, Brace and World Inc: New York, 1968. 219-255.
4	Sept 13	<p>Topic: Theories of HCI, Part 1</p> <p>Readings (choose 2 of 4):</p> <ol style="list-style-type: none"> 1. MacKenzie, I.Scott. (2003). Motor Behavior for HCI. 2. Payne, S. J. (2003). Users' Mental Models: The Very Ideas. 3. Pirolli (2003). Exploring and Finding Information. 4. Gay & Hembrooke (2004). Activity-Centered Design, ch. 1. 	Sept 15	<p>Topic: Elaboration of HCI Theories</p> <p>Undergraduates</p> <ul style="list-style-type: none"> • Discuss Theories • Project team work <p>Graduate student seminar</p> <p>Readings:</p> <ol style="list-style-type: none"> 1. Proctor & Vu. (2000). Human information processing. pp. 36-48.

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5	Sept 20	<p>Topic: Theories of HCI, Part 2</p> <p>Readings: Required:</p> <ol style="list-style-type: none"> 1. Preece, J. (2000) Online Communities, ch. 5-6. <p>Choose 1 of 3:</p> <ol style="list-style-type: none"> 2. Monk, A. (2003) Common Ground in Electronically Mediated Communication: Clark's Theory of Language Use. 3. Perry, M.(2003). Distributed Cognition. 4. Kraut, R. (2003) Applying Social Psychological Theory to Problems of Group Work. 	Sept 22	<p>Topic: Elaboration of HCI Theories</p> <p>Due: Human Subjects test</p> <p>Undergraduates</p> <ul style="list-style-type: none"> • Discuss Theories • Project team work <p>Graduate student seminar</p> <p>Readings:</p> <ol style="list-style-type: none"> 1. Clark & Brennan (1991) Grounding in Communication.
6	Sept 27	<p>Topic: Social Networks</p> <ol style="list-style-type: none"> 1. Barabási, A-L. (2003). Linked, ch. 3-4, pp. 25-54. 2. Horn et al (2004), Six Degrees of Jonathan Grudin, CSCW'04. 	Sept 29	<p>Topic: Social Networks</p> <p>Undergraduates:</p> <ul style="list-style-type: none"> • Social network analysis • Implications for HCI <p>Graduate student seminar:</p> <ol style="list-style-type: none"> 1. Granovetter (1973). The strength of weak ties.

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7	Oct 4	Oct 6
<p>Topic: Social Informatics and Social Navigation as a Philosophy of Design</p> <p>Due: Research Proposal and Human Subjects Application for graduate students.</p> <p>Readings</p> <ol style="list-style-type: none"> 1. Kling, R. (1999). "What Is Social Informatics and Why Does it Matter?" D-Lib Magazine 5(1) 2. Erickson and Kellogg. "Social Translucence: Using Minimalist Visualizations of Social Activity to Support Collective Interaction." In Designing Information Spaces, pp. 17-41. 3. Konstan, J.A., Riedl, J. "Collaborative Filtering: Supporting Social Navigation in Large, Crowded Infospaces." In Designing Information Spaces, pp. 43-82. 		<p>Topic: Social Informatics and Social Navigation</p> <p>Undergraduates</p> <ul style="list-style-type: none"> • Recommender system analysis <p>Note: meeting at Stone computer classroom at Mann Library</p> <p>Graduate student seminar</p> <ol style="list-style-type: none"> 1. Pew Internet & American Life Project. "America's Online Pursuits: The Changing Picture of Who's Online and What They Do." 2. Spence, R. Information Space Navigation: A Framework." In Designing Information Spaces, pp. 405-426.
Oct 11		Oct 13
<p>Fall Break</p>		<p>Topic: Guest speaker: TBA</p>

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8	Oct 18	Oct 20
<p>Topic: Designing HCI</p> <p>Readings:</p> <ol style="list-style-type: none"> 1. Stewart & Travis (2000), Guidelines, Standards, and Style Guides, in HCI Handbook, pp. 992-1005. 2. Gaver, B., Dunne, T. and Pacenti, E. (1999). Cultural Probes. <p>Optional readings:</p> <ol style="list-style-type: none"> 3. Button, G. and Dourish, P. (1996). Technomethodology: Paradoxes and Possibilities. 		<p>Topic: Designing HCI</p> <p>Undergraduates:</p> <ul style="list-style-type: none"> • Website design analysis <p>Note: meeting at Stone computer classroom at Mann Library</p> <p>Graduate student seminar</p> <p>Readings:</p> <ol style="list-style-type: none"> 1. Rosson & Carroll (2000). Scenario-based design, HCI Handbook, pp.1032-1048. 2. Muller (2000). Participatory Design: The Third Space in HCI, HCI Handbook, pp, 1052-1065.
9	Oct 25	Oct 27
<p>Topic: Research and evaluation, part 1</p> <p>Readings:</p> <ol style="list-style-type: none"> 1. Jeffries, Miller, Wharton, Uyeda (1991), User interface evaluation in the real world: a comparison of four techniques, CHI'91. <p>Choose 2 out of 3:</p> <ol style="list-style-type: none"> 2. Atwater & Babaria (2001). CHARM – Controlled experiments 3. Kuter & Yilmaz (2001). CHARM – Survey Methods 4. Ceaparu (2001). CHARM – Logging & automated metrics 		<p>Topic: Evaluation</p> <p>Due: progress report</p> <p>Undergraduates:</p> <ul style="list-style-type: none"> • Questionnaire design <p>Graduate Student seminar</p> <p>Readings:</p> <ol style="list-style-type: none"> 1. McGrath, J. (1994). Methodology matters: Doing research in the behavioural and social sciences.

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10	Nov 1	Nov 3
	<p>Topic: Research and evaluation, part 2 Guest speaker: Janet Vertesi</p> <p>Readings: 1. Sosnoski, J. J. (1999). Configuring as a Mode of Rhetorical Analysis. 2. Millen, D. (2000). Rapid Ethnography: Time Deepening Strategies for HCI Field Research.</p> <p>Optional reading: 1. Nardi et al (2004). Why We Blog. Communications of the ACM, 47, 12.</p> <p>Additional resource possibly relevant to group projects: 2. Burke & Kirke (2001). CHARM – Ethnographic methods</p>	<p>Topic: Evaluation</p> <p>Undergraduates: • Field research techniques</p> <p>Graduate Student seminar</p> <p>Readings: 1. Karat, J. (2003) Beyond task completion: Evaluation of affective components of use.</p>
11	Nov 8	Nov 10
	<p>Topic: CSCW – Computer Supported Cooperative Work Guest speaker: N. Sadat Shami</p> <p>Readings (2): 1. Grudin, J. (1994) Groupware and social dynamics: Eight challenges for developers. Communications of the ACM, 37(1), 93-104. 2. Bos, N.D., Shami, N.S., Olson, J.S., Cheshin, A., Nan, N. (2004) In-group / out-group effects in distributed teams: An experimental simulation. In Proceedings of the ACM Conference on Computer Supported Cooperative Work 2004, New York: ACM Press.</p>	<p>Topic: CSCW</p> <p>Undergraduates: • Analyze project group collaboration and use of technology</p> <p>Graduate student seminar: 1. Ackerman, M.S. (2000). The Intellectual Challenge of CSCW: The Gap Between Social Requirements And Technical Feasibility. Human-Computer Interaction, Vol. 15, 179-203.</p>

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12	Nov 15	Nov 17
	<p>Topic: Context-aware and mobile computing</p> <p>Readings (choose 2 of 3):</p> <ol style="list-style-type: none"> 1. Dryer, D., Eisbach, C. Ark, W. (1999). At what cost pervasive? A social computing view of mobile computing systems. 2. Burrell, Gay, Kubo, Farina (2002). Context-Aware Computing: A Test Case. 3. Perry, M. et al. (2001). Dealing with mobility: understanding access anytime, anywhere. 	<p>Topic: Context and Ubiquitous Computing</p> <p>Field trip to the Johnson Museum of Art</p> <p>Graduate student paper critique (choose 1 of 2):</p> <ol style="list-style-type: none"> 1. Dourish, P. (2003). What we talk about when we talk about context. 2. Abowd, G. & Mynatt, E. (2000). Charting Past, Present, and Future research in Ubiquitous Computing.
13	Nov 22	Nov 24
	<p>Topic: Future directions and wrap-up</p> <p>Readings: TBD</p>	<p>Thanksgiving</p>
14	Nov 29	Dec 1
	<p>Project Presentations I</p>	<p>Project Presentations II</p>
<p>Final deadlines:</p> <p>Monday, Dec 5: Undergraduates: Final project submission Graduates: Paper submission for review</p> <p>Thursday, Dec 15: Graduates: Final paper submission due to DIS and instructors</p>		