This document is still in progress, but is close to done.

Fall 2010, 3 credits
Web: https://confluence.cornell.edu/display/HCIFA10
Email: infocomm3450@cornell.edu. Use this unless your mail is directed to a specific instructor.
Prerequisites: COM/INFO 2450 (pre or co), or permission of the instructor.
Schedule: See the course website.

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Course overview

This course is about understanding key issues in the design of computer systems meant to be used by people. HCI shares a number of features with other design disciplines, including the need to make tradeoffs among a number of desirable goals in order to create effective solutions to important problems while respecting constraints.

In HCI, the constraints come from many sources, most of which are not technical. Human capabilities, user goals and attitudes, and the context of use shape interfaces and interactions as surely as great technology and creative graphic design. This course will build a base of useful knowledge of the factors that shape interaction design, as well as introduce students to processes that help designers consider these factors when building systems.

Goals

The overriding goal in this course is for each student to creatively and thoroughly examine topics related to human computer interaction. There are multiple objectives intended for a wide variety of student backgrounds and goals including:

- Forming an awareness of a broad range of HCI issues that arise when developing systems people will use.
- Learning useful design process activities that help designers remember to consider the issues learned above.
- Building a vocabulary around design that will help you communicate with users, other designers, and yourself when doing design.
- Synthesizing design concepts from a variety of sources, from academic literature to the web.
- Evaluating and critiquing designs in a number of ways, at all stages of the design process.
- Developing a system's interaction design in the scope of a major group project.

Note: this course is primarily about teaching the design process and the high-level issues, rather than specific aspects of interface building (e.g., GUI design, web design, icon design, graphic design). We will devote a small amount of time to these topics but they are not the focus of the course. A hands-on studio course in interface/interaction design would be a lot of fun, but as far as I know we don't have one at Cornell. INFO 1300/2300 has some design thoughts, especially around the web. Architecture, DEA, and Art all have design studio classes as well.

Expected workload

High. This is a project-oriented class, and you can expect to spend about 10 hours/week outside of class in reading and assignments. Every semester, I get comments that the workload is a little too high for a three-credit class. But in general, I find that people learn skills and processes best by doing them, and that takes time. So, we will.

There are four required texts for the class. One is a cheap book that you should already have or be buying for INFO/COMM 2450, the others are available online. I'm tired of mediocre, expensive textbooks.

- Donald Norman, The Design of Everyday Things. Everybody should read this book. Give it to friends when you're done with it.
- Clayton Lewis and John Rieman, Task-Centered User Interface Design. This is fairly readable, and useful; the task-oriented approach isn't exactly what we cover in 3450, but it's a broadly similar process, and knowing a set of related tools is useful.
- Usability.gov is a useful resource for info on both design processes and techniques, and also has a new bit about Research-Based Web Design and Usability Guidelines that I'll be integrating into the class when appropriate.
- Joel Spolsky, User Interface Design for Programmers. There's a print version of this as well that's probably nicer and handier (and has more stuff), but we'll only require parts I can find on the web.

You may also enjoy some of these optional books and other resources:

- Alan Cooper, Robert Reimann, David Cronin, About Face 3: The Essentials of Interaction Design. Cooper is highly opinionated, and talks in much more detail about specific design elements than we will. His stuff on processes, however, is pretty dry, and we don't spend enough time on the other parts to justify me making you buy it.
- Steve Krug, Don't Make Me Think! A common Sense Approach to Web Usability. It's a fine book about design, web design in particular, that some folks will have seen through earlier courses in the INFO sequence.
- Robin Williams' The Non-Designers Design Book is also a sweet book on design.

This is not an exhaustive list of potentially interesting books, but it's enough for now.

Readings will be posted on the course website at least a week in advance. We will try hard to supplement our readings from websites, blogs, and a few research papers. Do the required readings; ignore them at your peril. They will help you learn and do better on projects, and you're expected to use concepts from the readings in your own work. More on that next.

Graded assignments

Your grade will have a group and an individual component that take place roughly in parallel throughout the semester. The group component has one mini-project (10%) and one maxi-project (30%). If you are not able to commit the time to work with a group on a regular, ongoing basis this semester, you should consider taking 3450 at a better time. Individual work will include completing and commenting on design assignments and readings (20%), a midterm and final exam (25% combined), and "participation" based on attendance and completing in-class activities, self and group evaluations, and instructor discretion (15%). More details below.

Mini-project one: user-centered idea generation around an instructor-specified topic

This project happens from weeks 3-6. Its main goals include:

- Generating creative project ideas in a given domain.
- Discovering how users really do things in that domain, and how they react to your ideas.
- Capturing user reactions in the form of personas and scenarios.
- Sketching a number of ideas and realizing one as a series of storyboards that lay out the basic interactions with the system.

The plan is that you will work in teams of 4 to generate an interesting design project idea on a topic that we will broadly specify. More details will be posted on the website well in advance of its due date. The tentative plan is to use a version of the [CHI 2011 student design competition](http://chi2011.org/authors/sdc/index.html) problem, about systems that help people understand and appreciate differences from others, but with less restriction on length and more emphasis on elements we focus on in class.

We'll do group assignments at the end of week 2 based on information you give us about your skills, work habits, available times for group meetings, major, class level, and preferences for specific partners. We will make the case that good HCI is interdisciplinary in nature and that teams with members from a variety of backgrounds have advantages. Then you can judge that for yourselves. :)

One of my pet peeves about group projects is that instructors typically give little guidance about how to interact or proceed, and that we rarely monitor the relative contributions of individuals, leading to slackers, people who work too hard, and other annoying outcomes. Although we still will only give minimal instruction on this, you will conduct regular group evaluations where you tell us -- and each other -- how the group is functioning. Further, groups may change their membership between the mini- and maxi-projects.

Maxi-project: designing and evaluating System Z

This project takes place from week 6 until the official final time of the class (yet to be determined). Its main goals include:

- Reinforcing and practicing skills from the mini-project.
- Refining your design from a low-fidelity design to a prototype suitable for testing with users.
- Using a number of evaluation techniques we will cover to discover potential flaws in designs.
- Conducting user testing, and learning both about your design and about how people react to interfaces you build. This can be humbling.
- Creating a project portfolio that you can take pride in, and take to potential employers.

The main group project involves designing an interface that helps address a problem or satisfy a need that your group chooses. Groups will choose a problem to address and design the system's interactions, following an iterative design process we will teach in class and based on material from the readings. This will involve a number of activities:
Brainstorming ideas for problems and systems, then choosing a problem and justifying the choice. As part of this process, you need to identify actual, honest-to-goodness users who might benefit from a solution to the problem, and who you will stay in contact with throughout the project.

Identifying users, learning from them, and capturing this information in the form of thumbnail sketches of prototypical users ("personas"), along with creating stories of how they might use the system ("scenarios") at various levels of detail to help guide your design.

Developing a set of initial design sketches and choosing one to go forward with.

Creating a higher-fidelity version of the interface, and critiquing other groups' interfaces.

Evaluating your design using a standard set of interface heuristics ("heuristic evaluation") and using that feedback to create further iterations of your design.

Testing your design with real users and creating a fourth and final iteration.

Creating a final project writeup describing the evolution of your design across the semester.

More details on the requirements for the group projects will be given as the semester progresses. You will be busy, with group deliverables about every two weeks along with your individual work. These deliverables will not be graded. The focus is on using them to help you make progress and to generate material that you can get feedback on before incorporating it into the final writeup, without the pressure of being graded. You'll also be meeting with the instructional staff on a regular basis to talk about ideas and issues, to help you make progress.

Not all groups will implement working fully versions of their designs, though I hope groups with strong implementation skills will work toward this, and it is one way to add value to your final writeup.

Individual work

In a perfect world, we'd spend more of our time in a studio mode where we present and comment on each other's work. We'll do some of this in class, but we'll do much of it online through assignments that ask you to critique and redesign interfaces, to comment on others' critiques and designs, to ask questions and make comments on the readings, and to find and comment on occasional interesting HCI-related material. The main goals of these assignments are:

- Practice designing and critiquing skills.
- Demonstrate that you're thinking about the class, and help you think about it.
- Get plenty of feedback
- Have you on the lookout for interesting HCI-related material in the world.
- Practice thoughtful writing.
- Create a collection of work you could use as a basis for a full-fledged design portfolio to demonstrate your skills.

The core will be a series of required assignments that you'll post to your own page online, about two every three weeks. About half of the entries will be critiques plus sketches for improving existing designs, popularly called the "Hall of Fame/Shame exercise". Others will ask you to find and comment on "interesting material", defined very broadly. This could include pointers to and comments on useful websites, examples, or tools that you find related to the course, additional hall of fame/shame critiques, thoughts about your own projects or work in the course, writeups of HCI-related speakers or events around campus that you attend, or anything else that is class-related and shows you are thinking. Toward the end, these assignments will be aimed at helping you make progress on group projects, asking you to do individual-sized chunks that you will then combine to form group deliverables.

In addition, you'll be expected to make (at least) 12 thoughtful comments on either the readings or other people's assignments. Your own assignments should also, of course, be thoughtful. "Thoughtful" doesn’t mean "long", it means "thoughtful" -- showing that you thought about the thing you commented on, giving value to the poster, explicitly connecting your comments to ideas and vocabulary from the class, etc. Good questions can be thoughtful, and so can good answers. We recommend that you get started on this early in the semester, both so you can fine-tune your notion of thoughtful, and so you can get done before the crush of the end-of-semester tide comes upon you.

Midterm and final exams

Both are take-home, open-book, open-net, but to be done alone. The goals are to evaluate learning, to help you learn more, and to have fun, at least as much as an exam is likely to be fun. The midterm will be due shortly before fall break. The final will be due at our official final exam time.

Participation/instructor discretion

This will to some extent amplify the grade for individual work; it will also include occasional in-class exercises and quizzes, attendance (class is a venue where your group will often have time to meet, and you are expected to be here every time), other evidence of participation such as participating in HCI-related experiments and attending talks, and on elements from the self and group evaluations you write.

Grading

Grading scale

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<th>Letter</th>
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Deadlines

Assignments are due when called for. Doing them up to a week late means you get token points, maybe 50%; doing them after that or not doing them at all means zero, and danger for your instructor discretion grade as well. No exceptions except in case of emergency. If a deadline is a hardship for quite a few people (e.g., it conflicts with major test days in other classes that many people are taking), tell me in advance and try to get me to change it for the entire class. In-class assignments can't be made up. Come to class.

Grade disputes

We will try hard to make grading criteria available along with assignment requirements. You're entitled to a good explanation of why you got the grade you did. However: grading is occasionally subjective, errors are sometimes made in both directions, and in the end it balances out. If you see patterns of unfairness across multiple assignments, then you should talk to me.

Policies

Collaboration, academic integrity, cheating

Group assignments are meant to be worked on in groups. They are not meant to be done by one person without review and passed off as the group's work.

Individual assignments are meant to be worked on alone.

In both cases, looking things up and getting ideas from other sources is okay, if you cite. Plagiarism (copying of others' work and attempting to pass it off as your own) is not. If you’re not sure, you should be worried — and you can always ask. Check out http://plagiarism.arts.cornell.edu/tutorial/index.cfm for more info, but in this class, it will mostly boil down to not copying from sources verbatim, and pointing to any web resources you reference or access when you write or do your projects.

Cheating is lame. It cheapens the experience, and I hate that. If it occurs, I will deal with it in accordance with University policies. That likely means a lowered grade and a report to the office of academic integrity. Don’t be That Student. Check out Cornell’s code of academic integrity for more info.

Incomplete and withdrawals

Withdrawing from the course after groups have been formed is a serious step that will have a negative impact on your teammates; please decide early if you wish to drop the course.

As for incompletes, here's a excerpt of an official Cornell statement.

"The symbol of Incomplete is only appropriate when two basic conditions are met:
1. The student has substantial equity at a passing level in the course with respect to work completed;
2. The student has been prevented by circumstances beyond his/her control, such as illness or family emergency, from completing all of the course requirements on time."

You don't want to take incompletes. They rarely work well, often lead to academic chicanery, and are especially problematic in a class based on a semester-long group project. So don’t plan on getting one, unless something drastic happens to you in the last three weeks of the semester.

Other policies

I respect and uphold University policies and regulations pertaining to the observation of religious holidays; assistance available to the physically handicapped, visually and/or hearing impaired students; plagiarism; sexual harassment; and racial or ethnic discrimination. You are advised to become familiar with the respective University regulations and are encouraged to bring any questions or concerns to my attention.