While many organizations have outsourced the design of production systems, the recent Internet and e-commerce explosion has created the need to design corporate web sites. These sites are being developed by people of various backgrounds, but organizational practices must exist to make sure they take into account what we know about human factors engineering.

The course will focus on how to gather requirements, achieve a usable first draft, and test and improve the draft. Tools such as Publisher or Dreamweaver can be used for course projects. This year the course is designed to be more flexible, offering many options for earning your grade.

Instructor: Dennis Galletta

Texts:

- Te’eni, Carey, and Zhang: Human-Computer Interaction: Developing Effective Organizational Information Systems, 2007
- Norman, Donald A. The Design of Everyday Things, New York: Doubleday (256 pgs)

Other readings: A few additional readings each class, along with extensive web references. Many will report studies in our labs. Some might be replaced if a newer paper is finished in time for the course.


Grading

Undergraduate: Only attempt exactly 125 points
Graduate: Only attempt exactly 150 points

**Required** (all students):
- Attendance/participation........................................................................................................ 25
- Weekly Mini-Projects (all 5 @ 5).......................................................................................... 25
- Weekly quiz based on reading assignments for the week (best 4 @ 6) + 1 pt.)........... 25

**Menu:** (Undergraduates choose any two; Graduates choose any three)
- Book review....................................................................................................................... 25
- Weekly Research Reality Checks (weeks 1-5 @ 5).............................................................. 25
- Integrated Design project .................................................................................................... 25
- YouTube project................................................................................................................. 25
- Research project design (especially for students headed to a PhD program)............. 50

Final Syllabus – only minor changes/updates
Schedule

**Week 1:**

June 28: Chapter 1: Introduction
June 28: Chapter 2: Organizational and Business Context

June 30: Galletta (2006) reading
June 30: Galletta, Durcikova, Everard, Jones (2005) reading

**Week 2:**

July 5: Chapter 3: Interactive Technologies
July 5: Chapter 4: Physical Engineering
July 5: YESTERDAY: Watch Xerox Star videos on Youtube:
  - Part 1: [http://www.youtube.com/watch?v=Cn4vC80Pv6Q](http://www.youtube.com/watch?v=Cn4vC80Pv6Q)

July 7: TODAY: Watch Jef Han’s Multitouch video from 2006
[http://www.youtube.com/watch?v=QKh1Rv0PIOQ](http://www.youtube.com/watch?v=QKh1Rv0PIOQ)
Watch the Xoom video
[http://www.youtube.com/watch?v=BGtXmtAzzQw&feature=related](http://www.youtube.com/watch?v=BGtXmtAzzQw&feature=related)
July 7: Norman, chaps 1-2
July 7: Quiz 1
**July 7: Due: Bad Forms project**

**Week 3:**

July 12: Norman, chaps 3-5
July 12: Chapter 5: Cognitive Engineering
July 12: Chapter 6: Affective Engineering
July 12: Carroll reading
July 12: Everard & Galletta (2004-2005) reading

July 14: Bewley et al. reading
July 14: Chapter 7: Evaluation
July 14: Chapter 8: Design Principles and Guidelines
July 14: Quiz 2
**July 14: Due: Future Interaction submission project**
Week 4:

July 19: Field trip to Fidelity: Meet in classroom and leave promptly at noon

July 21: Gould and Lewis reading
July 21: National cancer Institute (browse the site to see basically what is there)
July 21: Koyani, Bailey, and Nall: Web design Guidelines (become familiar with the resource)
July 21: Quiz 3
July 21: Due: User Misunderstanding project

Week 5:

July 26: Chapter 9: Tasks in the Organizational Context
July 26: Chapter 10: Componential Design
July 26: Vessey & Galletta (1991) reading

July 28: Chapter 11: HCI Development Methodology
July 28: Chapter 12: Interpersonal Relationships, Collaboration, and Organization
July 28: Norman, chaps 6-7
July 28: Quiz 4
July 28: Due: Text Screen project

Week 6:

Aug 2: Media Lab Tour: Meet at classroom and leave promptly at noon

Aug 4: Chapter 13: Social and Global Issues
Aug 4: Chapter 14: Meeting the Changing Needs of IT Development and Use
Aug 4: Shirky and Carr reading
Aug 4: Jagatic et al. reading
Aug 4: Boss & Galletta (2010) reading
Aug 4: Quiz 5
Aug 4: Due: Icon Design project

Final session

August 9: Due: Book Review, YouTube, Integrated Design, and Research Project Design Presentations (all students must attend; presentations are due for those who chose these assignments)
Weekly Mini-Projects (5 points each):

**Bad Forms**
Most people encounter forms at least a few times per month, in everyday situations such as buying a car, ordering goods online, visiting a medical doctor, etc. Students in Universities probably encounter more forms than others. Some of those forms require a bewildering amount of repetition, require large amounts of text in very small areas, and require responses to undecipherable questions.

Your job is to find an example of a form you have seen and have judged to be terrible. Please download, screen capture, or scan and submit the form electronically. Please do not divulge confidential information to the class. That is, the form should either be blank or any material filled out redacted.

We will discuss in class potential defenses for the use of such forms, origins of the problems, and perhaps see another side of the issue. The goal is for you to better understand the genesis of design problems and ultimately avoid creating such problems for others.

**Future Interaction**
Your task is to search for depictions of future technology and pick out what you believe is most representative of how you would like to interact with home and/or office technology in the foreseeable future. Don’t get too wild: That is, don’t invent the obvious ultimate machine that would read your mind and do everything not only that you think of, but also what you fail to think of. Present your findings to the class. We will have an informal vote to see whose technology is most exciting.

What is required:

1. Identify and show a short video to the class. The ideal length would be 5 minutes to provide focus, but the absolute limit will be determined by the subject matter. You can get the video from any source, including YouTube, vendor sites, movies, etc. If you want to show part of a DVD, please note the precise time the segment begins.

2. Provide a list of advantages afforded by this technology. Tell us what problems this technology will solve. Refer to our list of outcomes we would want in improving the user experience. What will be faster? More accurate/effective? Less effortful/stressful? More interesting/fun? Easier for intermittent use?

3. Now, go past the hype and spoil our excitement. What will be slower? Less accurate/effective? More effortful/stressful? Less interesting/fun? Easier to forget how to use it?
User Misunderstandings

There is a famous story about a user not being able to find the “any” key on his keyboard, so he called tech support to find out what to do when the documentation said to “hit any key.” Another story tells us about the person who broke the “cupholder” on his computer and called tech support. It was determined that the “cupholder” was actually a CD tray.

These stories have been published on line in the past. A good source is the “Computer Stupidities” page at http://www.rinkworks.com/stupid/. Your job is to find the funniest story you can, and then share it with the class. We might vote on the best of the stories. You are permitted to use any other resources on line or in print to find such stories.

Usually the reason for these funny situations is a result of an interaction between user misunderstandings and design choices.

The deliverable is for you to:

- Read your story to the class. Videos are also welcome.
- Point out the design choices and misunderstandings you believe might have led to the funny situation.

For example, the “any key” person could not differentiate between key words and common words, and the designer of the documentation did not realize that people need to differentiate the two. The “cupholder” person was not familiar with the concept of a CD-ROM, and the designer decided to leave a round hole in the bottom for mechanical engineering reasons.

Text Screen Design

The goal of this assignment is for you to try and apply some of the screen design issues discussed in the text, and to discover how difficult it is to design even a simple output screen. We will use software to evaluate your screen, however, your grade will be assigned by your instructor.

You are to develop ONE information (not input) screen that contains the requisite information (see below). The contents of the screen should be a customer’s order, and should show:

- identifying information like company (filling the order) name and system/screen information;
- all pertinent customer information like name, billing address, and shipping address;
- all pertinent item information like description, price, quantity and product number showing exactly 8 items purchased;
- system information like how to get help, how to continue, what choices there are, etc.

Please submit a text file that is 80 “columns” (characters) wide by no more than 22 lines. Name your file "HCI: (your name) SCREEN.TXT". Do not use a proportionally-spaced font (use Courier or similar font). Ideal for this would be Notepad with Courier Font. Keep track of spacing by using a line at the top 123456789012345...etc and then delete that line after you finish. Do not use boldfacing, italics, or
underlining. Do not use any design tools that create graphic images or proprietary file formats. Finally, do not pad spaces with a letter such as “X” (eg., John DoeXXXXXXXX).

In class, we will evaluate the screen using software developed by Tullis (yes, our potential guest speaker), described in the reading, on an LCD projector.

Icon Design

Most people encounter graphical user interfaces these days, which include icons that a person must recognize and click. For example, in Microsoft Word, there is a printer icon that looks like a little printer. These icons do not just “happen,” and are often the result of careful design, rigorous testing, and endless modification.

The Bewley, et al. reading discusses computer icons for the Xerox Star, predecessor to the Apple MacIntosh. After reviewing these materials, you should have a good idea of the difficulties involved in designing icons. You will be using a graphics program (to be identified later) to design the icons. The objectives of this assignment are twofold: (1) to give you some practice in, and understanding of the difficulty involved in designing an icon, and (2) to give you some practice in, and understanding of the difficulty involved in making it legible in a tiny space on the screen.

Before you begin the steps below, choose any competitive Mac or Windows spreadsheet package (such as Excel or Lotus 1-2-3). Scan all of the icons and notice (1) how much meaning is expressed in each one that captures its function, (2) how well differentiated its drawing is from the other icons, and (3) how creative it is in expressing its specialized meaning. Your icons will be given points by me and by your peers on each of these criteria (meaning, differentiation, and creativity) in creating your three icons. Note: You need not provide the actual macro; in class we will only focus on the three icons themselves.

An icon editor called "Iconedit" is the best bet for this assignment. Please cruise to Iconedit.com or download.com, search for "iconedit" and download and install it. It is a 3 megabyte download. If you use another program, a 32x32 size is perfect for the assignment. Any larger and it is a less useful assignment.

Required:

1. Create an icon that would center a title line on the screen, assuming the user has highlighted the range containing the cell (at the left) in which there is a title, and the cells over which it is to be centered.

2. Create an icon that would (given the user has selected a range) sum all columns and sum all rows in the selected range, placing the row totals to the right of each row of the range and placing column totals at the bottom of each column under the range. (Many spreadsheets have this simple format...for example, in a list of products sold with each product as a row and each month as a column, this macro will create totals for each product across the months and each for each month across products.

3. Create an icon that would allow the user to select a range with column/row totals, and have the spreadsheet make sure the column totals equal the row totals.
Optional Reality Checks (25 pts)

Your assignment is to seriously evaluate relate a good portion of the readings in this course to your own working or personal life, and to think towards the future.

To satisfy this assignment, provide a list of “gems” for any two of the readings each week, one from a chapter reading and one from an article. These gems should NOT be bulleted lists of content of the article, but rather your own assessment of what is useful from the particular reading. I do not have a length requirement but I believe it is important to at least fill up a page (double-spaced) with your observations. A typical length for this assignment in the past has been 2 pages, but I will not “weigh” your submissions.

An excellent submission would provide (1) a short synopsis of what you got from the reading, (2) what you believe is valuable and why, (3) how practitioners could benefit from the material, (4) a particular situation that you were in that would have been different if the parties involved would have read it, (5) shortcomings of the study/chapter: what is missing, and (6) future research that you think should be done in the subject area.

You do not have to address all 6 items in each submission, as some will not apply. Also, don’t hesitate to be creative with this assignment.

Optional Book Review (25 pts)

Buy, rent, or borrow (but do not steal) any one of the following books. Other similar books are also permitted with the permission of the professor. Titles are first-come, first-served and no two students should cover the same book. Notify the professor of your choice by the 3rd class session. Provide a written (3-5 page) review and a short (approximately 10 minute) presentation to the class that describes:

- The main issues covered by the book
- What is particularly valuable about the book
- What seems to be missing or problematic in the book

The titles, in alphabetical order:

*Alone Together: Why We Expect More from Technology and Less from Each Other* by Sherry Turkle

*Designing Personalized User Experiences in eCommerce* (Human-Computer Interaction Series) by Clare-Marie Karat, Jan O. Blom and John Karat

*Designing Interfaces* by Jenifer Tidwell

*Designing Interactions* by Bill Moggridge

*Emotional Design: Why We Love (or Hate) Everyday Things* by Donald A. Norman
Optional YouTube Project (25 pts)

Working in a group of 3-5 people, your assignment is to provide a 6-minute (minimum) to 10-minute (maximum) video that provides instruction on any core topic in this course. PLEASE use a little humor, but on a modest basis or it might dilute your material too much or it might become unfunny. Please choose one of the following topics (and inform me of your choice so we do not have duplicates) or seek pre-approval from me for a topic of your choice:

- How to do a usability test in a web context
- Summary of your usability test of two competing websites
- Importance of usability engineering in designing an organizational website
- OBJECTIVE usability comparison of Android, iPhone, and Windows Phone 7 (I will look for a balanced presentation and will downgrade you if you are one-sided).
- OBJECTIVE usability comparison of Mac and Windows platforms (Again, a balanced presentation is required)
- What web designers should know about interface design
Optional Integrated Design Project (25 pts)

Working in a group of 2-4 people, develop an actual, working system (web site or installable program; a simulation via PowerPoint might also be acceptable depending on our resources; we will decide during the first class session) that will solve a real organizational problem. Provide the following:

1. Context of the design: Why is the system needed? What tasks will be aided by the system?
2. User needs: Specify the user’s stated needs that you discovered by interviewing users.
3. System design: Provide the sketches and narrative that helped formulate the system design.
4. Build the system: Use any tools to build the system, such as Visual Studio.net, Dreamweaver, Microsoft Publisher, Office Live, Frontpage, or others. PowerPoint might also be acceptable; this will be decided during the first class session.
5. Evaluate the system design by using members of the other team. They will also need you to do the same for them.
6. Provide a list of modifications that were made or that would be made in the future.

Optional Experimental Research Project Design (50 pts)

Particularly useful for doctoral students or those intending to become doctoral students, an experimental research project should be designed. Please choose the topic only with the professor’s approval. There is an opportunity to work with the professor after the course is finished to actually conduct the study and publish the results. Carrying out the study is purely optional and will be outside the scope of the course (not graded). The end-product should be a proposal for a study that has:

- A research question with a convincing context (why it is important; what problem it will address)
- Previous literature related to the question
- A theoretical context: what might be predicted and why
- Hypotheses motivated by the problem, the previous literature, and the proposed theory to use
- A description of what methodology should be used to test the hypotheses
- Any materials to be used for testing in the laboratory