IRLS575-791 User Interface and Web Site Design

Updated Mon, 08/24/2009 - 19:00

COURSE NAME, NUMBER AND PREREQUISITES:

User Interface and Web Site Design.

IRLS475/575 Section 791

[Prerequisite: IRLS 504 or consent of the instructor.]

Instructor: Martin Frické

Attached Course Outline

COURSE DESCRIPTION:

"Online instructional course on User Interface in Information Systems, Human Computer Interaction, and Web Site Design and Evaluation." (3 credit hours)

General overview

To adapt Ranganathan: information is for use. Nowadays, much of stored or recorded information is available electronically, and typically it is accessed through computers and networks, for example, by means of web sites. So the User often meets the information at the interface between humans and computers. The academic discipline of Human-Computer Interaction (HCI) studies exactly this interface.

This course offers instruction in a) the User Interface in Information Systems, b) Human Computer Interaction, and c) the design and evaluation of 'information' web sites. (Not all web sites aim primarily at presenting information-- some are for entertainment, many are for commerce. These types of sites are not considered in this course.)

HCI itself addresses the problem of designing composite systems, of humans and computers, which are both safe and efficient. This is an extremely important problem these days because everybody is a User. [30 years ago, computers could have all sorts of interface shortcomings because only experts used them and the experts could use their skills to overcome the difficulties. But now we are all Users, and we don't want difficulties!]

When looking at HCI, four considerations, and their interactions, are prominent

- human capabilities. These include physical and cognitive issues: what folk can do with their hands, eyes, and brains. Humans are highly variable, and have cognitive strengths and weaknesses (for example, humans have poor memories yet good abilities to recognize patterns in a visual scene).
- the technical features of the computing machines. Principally what the computer presents, and receives by way of
input and output; and the style of the interaction between the User and the computer. For example, an older computer might be able to take input only from a keyboard, and give output only to a printer-- in which case, human-computer interaction would be similar to a dialog or conversation (these days the possibilities are far richer with, for example, mice for input and sophisticated visual displays for output).

- the tasks being undertaken. For example, there is a world of difference between typing in a document for word processing, and producing some architectural drawings using a CAD/CAM package. Additionally, a modern trend is that of moving from the single user-- single interface to group working and multitasking (for example, computers are used extensively now in the cockpits of commercial aircraft and in that setting there is a team of humans interacting with several computers).
- the environment. What is the work, or task, setting? What are its physical and socio-cultural characteristics? (For example, it is unwise to use sound input or output in a noisy setting; another example, it is unwise to expect children to spell keywords perfectly for a Search in an Online Public Access Catalog in a library.)

The academic backdrop to HCI

Many academic disciplines have a role to play in the theories behind HCI and Web Site design, including:

Cognitive psychology

- to provide knowledge of what users can and cannot be expected to do
- to identify and explain the nature and causes of some of the problems that Users encounter
- to supply modelling tools and methods to help build interfaces that are easy to use

Social psychology (social knowledge)

- to offer knowledge of context of use
- to identify and explain how people work together and to suggest which computer systems are needed to support collaborative working
- to provide frameworks for social interaction and conversation (which, in turn, can form the basis of some HCI frameworks)

Organizational psychology (organizational knowledge)

- to provide models of processes and structures in organizations
- to identify 'trouble spots' in organizations which stop computers being used optimally
- to supply methods for design and evaluation of new technologies that are being introduced into the work settings

Computer Science, to offer the theories and practices (and software and hardware)

- to transform the information from the input devices into input that the computer can make use of
- to transform the output from the computer into a form suitable for the output devices
- to produce the computing environments to host the favoured interaction style

Ergonomics

- to match the physical characteristics of the devices with the physiological characteristics of the User
- to consider special considerations for Users with disabilities (eg. what kind of mouse is suitable for a User with arthritis)
- to consider safety issues connected with the Users being injured (RSI etc.)

Linguistics

- to understand language issues
- to design syntactically simple, yet semantically powerful and unambiguous, language fragments
- to help with iconic or diagrammatic languages

Artificial intelligence

- to leverage the abilities of both the User and the computer
to suggest agents, knowbots, wizards, intelligent help systems, and intelligent interfaces

Philosophy

• to help using its dispassionate, deep, and clear analysis of problems

Sociology, and Anthropology

• to identify how different people, of different cultures, behave, individually and in groups, when carrying out tasks using computers

HCl, in sum

HCl is a multi-disciplinary field encompassing cognitive psychology, social and organizational psychology, computer science, ergonomics, linguistics, artificial intelligence, philosophy, sociology and anthropology.

HCl is concerned with the design, evaluation, and implementation of interactive computer systems and study of major phenomena surrounding their use.

Web Site design

Web site design augments HCl-- it applies and extends the principles of HCl in a special case. To make a rough and ready distinction. Plain stand alone computers tend to calculate what they offer, whereas web sites are part of a network or networks and tend to retrieve information they, or others, already have and offer that. So the design of web sites can put an emphasis on the organization of information, on information architecture (IA), and the management of information. The design of web sites brings into play traditional library science skills.

How this course will be taught

This is an online course taught virtually at a distance using the Web. The course is conceived of as discussions on 15 (or so) topics. A lecture course in the University of Arizona amounts to 37 1/2 hours of instruction spread through a semester. Our 'discussions' will be the virtual counterpart of 30 (or so) one and a quarter hour lectures, delivered at a rate of two a week. There will be notes, readings, discussion groups, chat, and (of course) assignments.

The course has a start date and an end date, and the class as a whole will move through the course together. The primary means of introducing the scholarly material will be Notes. These are going to be posted one at a time steadily through the session, keeping the whole class moving forward through the material. There are 20 plus sets of Notes, and these normally will be delivered at a rate of two a week (usually put up on a Tuesday and a Friday). There will be assignments, with due dates, and formal discussions, and these will serve to check progress. There also will be readings or references to be followed up on the Web.

Almost all interactions will be asynchronous. That is, students can log on whenever they wish, and read material and post replies on timetables that suits their individual needs. A student will typically need to log on about 5 times a week. (An analog here is email-- most folk check their email at least five times a week.)

The students will also be placed in groups of about 4 students and there will be some groupwork. (There are two main reasons here. One central problem for distance education is the 'sense of isolation' that students can feel-- being a member of a small group is one counter to this. Second, the course itself in part studies groups using computer technologies to achieve group goals-- course groupwork gives a student direct experience of this task.)

d2l (desire to learn) is used as the instructional and course management environment. Students who enrol in the course will be given an account. They will be able to log in to their account via the Learning Technologies Center E-Learning Portal. d2l has facilities for internal email, and this will be one way to contact the Instructor or the Graduate Assistant Teacher (GAT).

Students are expected to log on reasonably regularly, to read and study the Notes and references, to participate in the online discussions, to interact by email (and other means) with their fellow students, to write (or otherwise answer) the assignments, to download and upload files (this will be taught), and to carry out various other activities. It is hard to anticipate accurately how much time all these course related activities will take in total (and such a figure would vary
from student to student and from week to week), but seven hours a week is a rough order of magnitude estimate.

The course will start in earnest a few days after the start of the semester. The d2l software can detect when students log on, and when most of the students have shown that they are present by logging on, the Instructor will get the course underway.

COURSE OBJECTIVES:

Successful completion of this course will help students achieve the A3 competency (outlined at http://sirls.arizona.edu/about/studentCompetencies). More specifically, by the completion of this course, you will:

- know the cognitive capabilities of humans, in individuals and groups, as they relate to interacting with computers
- know the typical input, output, and interaction-style features of computer systems
- know how human-computer systems are designed and evaluated
- be able to evaluate Web sites that have the goal of presenting information
- be able to design the organization, information architecture, and layout for such Web sites
- have experienced the presentation of information by many common systems for the computer mediated communication of information

It is not an objective of this course to teach a student how to code, to program, or to use a development system for producing Web sites. In fact, no technical skills are presupposed by this course, and none are taught in it.

REQUIRED COURSE MATERIALS:

Students need online access, either by way of their own computers and Internet connection or by public access means (such as those provided in Public Libraries or in on campus labs).

There is no set text for the course. And online materials are available either directly on the Web or through password protected electronic reserves at the library (http://eres.library.arizona.edu with password xxx)

COURSE REQUIREMENTS:

The course requirements are

- coursework
- participation
- groupwork (assessed for the IRLS575 students only)
- final examination (optional for extra credit).

The coursework requirement will be, by default, two papers, one due about 2 weeks and the other 4 weeks into the course, at times to be announced in class. The intention, though, is that this course will in part be doing interface and web site design, rather than just talking about design. In which case, approved practical projects or group presentations would be welcome substitutes for one or both papers.

The participation requirement is that you contribute to the online discussion groups or forums. You can meet this requirement by posting at least 5 times during the semester. We do not want these forums to be cluttered up by folk posting when they have nothing to say. But you should have something to say from time to time, and we would like to hear it.

Some groupwork will be set. These will a small project undertaken by you working in teams. So called 'groupware'-- for example wikis, chats, decision support systems, social networking software, etc-- are an increasing important area of computer software. The groupwork will require you to use groupware, and thus have direct experience of some examples of it.

The optional final examination will be a take-home exam, of two hours duration for the IRLS575 students and of one and one half hours duration for the IRLS475 students. It will be distributed electronically about August 1st and has to be returned by August 8th.

For both the IRLS475 and the IRLS575 students, the coursework will count for 60% of the final grade, the participation
10%, and the groupwork 30%. If a student does the optional final, it will be worth 30% overall and the grade for that final may be used to improve one grade the student obtains for exactly one of {either of the two papers the student has done in the coursework, or for the groupwork}. [Sitting the optional final can only improve a student's overall grade, it can never lower the grade.]

COURSE, SCHOOL, AND UNIVERSITY POLICIES:

Academic Code of Integrity

Students are expected to abide by The University of Arizona Code of Academic Integrity, see . 'The guiding principle of academic integrity is that a student's submitted work must be the student's own.' If you have any questions regarding what is acceptable practice under this Code, please ask an Instructor.

Accommodating Disabilities

The University has a Disability Resource Center. If you anticipate the need for reasonable accommodations to meet the requirements of this course, you must register with the Disability Resource Center and request that the DRC send me, the Instructor, official notification of your accommodation needs as soon as possible. Please plan to meet with me by appointment or during office hours to discuss accommodations and how my course requirements and activities may impact your ability to fully participate.

Assignment Policies

- Submission: The papers are to be submitted usually by the d2l assignment Dropbox, which can be found as a link on the toolbar. (A less preferable alternative is by d2l internal email to the Instructor, put, for example, 'Assignment One' as the subject and send the assignment either as the message or as an attachment to the message. Pure electronic documents need to be either plain text or formatted using HTML (just 'Save As' HTML using your favourite word processor).
- Format, style and content: Content is all important in this course. Style should be plain and transparent (be guided by the classic Strunk and White Elements of Style). If English is not your native language, and you would like some assistance, please contact the Instructor. The format is unimportant, except that it should be html.
- Late papers: There will be due dates and students are expected to meet them. With an online course like this, difficulties can arise (such as computers or d2l being temporarily out of service) and appropriate decisions will be made as needed.

Incompletes

The 1997-8 University of Arizona General Academic Manual, p.23 reads

The grade of I may be awarded only at the end of a semester, when all but a minor portion of the course work has been satisfactorily completed. The grade of I is not to be awarded when the student is expected to repeat the course; in such a case the grade of E must be assigned. Students should make arrangements with the instructor to receive an incompete grade before the end of the semester ...

If the incomplete is not removed by the instructor within one year the I grade will revert to a failing grade.

GRADING:

The following scales will be used

For IRLS475 students

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<thead>
<tr>
<th>Internal</th>
<th>For the University</th>
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<tbody>
<tr>
<td>85-100%</td>
<td>A</td>
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<tr>
<td>65-84%</td>
<td>B</td>
</tr>
<tr>
<td>below 65%</td>
<td>C</td>
</tr>
</tbody>
</table>

For **IRLS575** students

The following scales will be used

<table>
<thead>
<tr>
<th>Internal</th>
<th>For Graduate School</th>
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</thead>
<tbody>
<tr>
<td>90-100%</td>
<td>A</td>
</tr>
<tr>
<td>80-89%</td>
<td>B</td>
</tr>
<tr>
<td>below 80%</td>
<td>C</td>
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General **grading criteria**: For ordinary papers, and unless specified otherwise, you should write about the equivalent of four pages of ordinary text (ie about 1200 words). Grammar, style, or spelling are not central-- provided the paper is understandable and the faults are not so severe as to be a distraction. Then, important grading criteria include:-

- clear articulation of your views and arguments
- soundness of what is said
- appropriate appeal to evidence
- clear and concise exposition of the points you are making
- consideration of intellectual context and relevant literature

How to find out your grades: d2l has two main ways to help a student find grades. There is a link on the toolbar named 'Grades' which, if clicked on, will display all the grades. Second, if a student clicks on a submitted and graded assignment in the Dropbox, the grade, and feedback comments from the Instructor, will be displayed.

**INSTRUCTOR NAME AND CONTACT ADDRESSES:**

Please raise queries by email. When the course is up and running, and you are a registered student, use the course's internal email (this is best for me as it keeps material related to this course in one place). Failing that, use ordinary email to mfricke(AT)u.arizona.edu .

There will be an online office hour, during which I will be available in a Chat room. This will be at a time to suit you students, but it may well be an evening at 7pm MST.
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