

Human-Computer Interaction Course Description

The "Human-Computer Interaction" course (HCI) presents material on human aspects of interaction design, on technological aspects of interface design, and design methodologies. The laboratory component is intended to study design in practice. Exercises include practicing design and data gathering techniques, critiquing existing packages and, constructing interface elements.

In the Computer Science curriculum at SIUE HCI course is a required course. It is taught each fall and spring term, which are 15-week semesters. The course enrollment is usually between 15 and 30 students. The course is usually taken in the student's junior year just prior to the Senior Project Capstone Course. This provides students with the basis for performing the design work in their capstone projects. The Senior Project course at SIUE is a team project experience spanning two semesters. Projects are solicited from the University and Local community. Students are expected to carry out the entire project from initial requirements gathering to implementation and deployment. Because these are actual projects with non-computer professional users it is important that the students understand how to interact, gather data, and design with users who do not have a technological background. For more information and examples of the Senior Projects please visit www.cs.siue.edu/SeniorProjects/.

The prerequisite to the HCI course is "Interaction Programming". This course provides the students with an understanding of event driven program, graphical user interfaces (GUI), and one language to program GUI's. This is a second language course for the students, so entering this course they are expected to know one high level programming language. At present Microsoft's Visual Basic is being used in the Interaction Programming course. Students though are not restricted to using Visual Basic for their project in HCI.

Required Texts

Bringing Design to Software, Terry Winograd, ed., Addison-Wesley, 1996.

Contextual Design, Hugu Beyer & Karen Holtzblatt, Morgan Kaufmann, 1998.

Objectives:

- To study theory and methods of the design of interactions between people and computers.
- To learn and practice methods of conceptual modeling.
- To learn and practice techniques of participatory (customer-centered) design.
- To Think Differently.

Organization

- The course will consist of lectures, small group discussions, individual assignments, and group assignments.
- Each class member will participate in a team design project. Teams will consist of 3 students. The team is expected to meet project deadline milestones.
- Each class member is expected to participate in small group discussion and exercises. Discussions will be over course reading material. Reading questions will be in preparation for discussions. To receive credit for the reading questions you must be in attendance for the group discussion.

Grading

Assignments & Reading Questions	30%
Midterm Exam	20%
Final Exam	20%
Design Project	30%

Overview of Topics

Contextual Design	Steps in the design process including data gathering, interpretation, user modeling, brainstorming, paper prototyping, and usability testing.
Ethnographic Techniques	User Observation, user interviewing, validating data, transcribing video tape, and writing field notes
Psychology of HCI	Knowledge representation, mental models, conceptual modeling, perception, and memory constraints
HCI Design Concepts	Including use of metaphors, icon design, affordance, visibility, feedback, constraints, heuristic evaluation
Organization and Visual Composition	Including consistency, simplicity, readability, use of color, grouping, alignment, use of borders, symmetry, use of white space, and balance
Social and Ethical Implications	Including professional ethical responsibilities and design for disabilities.

Project Description

The students in the HCI class are expected to complete a semester long design project. The project is given to them in a high level description with very little hard specifications. Working in teams of 3 or 4, the students are expected to do observation and interview studies of potential users, model the data gather, consolidate the individual models to a user population, brainstorm a design idea, test a paper prototype, and create a high fidelity prototype.

Users are solicited volunteers from introductory computer science courses. They are offered extra credit for participation. Each HCI student is required to interview/observe 2 potential users. So, a design team of 3 will have data gather from six people. This gives them a good basis for design. The interviews last between 45 to 60 minutes, so the amount of time the introductory CS students spend is very nominal. After creating a paper prototype, the design team is required to test the prototype with three of the interviewees. This provides them both with a way to refine their design and to validate their ideas.

The focus of the projects is tasks general enough that a general population will have some experience to provide useful information. For example one project focused on creating a time management system geared toward academic studies, and another focused on an application for creating academic schedules.

Milestones corresponding to the steps in the Contextual Design process are set to provide students feedback during the process and to insure they are making progress.