

# Course Information Sheet

## CSCI 4800

### Human-Computer Interaction

#### **Brief Course Description** (50-words or less)

Issues in the design, development, and evaluation of user interfaces for computer systems. Concepts in human factors, usability, and interface design, and the effects of human capabilities and limitations on interaction with computer systems.

#### **Extended Course Description / Comments**

This course is an introduction to Human-Computer Interaction and focuses primarily on user-centered design techniques. Students will work on a semester-long team-based project, identifying a problem in a novel domain, interviewing users, and subsequently develop and test prototype solutions.

This course is also cross-listed with CSCI 6800, the graduate version of this course.

#### **Pre-Requisites and/or Co-Requisites**

This course is part of the BS-CS Teamwork Requirement; students In CSCI 4800 are required to work in teams of size greater than 2.  
CSCI 1302  
Software Development in Java

#### **Approved Textbooks** (if more than one listed, the textbook used is up to the instructor's discretion)

Author(s): Shneiderman & Plaisant  
Title: Designing the User Interface  
Edition: 5th  
ISBN-13:

Author(s): Sharp, Preece, Rogers  
Title: Interaction Design  
Edition: 3rd  
ISBN-13:

Author(s): Norman  
Title: Emotional Design  
Edition:  
ISBN-13:

#### **Specific Learning Outcomes (Performance Indicators)**

This course presents an introduction to Human-Computer Interaction. At the end of the semester, all students will be able to do the following:

1. Apply the principles of user-centered design, via group projects, in formulating user interface prototypes in novel domains.
2. Create a hierarchical task analysis to analyze and specify which tasks should be supported in a user interface
3. Gather design requirements from users and conduct a requirements analysis
4. Describe the paradigm shifts in HCI and explain the causal factors for each.
5. Develop and implement a testing plan for evaluating a user interface design
6. Develop and implement benchmark testing
7. Generate several user interface design alternatives that satisfy a set of

- user requirements
- 8. Use programming or a software package to create prototypes
- 9. Assess and compare the success of a user interface along multiple dimensions
- 10. Evaluate the trade-offs of usability considerations (e.g. novice vs experienced users, efficiency) in all stages of the design process.

**Relationship Between Student Outcomes and Learning Outcomes**

		<i>Student Outcomes</i>										
		a	b	c	d	e	f	g	h	i	j	k
<i>Learning Outcomes</i>	1	•	•	•	•	•						•
	2		•									•
	3		•									•
	4	•										
	5		•									•
	6		•									•
	7		•									•
	8	•	•									•
	9		•									•
	10		•									•

**Student Outcomes**

- a. An ability to apply knowledge of computing and mathematics appropriate to the discipline.
- b. An ability to analyze a problem, and identify and define the computing requirements appropriate to its solution.
- c. An ability to design, implement, and evaluate a computer-based system, process, component, or program to meet desired needs.
- d. An ability to function effectively on teams to accomplish a common goal.
- e. An understanding of professional, ethical, legal, security and social issues and responsibilities.
- f. An ability to communicate effectively with a range of audiences.
- g. An ability to analyze the local and global impact of computing on individuals, organizations, and society.
- h. Recognition of the need for and an ability to engage in continuing professional development.
- i. An ability to use current techniques, skills, and tools necessary for computing practice.
- j. An ability to apply mathematical foundations, algorithmic principles, and computer science theory in the modeling and design of computer-based systems in a way that demonstrates comprehension of the tradeoffs involved in design choices.
- k. An ability to apply design and development principles in the construction of software systems of varying complexity.

**Major Topics Covered**  
(Approximate Course Hours)

3 credit hours = 37.5 contact hours  
4 credit hours = 50 contact hours

Note: Exams count as a major topic covered

HCI Historical Perspectives	5-hours
Introduction & Need for HCI	
Paradigm Shifts	
Historical Figures	
Major Milestones	
Human-Factors	3-hours
Cognition	
Sensation and Perception	
Motor Skills	
User-Centered Design	11-hours
Stakeholder Analyses	2-hours
Brainstorming Exercises	2-hours
Design Alternatives	2-hours
Prototyping	2-hours
Testing & Evaluation Plans	3-hours
User Interface Design	13-hours
Guidelines & Expectations	2-hour
User Experience	2-hours
Platform UI Guidelines	1-hour
Interaction Paradigms	1-hour
GUI Programming	5-hours
Help & Documentation	1-hour
Errors	1-hour
Data Collection Techniques	7-hours
Interviews	
Surveys	
Observational Techniques	
Controlled Studies	
Cognitive Models	
Cognitive Walkthroughs	
Thinkaloud Study	
Task Analyses	
Data Analyses	
Groupwork	4-hours
Special Topics	3-hours
Miscellaneous	1-hour
Examinations	3-hours

**Assessment Plan for this Course**

Each time this course is offered, the class is initially informed of the Course Outcomes listed in this document, and they are included in the syllabus. At the end of the semester, an anonymous survey is

administered to the class where each student is asked to rate how well the outcome was achieved. The choices provided use a 5-point Likert scale containing the following options: Strongly agree, Agree, Neither agree or disagree, disagree, and strongly disagree. The results of the anonymous survey are tabulated and results returned to the instructor of the course.

The course instructor takes the results of the survey, combined with sample student responses to homework and final exam questions corresponding to course outcomes, and reports these results to the ABET committee. If necessary, the instructor also writes a recommendation to the ABET committee for better achieving the course outcomes the next time the course is offered.

**How Data is Used to Assess Program Outcomes**

Each course Learning Outcome, listed above, directly supports one or more of the Student Outcomes, as is listed in "Relationships between Learning Outcomes and Student Outcomes". For CSCI 4800, Student Outcomes (a) through (e), and (i) are supported.

**Course Master  
Course History**

Dr. Christopher Plaue

05/2000	Course Introduced in CAPA
02/2012	Course Information Sheet Prepared
04/2012	Change of Pre-Req from 2720 to 1302
12/7/2012	Course added to BS-CS Teamwork Requirement block