C S 485 / 515: User Interface Design
TTh 4:00–5:15pm, Science Hall 113, Fall 2013

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office hours: M 2:00–4:00pm; W 1:30–2:30pm, 4:00–5:00pm; & by appointment; Science Hall 136

teaching assistant: Ping Hou; phou@cs.nmsu.edu

office hours: TTh 2:00–4:00pm & by appointment, Science Hall 143

required text:
Rogers, Y., Sharp, H., Preece, J. *Interaction Design: Beyond Human-Computer Interaction, 3rd ed.* Wiley. 2011.

online texts:
You will be expected to read a number of texts provided directly online and/or via the ACM Portal Digital Library. Note that to access the ACM Portal, you must be on campus, proxied through the NMSU network, or have a paid subscription to the Portal. You are responsible for access.

optional texts (available from library reserve):
Tufte, E.R. *Envisioning Information.* Graphics Press. 1990.
Norman, D.A. *The Design of Everyday Things, 1st ed.* Basic Books. 2002.
Lazar, J., Feng, J.H., Hochheiser, H. *Research Methods in Human-Computer Interaction, 1st ed.* Wiley. 2010.
Itten, J. *The Art of Color, Revised ed..* John Wiley & Sons. 1997.

course description: In this course, we will learn techniques for designing, building, and evaluating computer interfaces with a human-centered approach. We will learn best practices and known design principles. The course begins with a heavy reading load from the primary textbook (plus a few choice excerpts from other sources). In this time, we cover many of the basics of HCI, engage in a few short design projects, and develop a larger individual project that includes a substantial coding component. After the mid-term exam, the reading load tapers off, when our attention focuses on the final team project and papers selected from the HCI community. Throughout the semester, graduate students supplement the course material by reading and presenting the best papers from recent years of the *ACM Computer-Human Interaction Proceedings* (undergraduates may do the same for extra credit).

course objectives: At the conclusion of this course, will be able to:

- Describe, analyze, and/or critique a device interface using a design vocabulary.

- Enact a human-centered process of interaction design by gathering data using mixed methods; developing a design based on data and employing best practices; iterating the design through testing and further data gathering; and evaluating the results.

- Conduct human-computer interaction research by proposing, developing, and conducting experiments; analyzing data; and developing synthesized results from analyzed data.

- Communicate designs and evaluations through presentations, demonstrations, and reports.

Students will also develop knowledge of:

- Known design principles in interaction design.

- Techniques to gather data and evaluate designs.

- A cursory view of the latest in interaction design research.

prerequisites: This course involves reading, designing, and coding. You are *expected to be a competent coder* in at least one language that you can use to develop assignments. Requires a C or better in C S 371 or consent of instructor.

code policy: This course does not have a required programming language; you are assumed to be a competent coder in at least one. Because your instructor and/or TA may not be proficient in your chosen language, you *must* make your code as clear as possible! It must be styled appropriately (use liberal whitespace, use appropriate indentation, etc.) and should be extensively, but not excessively, documented. Failure to do so is grounds for losing points.

reading / quizzes: The reading requirements for this course are heavy and you are responsible for reading all materials prior to class. Graduate students are required to do additional reading from the latest ACM Computer-Human Interaction Proceedings, as specified in the Reading++ column. Undergraduates are encouraged, but not required to, read these papers as well. **For every day with a reading assignment, daily quizzes will be used to assess reading and will be available via Canvas until the start of class each period. Missed quizzes cannot be made up.**

grad / bonus paper presentations: Graduate students will present papers from the current HCI literature throughout the semester, as found under the Reading++ column of the schedule. At the beginning of class we will set aside time for the presentations. By the second week of class, we will assign the readings to graduate students. **All graduate students are expected to make two presentations of long papers; short papers count as 1/2 a presentation.**

Of the remaining unselected papers, **undergraduates may contact the professor at any time in advance of the class day to present an upcoming paper and potentially receive bonus points on his/her final average**. These presentations are graded in the same was as graduate paper presentations. If there is more interest than papers available, we will select additional readings to accommodate students, assuming there is time left in the semester to provide adequate time for the class to read the paper and for the student to present. (For example, if 5 undergraduates ask to present papers on the last day, most likely only the first two or three will get the opportunity; it is recommended you select in advance.)

A separate assignment document will outline the rubric and timing for paper presentations.

presentation questions: Over the course of the semester, students are expected to ask questions of the presenters (in addition to generally engaging in class discussion). **All students must ask**

at least 2 questions of the presenters over the course of the semester to achieve full credit on the Presentation Questions / Class Participation component of her/his grade. Students are encouraged to be strategic about this, as there will be time for no more than 2–3 questions per presentation. Students may find it best to read and/or skim interesting papers and prepare questions in advance.

Presentation questions should be thought of as preparation for an academic/industrial/professional conference. When asking a question of a speaker, the student should raise her/his hand. When called upon, the student should stand up, announce his/her name and institution, then ask the question.

attendance / class participation: Attendance is expected at every class, unless the class is released to work on class projects. Students should be present both physically and mentally, asking questions, discussing, and not otherwise engaged (in a device). A student with more than two unexcused absences will lose points from the Presentation Questions / Class Participation component of his/her grade.

assignments: Students are expected to turn in assignments *before* class on the day specified in the assignment, as specified in the assignment description (usually via Canvas). Frequently, this constraint is a logistics issue, as students will present work in class. Late work will be accepted, but with a 10% penalty *per day* late. Note that this means if you were to present in class and fail to do so, you will face a 20%–50% penalty, depending on when class meets next. Some assignments may include a bonus component; this bonus applies only to the assignment and cannot push an assignment's grade beyond 100%.

Graduate student assignments may have modifications from the base undergraduate assignments (generally there is more to do).

grading: Grading will be carried out by the instructor and/or TA, who will make every attempt to return grades as soon as possible after assignments are turned in. Mid-term grades will be made available, upon request, prior to the final drop date.

grading rubric: Your rubric depends on whether you are taking the graduate version of the course (C S 515) or the undergraduate one (C S 485). The graduate rubric includes an additional assignment of reading and presenting current HCI papers in class. It also weights the team project more heavily than the undergraduate version. Undergraduates have the opportunity to earn up to an additional 3% by opting in to reading and presenting a current paper from the HCI literature.

The chart below lays out the rubric; for the individual project sequence and final project sequence, the individual deliverables are broken out.

	485		515		
	100%+3%		100%		
daily reading quizzes	5%		5%		
task observation	5%		2.5%		
disconnected interaction design	5%		2.5%		
xeno affordance design	5%		2.5%		
grad paper presentations	–		7.5%		
presentation questions / class participation	5%		5%		
individual project sequence	15%		15%		(100%)
preparation		5%		5%	(33%)
needs and requirements		5%		5%	(33%)
design briefing		5%		5%	(33%)
mid-term exam	20%		10%		
final project sequence	40%		50%		(100%)
individual micro-proposal		0.8%		1%	(2%)
project proposal / refinement		4%		5%	(10%)
literature review		1.2%		1.5%	(3%)
storyboards		1%		1.25%	(2.5%)
low-fi prototype		1%		1.25%	(2.5%)
user study 1		4%		5%	(10%)
functional prototype / demo		4%		5%	(10%)
user study 2		6%		7.5%	(15%)
final presentation		6%		10%	(20%)
final report		8%		10%	(20%)
peer review		2%		2.5%	(5%)
bonus paper presentation	+3%		–		

tentative schedule:

RSP is the required textbook (Rogers, Sharp, and Preece). All other papers are available in the ACM Portal Digital Library, unless marked otherwise:

† indicates a paper available online (see References section).

§ indicates a paper on reserve with the library (**only one person can use at a time; consider reading ahead on these!!!**).

* indicates a short paper; students presenting this paper must present an additional paper with a star.

date	topic	reading	pp	reading++	pp	assignments
8/22/Th		Intro to Class				assign: Task Observation
8/27/Tu	Interaction Design Vocabulary	Norman (2002)§: ch1, 3; Tognazzini (2003)†; Bush (1945)†	75	-	0	**DUE: Task Observation** assign: Disconnected Interaction
8/29/Th	What is Interaction Design?	RSP ch1	34	-	0	assign: Grad Paper Presentations
9/3/Tu	Understanding and Conceptualizing Interaction	RSP ch2	29	-	0	**DUE: Disconnected Interaction** assign: Xeno Affordance Design
9/5/Th	Cognitive Aspects	RSP ch3	34	-	0	
9/10/Tu	Data Gathering	RSP ch7	46	Rodden et al. (2013)	10	
9/12/Th		Present Disconnected & Xeno Affordance Design / catchup				**DUE: Xeno Affordance Design** assign: Individual Project Sequence

date	topic	reading	pp	reading++	pp	assignments
9/17/Tu	Data Analysis, Interpretation, and Presentation	RSP ch8	47	Krämer et al. (2013) (Ruiqi Deng)	10	
9/19/Th	Establishing Requirements	RSP ch10	35	de Sa et al. (2013)	10	**DUE: IPS - Preparation**
9/24/Tu	Interfaces	RSP ch6	64	Zoran & Paradiso (2013)*; Pohl et al. (2013)* (Deepika Vaddi)	8	
9/26/Th	Interfaces (cont.)	RSP ch6	–	Kumar et al. (2013) (Ruiqi Deng)	10	
10/1/Tu	The Process of Interaction Design	RSP ch9	34	-	0	**DUE: IPS - Needs and Requirements**
10/3/Th	Information Visualization & Color	Tufte (1990)§: ch2–5; Arditi (2013)†; Ekperigin (2013)†	60	-	0	
10/8/Tu	Individual Demos / catchup					**DUE: IPS - Design Briefing**
10/10/Th	Mid-Term Exam					assign: Final Project Sequence
10/15/Tu	Design, Prototyping, and Construction	RSP ch11	43	Márquez Segura et al. (2013) (Stella Otoo)	10	FPS - Team Formation **DUE: FPS - Individual Micro-Proposal**
10/17/Th	Introducing Evaluation	RSP ch12	21	Erickson et al. (2013) (Deepika Vaddi)	10	

date	topic	reading	pp	reading++	pp	assignments
10/22/Tu	An Evaluation Framework	RSP ch13	20	Fitchett et al. (2013) (Stella Otoo)	10	**FPS - Final Project Proposal**
10/24/Th	Analyzing Data	Lazar et al. (2010)§: ch4, 11	49	Harpstead et al. (2013) (Alistair Gillikin)	10	
10/29/Tu	Proposal Presentations	papers for Literature Review				**DUE: FPS - Proposal Refinement**
10/31/Th	Proposal Presentations	papers for Literature Review				**DUE: FPS - Literature Review**
11/5/Tu	Evaluation Studies: From Controlled to Natural Settings	RSP ch14	28	Flatla et al. (2013)	10	
11/7/Th	Evaluation: Inspections, Analytics, and Models	RSP ch15	25	Bernstein et al. (2013) (Catherine Opondo)	10	**DUE: FPS - Story Boards; Low-Fi Prototype**
11/12/Tu	Social Interaction	RSP ch4	26	Wyche et al. (2013) (Catherine Opondo)	10	
11/14/Th	Emotional Interaction	RSP ch5	29	Hillman et al. (2013)	10	**DUE: FPS - User Study 1**
11/19/Tu	Ubiquitous	Weiser & Brown (1996)†; Abowd & Mynatt (2000)	33	Gaver et al. (2013)	10	
11/21/Th		Team Demos				**DUE: FPS - Functional Prototype**
11/26/Tu		Thanksgiving				
11/28/Th		Thanksgiving				
12/3/Tu	Location-Aware	Benford et al. (2006)	34	Bowser et al. (2013)	10	
12/5/Th	Games & Fun	Toups et al. (2009); Stach et al. (2007)	18	Jacobs et al. (2013)	10	**DUE: FPS - User Study 2**
EXAM		Final Project Presentations				**DUE: FPS - Project Presentation**
12/11/We		Turn-in				**DUE: FPS - Final Report**
12/17/Tu		Final Grades Due				

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Student Accessibility Services (SAS)
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Office of Institutional Equity (OIE)
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