CS325 – Introduction to Human-Computer Interaction

University of Massachusetts - Amherst, Fall 2017

Course Syllabus

I. ADMINISTRATION

Lecture Times (on-line): There will be two on-line lectures / week

Studio Times:
Section 01AA (41927) Monday – 4-5:15, Eng. Lab. 323
Section 01AB (41928) Wednesday – 4-5:15, Eng. Lab. 323

Instructor: Eva Hudlicka hudlicka@cs.umass.edu

Office hours: By appointment

Teaching assistants: TBA

II. OBJECTIVES

We will examine and learn about...

- Human-Computer Interaction history
- Human cognitive & perceptual capabilities & limitations; Human error
- Importance of emotions in HCI & design
- Knowing the user: user models & human-centered computing
- Requirements analysis for HCI and UX
- Design principles for HCI (UI, UX)
- Graphical design: elements & principles
- Information organization & visualization
- Understanding the design process & designing for error
- Design process
- Storyboarding & Rapid prototyping
- User modeling & adaptive HCI
- Usability evaluation
- Affective HCI & future trends in UI & UX

No prior programming knowledge required.

III. TEXTBOOKS (Some of the readings will be available on Moodle)

• "Human–Computer Interaction: Fundamentals and Practice" (ISBN: 978-1-4822-3389-6)
by Gerard Jounghyun Kim, Taylor & Francis, 2014

• "The Design of Everyday Things" (ISBN-10: 0465067107)
by Donald Norman, Basic Books, 2002

• "Designing with the Mind in Mind" (2nd Ed.) (ISBN: 978-0-12-407914-4)
by Jeff Johnson, Elsevier, 2014

• "Don't Make Me Think!: A Common Sense Approach to Web Usability - Revisited" (3rd Ed.)
(ISBN-10: 0-321-96551-5) (earlier edition is OK)
by Steve Krug, New Riders, 2014

(OPTIONAL)

• "Designing the User Interface: Strategies for Effective Human-Computer Interaction" (5th Ed.) (ISBN-10: 0321537351) (earlier edition is OK)
by Ben Shneiderman & Catherine Plaisant, Prentice Hall, 2009

- "Emotional Design: Why We Love (or Hate) Everyday Things" (1st Ed.) (ISBN-10: 0465051367) by Donald Norman, Basic Books, 2005

One of the following two books on HTML/CSS:

- "HTML & CSS Design and Build Websites" (ISBN: 978-1-118-00818-8) by Jon Duckett, John Wiley & Sons, 2011

- "HTML & CSS" (8th Ed) (ISBN-10: 0-321-92883-0) by Elizabeth Castro & Bruce Hyslop, Peachpit Press, 2014

IV. ASSIGNMENTS & GRADING

Submission Policy:

Submit all assignments via Moodle unless otherwise specified in class.
All assignments are due at 11:55pm on the due date.

Grade Breakdown:

Project 1	'Instructions'	10%
Project 2	'Observe a door'	10%
Project 3	'Reinvent a form'	10%
Project 4	'Make it better' term project	30%
Exam I	In class (closed book; closed notes)	30%
Participation	Class participation	10%

Late work policy

- Please note that midnight is in fact midnight. Work submitted after midnight is considered late.
- Work that is turned in up to a day late will be penalized 10% of the possible points.
- Work that is turned in up to a week late will be penalized 25% of the possible points.
- Work that is turned in 1 week late will be penalized 50% of the possible points.
- Work that is turned in more than two weeks after due date will not be graded.

Additional information

Teamwork

- All projects are done in teams
- You may switch teams / form new teams up until Project 4. Project 4 must be done with the same team throughout the project
- Team issues do arise – this is to be expected. You should first attempt to resolve them within the team and if this doesn't work, come see the instructor or the TA.
- Do not wait to address team issues because they can severely impact your "experience" and, ultimately, the project grade

Letters of recommendation

Please note that am not able to provide letters of recommendation for graduate schools

V. SCHEDULE (Subject to minor changes)

Date	Topics	Assignments
Sep 6	Course overview / History of Human Computer Interaction; Engagement; Teamwork	Project 1 assigned
Sep 8	Human capabilities (cognitive, perceptual, physical) (Part 1)	
Sep 11	Human capabilities (cognitive, perceptual, physical) (Part 2)	
Sep 13	Importance of emotion (Part 1)	
Sep 18	Importance of emotion (Part 2)	**Project 1 due;** Project 2 assigned
Sep 20	Generic design principles (Norman) – objects (affordances and the 'psychopathology of everyday things')	Project 4 assigned
Sep 25	Requirements analysis: "The User is Always Right" Knowledge elicitation / Task Analysis; Mental models (Part 1)	
Sep 27	Requirements analysis: "The User is Always Right" Knowledge elicitation / Task Analysis; Mental models (Part 2)	Project 3 assigned
Oct 2	UI design principles; Gestalt laws; Principles & elements of graphic design; Use of color	
Oct 4	UI Types; Designing elements of UIs – (screens, forms & icons)	
Oct 9 (01AA)	Formal Studio (Work on Project 3 – Form re-design)	**Project 2 due**
Oct 11 (01AB)	Formal Studio (Work on Project 3 – Form re-design)	
Oct 16	Film: "Objectified"	**Project 3 due**
Oct 18	Overview of the design process; Scenario-based design	**Project 4.1 due (Initial ideas)**
Oct 23 (01AA)	Exam I (In class; Cumulative through Oct 18 - Closed book – closed notes)	
Oct 25 (01AB)	Exam I (In class; Cumulative through Oct 18 - Closed book – closed notes)	
Oct 30 (01AA)	Formal Studio – ("Thinking about Project 4")	
Nov 1 (01AB)	Formal Studio – ("Thinking about Project 4")	**Project 4.2 due (RA / KE)**
Nov 6	Designing elements of UIs - (menus); Direct manipulation interfaces	**Project 4.3 due (3 Tasks)**
Nov 8	Storyboarding & Paper Prototyping & Wizard of Oz prototyping	
Nov 13 (01AA)	Formal Studio – (Presentations of project proposal - 4.3)	
Nov 15 (01AB)	Formal Studio – (Presentations of project proposal - 4.3)	**Project 4.4 due (Storyboards)**
Nov 20-27	No classes - Happy Thanksgiving!	
Nov 27	Rapid prototyping & Web design overview	
Nov 29	Usability evaluation	**Project 4.5 due (Paper prototypes)**

Dec 4	Human Error and Designing to avoid error	
Dec 6	Human Error and Designing to avoid error (cont.) Visualization and Edward Tufte's work	**Project 4.6 due (User testing)**
Dec 11	Affective computing & affective HCI; Ethical issues in HCI	
Dec 15		**Projects 4.7 & 4.8 due (Prototype + code; Presentation)**
TBA (Finals week)	Final project 4 presentations (in class – location TBA) (follow the template)	**Project 4.9 due (Presentation)**
Dec 21	Final project 4 report due (11:59pm)	**Project 4.10 due (Final report + code)**

VI. READING ASSIGNMENTS (Class schedule + readings)

Note: The reading assignments are preliminary. An updated set of reading assignments will be posted by the 2nd week of classes.

Date	Topics / Readings
9-6	Course overview / History of Human Computer Interaction
	Pew, The Evolution of Human-Computer Interaction: From Memex to Bluetooth and Beyond Vannevar Bush, "As We May Think", *The Atlantic Monthly*, July 1945 http://www.theatlantic.com/magazine/archive/1945/07/as-we-may-think/303881/ (Optional) Johnson et al., The Xerox Star: A Retrospective; Shneiderman, Chapter 1;
9-8 / 9-11	Human capabilities (cognitive, perceptual, physical)
	Proctor & Wu, "Human Information Processing: An Overview for Human-Computer Interaction", in Handbook of HCI, Sears & Jacko, 2009 Johnson, Chapters 1, 4 (pp. 37-44), 5 (49-54), 7
9-13 / 9-18	Importance of emotion
	Brave & Nass, "Emotion in Human Computer Interaction", in Handbook of HCI, Sears & Jacko, 2009
9-20	Generic design principles (Norman) – objects (affordances and the 'psychopathology of everyday things')
	Norman, The Design of Everyday Things, Chapters 1 - 4 (Chapter 7 – Optional)
9-25 / 9-27	Requirements analysis: "The User is Always Right"; Knowledge elicitation / Task Analysis; Mental models
	Requirements Analysis / Knowledge Elicitation Hudlicka, "KE Techniques Summary"; (Optional) Cooke, "Knowledge Elicitation" in Handbook of Applied Cognition
10-2 / 10-4	UI design principles; Designing elements of UIs (command languages, screens, forms, windows, icons)
	(Optional) Mullet & Sano, Chapters 2,3,4 (screen design) (Posted on Moodle) (Optional) Mullet & Sano, Chapters 6 (Icon design) Shneiderman – Chapter 12 (Section 12.4 – screen design); Section 12.5 (window design)(Posted on Moodle) (Optional) Shneiderman, Chapters 2, 6 & 7, Chapter 11 (Sections 11.4, 11.6) (Optional) Shneiderman, Chapter 11 (Section 11.7)

10-18	Overview of the design process; Scenario-based design
	Scenario-Based Design (Rosson & Carroll); (Optional) Shneiderman, Chapter 3
11-6	Designing elements of UIs - (menus); Direct manipulation interfaces
	(Optional) Shneiderman, Chapters 2, 6 & 7, Chapter 11 (Sections 11.4, 11.6) Optional) Shneiderman, Chapter 5 (Sections 5.1 – 5.3)
11-8	Storyboarding & Paper Prototyping & Wizard of Oz prototyping
	Prototyping for tiny fingers (Rettig); Storyboards and Sketch Prototypes for Rapid Interface Visualization (Curtis & Vertelney*);* Wizard of Oz Support throughout an Iterative Design Process (Dow, MacIntyre, Lee, Oezbek, Bolter, Gandy)
11-27	Rapid prototyping & Web design overview
	TBA for rapid prototyping (Optional) Shneiderman, Chapter 11 (Section 11.5); Krug, “Don’t Make Me Think” (Chapters 2, 9, 10, 11)
11-29	Usability evaluation
	Re-read Shneiderman, Chapter 1; Shneiderman, Chapter 4; User based evaluations (Dumas)
12-4 / 12-6	Human Error and Designing to avoid error
	Norman, Design of Everyday Things (Chapter 5); (Optional) Shneiderman, Chapter 14
12-6	Visualization and Edward Tufte’s work
	Readings from Tufte
12-11	Affective computing & affective HCI; Ethical issues in HCI
	Hudlicka, 2003 “To Feel or Not To Feel”, IJHCS