

Syllabus

CS 5317: Graduate Human-Computer Interaction

Spring 2017

Monday & Wednesday, 12:00 - 1:20, Liberal Arts Building 106

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Office Hours: Mondays & Wednesdays 2:40-3:45, or by appointment, and usually when the door is open

Course Objectives

Acquire the knowledge and skills needed to create highly usable software systems.
Prepare to contribute to the advancement of Human-Computer Interaction theory and practice.

Main Topics Human Perception, Ergonomics, Cognition, and Psychology
Task Analysis
User Interface Design
Interface Programming
System Evaluation

Format Lectures, student presentations, discussions, in-class design exercises, lab time, project activities, project presentations, etc.

Textbook *Designing the User Interface, 6th Edition*. Ben Shneiderman, Catherine Plaisant, *et al.*, Addison Wesley, 2017 (hereunder “sp”). We will be skipping back and forth in the book as we follow the topics listed above.

This will be supplemented by readings handed out in class. Some other good books to own are listed at the course website.

Course Website: <http://www.cs.utep.edu/nigel/grad-hci/>

Assignments There will be a number of structured assignments, designed to give experience with various usability engineering activities. Most assignments will be done in teams. Assignments due at the start of class will be collected after a one minute grace period; late assignments will receive at most two-thirds credit. Assignments are to be handed in as hardcopy unless otherwise specified. Writing quality is important, and rework may be required if it is not up to standard.

Cooperation among students and among teams is encouraged, but not to the extent that it interferes with each individual’s understanding or with learning-by-doing. Help given to and received from other students and sources should be noted in the assignment write-up.

Materials Bring the textbook to class, also unlined paper and pens or pencils of different thickness, darknesses or colors for sketches and designs.

Grading Approximate weighting:
assignments 25%
project and presentations 25%
tests 40%
quizzes and participation 10%

To achieve these weights, a point on an assignment will typically be worth 1.1 to 1.3 times as much as a point on a quiz or test. Assignments and tests will be challenging; as a result no one will ever feel completely satisfied with their achievements, but this is the nature of HCI. Grading will be on a points-earned basis (points above zero), rather than a points-off basis (points below expectation). Letter grades will be assigned accordingly; in the past, the A/B break has been around 80% and the B/C break around 70%. Grading of design projects unavoidably involves subjective judgments, but these will not be a major influence on the overall grade.

Conduct, etc. Students are expected to be punctual, and to follow the spirit and letter of the UTEP Standards of Student Conduct <http://admin.utep.edu/Default.aspx?tabid=73922>. If you have or suspect a disability and need accommodation you should contact CASS at 747-5148 or at cass@utep.edu or visit Room 106 Union East Building.

Tests will be closed-book, except that one page of hand-written notes may be brought in for the first test, two for the second test, and three for the final. If you leave the classroom for any reason, your test will be graded on only what you did up until that time. No make-up exams or assignments will be given except under the conditions set forth in the Catalog. Students are free to attend class or not, bearing in mind that absence may annoy other students, interfere with learning, and result in a lower grade.

Important Dates

January 18: Class begins
February 15: Test 1
March 13-17: Spring Break
March 27: Test 2
April 26: Test 3
May 12: Final Exam, 1:00-3:45

Tentative Schedule

1. **Course Overview** (Chapter 1) (1 day)
 1. Why Design for Usability?
 2. Historical Perspective: machinery, computers, PCs and GUIs, the Web
 3. Possible Futures

Assignment A: Analyze a Usability Problem (1hr)
2. **Observing Users** (Sections 5.3, 5.4, 5.5, 5.7) (2 days)
 1. Mindset
 2. Subject-Running Techniques
 3. Usability Studies

Exercise E: Observe Users with a GUI; Presentation (4hr)

- 3. Usability Analysis** (Chapter 3, Section 5.2) (2 days)
1. Error Handling, Error Prevention
 2. Cognitive Walkthroughs
 3. Heuristic Evaluation
 4. Usability Guidelines
 5. Choosing Among Usability Methods
- Exercise F: Evaluate the GUI Again (2hr)*
- 4. Specifying and Prototyping** (Sections 4.1-4.3) (2 days)
1. Low-Fidelity Prototyping
 2. Transition Diagrams
 3. Visual Basic Prototyping
- Exercise H: Propose a Better GUI; Presentation (2hr)*
- 5. Task Analysis, User-Centered Design** (Sections 4.4 - 4.8, 5.1, 5.6, Chapter 6) (3 days)
1. Systems Analysis (sp 1.5.3, 2.4.4, Ch 3 (esp 3.4, 3.5, 3.7))
 2. Techniques: Task Decomposition, CARD, Ethnographic Observation
 3. Allocation of Functions (sp2.3.6)
 4. Usability Engineering in the Business Context
- Exercise J: Sketch People-Icons (.5 hr)*
Exercise K: Task Decomposition (1.5 hr)
Exercise I: Ethnographic Observation (1 hr)
Exercise X: Allocation of Functions (1 hr)
Exercise G: Examine a Usability Consultancy (1.5 hr)
- Test 1
Project Concepts
- 6. Interaction Styles, Higher Cognition** (Chapters 7, 9) (2 days)
1. Metaphor (in-class exercise)
 2. Direct Manipulation
 3. Widget Survey
 4. Command Languages
 5. Other Interaction Styles
 6. Choosing Among Interaction Styles
- Exercise Q: The Unix Command Line (1.5 hr)*
- 7. Interface Implementation** (3 days)
1. Events and Handlers
 2. Development Tools
 3. Responsiveness Issues
- Exercise M: GUI Design (2 hrs)*
Exercise L1: GUI Architecture (2 hrs)
Exercise L2: GUI Implementation (5 hours)
- Project Charters
- 8. Human Perception, Information Presentation, Layout** (Chapters 8, 12, 16) (3 days)
1. Perception, gestalt perception, typography
 2. Color
 3. Graphic design
 4. Displays, Paper, and other Output Devices
 5. Forms Design
 6. Interface Design Patterns
 7. Information Visualization
- Exercise B: Static Information Presentation (1.5hr)*
- Test 2

9. **The Human Body and Device Design** (Chapter 10) (3 days)
 1. Input Devices and Ergonomics (sp 8.1-8.3)
 2. Virtual Reality (sp 5.5-5.6)
Exercise D: A Time-and-Motion study of GUI Use (2hr)
10. **Low-Level Human Cognition** (Chapters 2, 13) (1 day)
 1. GOMS Keystroke-Level Modeling (in-class exercise)
 2. Time-scales and the Illusion of Multi-Tasking (sp 1.4.2, sp 10.1-10.5)
 3. Hypothesis Testing and Statistical Significance (sp 4.7)
11. **Topics** (Chapters 11, 14; Afterword) (3 days)
 Web, Mobile, Speech and Multimodal, Groupware, Games, etc.
 Test 3
 Guest Lectures
 Research Paper Presentations
 Research Plan Presentations
 Project Time
12. **Review** (1 day)
 (sp 2.4.1)
Exercise Y: A Question for the Final Exam (1 hr)
Exercise Z: Evaluate the Course
 Project Presentations

(Note that the above time estimates for the exercises are for an efficient person working with a well-organized team)
 (A suffix of “s” on a reading means that that chapter or section need only be skimmed)