Syllabus: CSCI 431 Usability Engineering

Kevin Buffardi

February 2020

Course Description

Usability Engineering is the craft of designing and evaluating how people interact with digital interfaces. In this class, students learn qualitative and quantitative methods for conducting behavioral research to investigate human-computer interaction (HCI) and to iteratively improve user experience (UX) design. Students engage in team projects and conduct user research to design, evaluate, and revise interactive prototypes following the user-centered design process. 2 hours discussion, 2 hours activity.
Prerequisites: Junior Standing.

Instructor

Kevin Buffardi
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OCNL 220
Office Hours: TBD

Required Materials

No required textbook; **free reading materials** will be assigned and provided in class, with either public or universary library access. Readings will include

selections from (but not limited to):

- *Interaction design: beyond human-computer interaction*
  (Rogers, Sharp, Preece) ISBN: 0470665769
- *The Design of Everyday Things*
  (Norman) ISBN: 9780470185483
- *An introduction to human factors engineering*
  (Wickens, Gordon) ISBN: 0131837362
- *Handbook of human-computer interaction*
  (Helander) ISBN: 1282167200
- *Don't make me think! : Web & Mobile Usability*
  (Krug) ISBN: 9783826697050

A laptop or tablet computer is required. Mac OSX or Windows 7+ is preferred for some software we will use. *nix may be suitable as well, but mobile-specific operating systems like Android, iOS, or ChromeOS are insufficient. No software purchases required. Bring the laptop to both lecture and lab, prepared with a charged battery (and/or your charger).
Low-cost, required materials include:

- Sketch book/pad (white paper, unlined, at least 8.5x11")
- Graphite drawing pencil (black color, non-mechanical)
- Eraser

Students are responsible for all announcements as well as for taking their own notes in class. Absences should be pre-excused with the instructor and notes should be borrowed from a trusted classmate.

Note paper and writing utensils are necessary for notetaking

Learning Outcomes

By completing this course, students will be able to:

- Understand usability goals and explain how they impact user experience

- Understand and follow the process of user-centered design
- Explain the value of following user-centered design methods
- Demonstrate user inquiry methods (e.g. contextual inquiry, surveys, card sorting)
- Analyze results of user inquiry methods
- Design low-fidelity user interface wireframes
- Plan and develop prototypes for rapid-development
- Create research design for a usability study
- Create a recruitment and user test/interview protocol
- Demonstrate fundamentals of conducting a user test/interview
- Analyze findings from a user study
- Create a report of usability findings and recommendations
- Create an online portfolio that communicates their work to different audiences

In this class, students will satisfy the General Education Student Learning Outcomes (SLO):

- **Critical Thinking**
  Identifies issues and problems in human-computer interteraction by analyzing and assessing their designs, according to usability goals.
- **Active Inquiry**
  Demonstrates knowledge of usability evaluation by applying appropriate research methods and interpreting how their findings relate to human cognition and behavior
- **Creativity**
  Takes intellectual risks and applies novel approaches to designing unique solutions for user interactions.

In particular, this course fulfills the Upper Division Pathway Social Sciences (Area D) disciplinary area in accordance with the CSU General Education Breadth Requirements - Executive Order (EO) 1100:

- **Area D [...deals] with human social, political and economic institutions and behavior, and their historical background.**
  In the course, students conduct research to investigate human behavior as it relates to how users interact with technology. We also discuss how the design of technology impacts not only how an individual interacts with technology, but also how devices impact how we interact with each other – especially with the pervasiveness of social media. Students investigate both intentional and unintended consequences of how user interface design impacts human behavior.

- **Through fulfillment of the Area D requirement, students will develop an understanding of problems and issues from the respective disciplinary perspectives and will examine issues in their contemporary as well as historical settings and in a variety of cultural contexts. Students will explore the principles, methodologies, value systems and ethics employed in social scientific inquiry.**
  The course explores both historical and contemporary case studies to examine how digital design practices have evolved and to explore how to inform interaction design through behavioral research. Human behavior is influenced by our world views, previous experiences, and other contexts. The course discusses methods of inquiry such as naturalistic observations, interviews, focus groups, surveys, and contextual inquiries to understand the contexts and motivations in which people interact with technology. Students adopt these traditional methods from social and behavioral sciences as well as variations specific to human factors and human-computer interaction to understand why and how people interact with technology.

This course is also an upper-division Writing (W) course. Accordingly, the course will include:

- **Written Communication**
  Students will practice writing to communicate usability requirements to designers and developers as well as summarizing research findings for
  business stakeholders. Students will also write journal entries to communicate to broad audiences about real-life impacts of usability.

- **Critique and Revision**

Students will revise written assignments to reduce errors in grammar/syntax/punction/spelling and to improve writing techniques within the discipline. Students will also critique other students' writing in guided peer-review activities.

Assessment

Grades for this course will be determined by the following assessments, with the provided weights:

- Team Project Deliverables **(50%)**, including:
  - User Inquiry and results
  - Wireframes
  - Initial Prototype
  - User Study Protocols
  - Usability Report & Portfolio
  - Team & Peer Evaluation
- Individual Assignments:
  - In-class exercises **(20%, cumulative)**
  - Progress checks (periodic, short quizzes) **(20%, cumulative)**
  - Portfolio journal **(8%)**
  - User introduction **(2%)**

Letter grades are assigned on a 10-point scale per letter; the top 2 points for each letter earn a plus (+) designation while the bottom 2 points earn a minus (-). For example, 88-89 earns a B+ while 82-87 earns a B and 80-81 earns a B-. Fractions are rounded to the closest whole number.

Schedule

The following is a tentative schedule:
Week - Topic

1. - User eXperience (UX): Overview and Purpose
2. - User Inspection Methods & Ethics in User Research
3. - Contextual Inquriy & Task Analysis
4. - Card Sorting & Information Architecture
5. - User Personas & Storyboards
6. - Wireframing
7. - Writing user experience guidelines
8. - Low-Fidelity prototype design
9. - High-Fidelity prototype implementation
10. - User study research design & iteration
11. - Recruitment and User Test protocol design
12. - Conducting and Moderating User Tests
13. - Analyzing qualitative and quantitative data
14. - Interpreting usability recommendations
15. - Writing user study report

Accommodations

If you require any auxiliary aids, services, or other accommodations for this class, please identify your needs to your instructor by the end of the first week of class (via email or schedule an appointment in person), or as soon as you have the required documentation.

If you wish to have special accommodations due to religious holidays, please request those accommodations by the end of the second week of class. Requests made after these deadlines may not be possible to honor.

Principles

Students in this class are encouraged to speak up and participate during class meetings. Because the class will represent a diversity of individual beliefs, backgrounds, and experiences, every member of this class must show respect for every other member of this class.

I am part of the Safe Zone Ally community network of trained Chico State faculty/staff/students who are available to listen and support you in a safe and confidential manner. As a Safe Zone Ally, I can help you connect with resources on campus to address problems you may face that interfere with your academic and social success on campus as it relates to issues surrounding sexual orientation/gender identity. My goal is to help you be successful and to maintain a safe and equitable campus.