SWE 632: User Interface Design and Development

Fall 2023 **Tuesday, 4:30pm-7:10pm, Exploratory Hall L102**

Grades • Syllabus, Schedule, and Slides • Announcements, Assignments, Discussion (Piazza)

Course Overview

This course will provide a comprehensive introduction to human-computer interaction and the design and development of user interfaces, covering basic human cognition, methods for needfinding and prototyping, user-centered design, empirical and analytical methods for conducting usability evaluations, and principles for visual, information, interaction, and community design.

Learning Outcomes

- Design a UI through user-centered design
- Conduct a heuristic evaluation or think-aloud usability study to identify usability issues
- Use principles from visual, interaction, and community design to identify and address usability issues
- Improve a UI by addressing usability issues through iterative design
- Use modern web technologies to implement a UI

Required Textbooks

- Don't Make Me Think, Revisited: A Common Sense Approach to Web Usability, Steve Krug, 2014 (3rd Edition) (referenced as Krug)
- The Design of Everyday Things: Revised and Expanded Edition, Don Norman, Basic Books, 2013 (referenced as Norman)

Course Staff

Instructor: Prof. Thomas LaToza (tlatoza@gmu.edu)

Office hours by appointment.

Teaching Assistant: Divesh Upreti (dupreti@gmu.edu)

Office hours: TBA

Schedule

Preliminary Schedule, subject to change. Lecture titles link to lecture slides.

1. Course Overview and Heuristic Evaluation (8/22)

Req Readings: none

2. Human Cognition (8/29), React tech talk

Req Readings:

- Norman, Chapter 1: The Psychopathology of Everyday Things
- Norman, Chapter 2: The Psychology of Everyday Actions

HWs: HW0 due, Tech Talk signup due

3. User-Centered Design (9/5)

Req Reading:

- Norman, Chapter 6: Design Thinking

4. Contextual Inquiry (9/12)

Req Reading: Beyer and Holtzblatt, Apprenticing with the customer, CACM 38 (5)

HWs: HW1 due

5. Sketching and Prototyping (9/19)

Req Readings:

- Ko, How to Be Creative
- Ko, How to Prototype
- Ko, How to Critique

HWs: HW2 due

6. Think-aloud Usability Evaluations (9/26)

Req Reading: Krug, Chapter 9, Usability Testing on 10 cents a Day
HWs: HW3 due

7. Midterm Exam (10/3)

(10/10) – NO CLASS – FALL BREAK - NO TUESDAY CLASSES

8. Site Design (10/17)

Req Readings:

- Krug, Chapter 6, Street Signs and Breadcrumbs
- Krug, Chapter 7, The Big Bang Theory of Web Design

9. Interaction Techniques (10/24)

Req Readings:

- Krug, Chapter 10, Mobile: It's not just a city in Alabama anymore
- Krug, Chapter 11, Usability as common courtesy
- Krug, Chapter 12, Accessibility and you

HWs: HW4 due

10. Preventing Error (10/31)

Req Reading:

- Norman, Chapter 5, To Err is Human

HWs: HW5 due

11. Visual Design (11/7)

Req Reading (distributed as pdf): Mullet and Sano, Chapter 4, Designing Visual Interfaces

12. Information Visualization (11/14)

Req Reading (distributed as pdf): Card, Mackinlay, and Shneiderman, Chapter 1, Information Visualization
HWs: HW6 Due

13. Community Design (11/21)

Req Reading:

- (distributed as pdf): Kraut and Resnick, Chapter 2, Encouraging Contribution to Online Communities

HWs: HW7 Due

14. Final Presentations (11/28)

Req Reading: none

Final Exam: Tuesday, December 12, 4:30-7:10pm

Course Policies

Contacting

If you have a general question about an assignment or course content, first check piazza to see if someone has already answered your question. If not, post your question in piazza, where your question may be answered by other students or the course staff. For questions about grades, contact one of the TAs by email.

Office Hours

Office hours this semester are by appointment. Please email the instructor or course TA to make an appointment.

Readings

We will have readings from the textbooks Krug and Norman. Additionally, several readings will be chapters from other books, which will be available electronically through Blackboard. All readings are listed in the course schedule. Material covered in the readings may appear in the midterm and final exams.

Resources

The course website lists the sylabus, course schedule, and links to the lecture slides. Assignments and announcements as well as discussion will be posted on Piazza. Grades will be posted on Blackboard.

Exams

There will be a midterm exam and a comprehensive final exam. Both will be closed-book and in-class. Exams will cover material from the lectures as well

as from the assigned readings.

Makeups

Unless arrangements are worked out in advance, missed exams **cannot** be made up. As some of the HW assignments involve peer evaluations where groups give and receive feedback with other groups, late HW submissions impact not only the groups themselves but other students in the course. Thus, 10% will be deducted for late HW assignments and late HW assignments will only be accepted for 24 hours after the due date. **HW assignments submitted more than 24 hours late will receive a zero.** If you're worried about being busy around the time of a HW submission, please plan ahead and get started early.

In-Class Activities

As user interface design requires achieving a mastery of design skills, each class will include an extended in-class group activity. Each activity will result in a small deliverable, often in the form of a sketch or a list. In-class activities will each be worth 10 points and will be graded for participation as follows:
Satisfactory: put forth a good effort in accomplishing the activity's goals (10/10)
Needs improvement: substantially misunderstood the activity or did not make meaningful progress (5/10)
Not present: did not submit deliverable from activity (0/10)

To accomodate planned or unplanned absences, the three lowest scores (including absences) will be dropped.

Assignments

The homeworks in the course will be in the form of a project. You will first design and implement a simple UI in the form of a web app. Throughout the semester, you will perform peer evaluations, identifying usability issues with the UI of apps built by other students in the course. Based on the reported usability issues you receive, you will then iteratively redesign and improve the usability of your web app to address these issues. Full details for each HW can be found in the HW Assignment descriptions; the due dates are summarized in the course schedule.

You are allowed to work on the HWs collaboratively using one of two models:

1. Work on and submit all HWs independently.
2. Collaborate from start to finish on all HWs with at most two other students in SWE 632. You must submit one solution as a group for each HW. Additionally, each group member will separately submit a peer evaluation, describing the involvement of each group member (including themselves) in the HW assignment.

Note: You are **NOT ALLOWED** to include "guest names." Every person listed as a collaborator must contribute. If someone is listed as a collaborator but did not contribute, all will be given a zero on the assignment and reported to the university honor committee.

Tech Talks

Each student will be responsible for giving a short group presentation surveying a front-end web technology. Each group will consist of 3 students. See the Tech Talks posting on piazza for more details.

SWE Subject Pool

To gain experience in user studies, you will participate in the software engineering subject pool and sign up for at least 6 hours of programming user studies or complete an alternative assignment. See the SWE Subject Pool posting on piazza for more details.

Grading

In-Class Activities: 10%
Tech talk: 5%
HWs and project presentation: 30%
SWE Subject Pool participation: 10%
Mid-term exam: 20%
Final exam: 25%

Honor Code

GMU is an Honor Code university; please see the Office for Academic Integrity for a full description of the code and the honor committee process, and the Computer Science Department's Honor Code Policies regarding programming

assignments. The principle of academic integrity is taken very seriously and violations are treated gravely. What does academic integrity mean in this course? Essentially this: when you are responsible for a task, you will perform that task. When you rely on someone else's work in an aspect of the performance of that task, you will give full credit in the proper, accepted form. Another aspect of academic integrity is the free play of ideas. Vigorous discussion and debate are encouraged in this course, with the firm expectation that all aspects of the class will be conducted with civility and respect for differing ideas, perspectives, and traditions. When in doubt (of any kind) please ask for guidance and clarification.

Accommodations for Disabilities

If you have a documented learning disability or other condition that may affect academic performance you should: 1) make sure this documentation is on file with the Office for Disability Services to determine the accommodations you need; and 2) talk with me to discuss your accommodation needs.

Privacy

Students must use their Mason email account to receive important University information, including messages related to this class. See Mason Email Systems for more information.

Other Useful Campus Resources

Writing Center

University Libraries

Counseling and Psychological Services (CAPS)

University Policies

GMU Academic Calendar