

Syllabus for CS352: Introduction to Usability Engineering

- **Credits:** 4
- **Instructor's name:** Amir Azarbakht
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- **Office Hours:** By appointment only, over Google Hangouts at cs352w16@gmail.com
- **OSU catalog course description:** Basic principles of usability engineering methods for the design and evaluation of software systems. Includes the study of human-machine interactions, user interface characteristics and design strategies, software evaluation methods, and related guidelines and standards.
- **Prerequisites:** CS 161 or CS 295 or CS 151 or ECE 151

Course overview

Overall goals: This class will give you hands-on experience with usability evaluation and user-centered design. In this class you will not learn how to implement user interfaces, but rather how to design these based on the needs of users, which you will determine, and learn how to evaluate your designs rigorously. This is a class for those who wish to know more about usability, human-computer interaction, the psychological aspects of computing, evaluation, and/or experimentation.

Your project: Much of your work will be done collaboratively (online) on group projects (~4 person groups). A significant portion of your grade will be based on that team project, where you will propose, prototype (using a special prototyping tool called "myBalsamiq"), and evaluate your own solutions. There will be no programming: everything you need to prototype will be done using myBalsamiq.

Readings: It is best to do the reading before viewing the lectures. I may not go over all the reading material in the lectures, preferring to spend that time elaborating or discussing that material's implications or usage. This does not mean the assigned reading is not important, or will not be covered in a test.

Online discussions: I expect to see a healthy class discussion over every topic. Participation in online discussion will count towards your final grade. Most of the class discussion is via our Piazza website: <http://www.piazza.com/oregonstate/winter2016/cs352/>

Canvas: This course will be delivered via Canvas, your online learning community, where you will interact with your classmates and with me. Within the course Canvas site you will access the learning materials, tutorials, and syllabus; submit assignments; take quizzes; email other students and the instructor; and display your projects. To preview how an online course works, visit the [Ecampus Course Demo](http://ecampus.oregonstate.edu/services/technical-help.htm). For technical assistance, Canvas and otherwise, see: <http://ecampus.oregonstate.edu/services/technical-help.htm>.

Learning objectives

At the completion of this course, students will be able to:

1. Describe the human centered design process and usability engineering process and their roles in system design and development.
2. Discuss usability design guidelines, their foundations, assumptions, advantages, and weaknesses.
3. Describe basics of human subjects research.
4. Complete a basic human subjects research certification form.
5. Design a user interface based on analysis of human needs and prepare a prototype system.
6. Assess user interfaces using different usability engineering techniques.
7. Make an oral presentation that justifies design decisions.

Course Schedule & Topics

Instructions: For each unit, do the readings for that week first, then the rest of the items according to the numbering. Most assignments are due Sundays. Assignments due Tuesday are shaded. Quizzes are due Sunday for the simplicity of deadlines but we recommend you start them Fridays.

Example:

- In Week 1, do the readings (according to the **Weekly Reading Schedule**)
- Do Unit 2.1 (View the lecture)
- Hand in Unit 2.2 (Do the activity)
- In Week 2, do additional readings for Unit 2
- Do Unit 2.3 (Take the Quiz)
- Do Unit 2.4 (View the lecture), and so on.

The **CS352 Weekly Assignment Chart** (Page 3) contains due dates. The **Weekly Reading Schedule** is on Pages 4-5.

CS352 Weekly Assignment Chart

Week	Piazza or Canvas	Assignments & Exams	Due Date	Individual or Group	Points
1	Piazza	Introduce yourself	ASAP, Week 1	Individual	0
	Canvas	Unit 1.2: Homework 1	Sunday, Jan 10	Individual	10
	Canvas	Unit 2.2: Exercise	Sunday, Jan 10	Individual	10
	Canvas	Unit 2.3: Project Idea & Skills Survey	Sunday, Jan 10	Individual	0
2	Piazza & Email	Unit 2.5: Form Teams, Choose Project Idea (see Unit 2.4 from Week 1 for help)	Tuesday, Jan 12	Group	0
	Canvas	Unit 2.6: Quiz 1	Sunday, Jan 17	Individual	10
	Canvas	Unit 2.7: Project Documents 1, 2, & 3	Sunday, Jan 17	Group	30
3	Piazza	Unit 3.2: Interview Practice & Discussion (see Canvas Week 2 for assignment description)	Tuesday, Jan 19	Individual	5
	Canvas	Project Team Status Report	Tuesday, Jan 19	Group	5
	Canvas	Unit 3.7: Homework 2 (IRB)	Sunday, Jan 24	Individual	10
	Canvas	Unit 3.4: Quiz 2	Sunday, Jan 24	Individual	10
	Piazza	Unit 3.6: Observation	Sunday, Jan 24	Individual	5
4	Canvas	Project Team Status Report	Tuesday, Jan 26	Group	5
	Canvas	Unit 4.3: Project 4 (see Canvas Week 3 for assignment description)	Tuesday, Jan 26	Group	20
	Canvas	Unit 4.4: Quiz 3	Sunday, Jan 31	Individual	10
	Canvas	Unit 4.7: Thermostat Activity	Sunday, Jan 31	Individual	10
	Canvas	Unit 4.8: 7 Gulfs Activity	Sunday, Jan 31	Individual	10
5	Canvas	Project Team Status Report	Tuesday, Feb 2	Group	5
	Canvas	Unit 5.4: Quiz 4	Sunday, Feb 7	Individual	10
	Canvas	Unit 5.6: Project 5 (Concepts)	Sunday, Feb 7	Group	30
	Piazza	Unit 5.7: Post Concepts to Interactive Design Gallery #1	Sunday, Feb 7	Group	0
6	Piazza	Unit 6.3: Individual comments in Interactive Design Gallery #1 (see Canvas Week 5 for assignment description)	Tuesday, Feb 9	Individual	5
	Canvas	Unit 6.7: Project 6 (Eval Plan)	Sunday, Feb 14	Group	20
Mid	Canvas	Unit 6.8: Midterm (proctored)	Available Sunday through Wednesday Feb 14 – Feb 17	Individual	100
7	Canvas	Unit 6.9: Project 7 (Evaluation)	Sunday, Feb 21	Group	60
	Canvas	Unit 7.2: Attention Investment Activity	Sunday, Feb 21	Individual	10
8	Canvas	Unit 7.4: Quiz 5	Sunday, Feb 28	Individual	10
	Canvas	Unit 7.6: Project 8 (myBalsamiq Prototype)	Sunday, Feb 28	Group	40
	Piazza	Unit 7.7: Post myBalsamiq Prototype to Interactive Design Gallery #2	Sunday, Feb 28	Group	0
9	Piazza	Unit 7.8: Individual comment in Interactive Design Gallery #2	Tuesday, Mar 1	Individual	5
10	Piazza	Unit 8.1: Post Final prototype to Final Interactive Design Gallery	Tuesday, Mar 8	Group	0
	Piazza	Unit 8.2: Individual comment in Final Interactive Design Gallery	Sunday, Mar 13	Individual	5
	Canvas	Unit 8.3: Project 9 (Final Project)	Sunday, Mar 13	Group	50
	Canvas	Unit 8.4: Self & Peer Evaluation	Sunday, Mar 13	Individual	10
Finals	Canvas	Comprehensive Final exam (proctored)	Available Sunday through Wednesday Mar 13 – Mar 16	Individual	100

Weekly Reading Schedule

Week	Units and Topics	Readings (do these prior to the other items this week in that unit)	Lectures and Activities
1	+ Unit 1: Introduction to Human-Computer Interaction	+ Unit 1: Interaction design and process: Ch. 1.4-1.6 + Unit 1: (Optional): skim remainder of Ch. 1	+ Unit 1.1: Lecture: Introduction to HCI
	+ Unit 2: UI design fundamentals	+ Unit 2: Design: Ch. 2.2-2.5 + Unit 2: (Optional): skim remainder of Ch. 2	+ Unit 2.1: Lecture: PRICPE design process + Unit 2.4 Lecture: Team skills & roles
2	+ Unit 2 (cont): UI design fundamentals	+ Unit 2: Design: Ch. 9.2.3. (Skim 9.3)	
	+ Unit 3: Learning about your users	+ Unit 3: Data about users: Ch. 7-7.4, 7.6-7.6.1	+ Unit 3.1 Lecture: Formative empirical work & Interviews + Unit 3.3 Lecture: Field interviews
3	+ Unit 3 (cont): Learning about your users		+ Unit 3.5 Lecture: Observations + Unit 3.8 Lecture: Formative empirical work: Outputs
	+ Unit 4: Human capabilities	+ Unit 4: Humans: All of Ch. 3 except omit 3.3.3.	+ Unit 4.1 Lecture: Memory
4	+ Unit 4 (cont): Human capabilities		+ Unit 4.5 Lecture: Perception + Unit 4.6 Lecture: Mental Models
	+ Unit 5: Creating and working with design concepts and prototypes	+ Unit 5: Concepts & prototypes: Skim all BOXES and FIGURES of Ch. 6.2 (These have headings "Box n" or "Research and design issues".) + Read Ch. 11.2-11.3, 11.5-11.6	+ Unit 5.1: Lecture: Concepts & Prototypes
5	+ Unit 5 (cont): Creating and working with design concepts and prototypes	+ Refer to only as needed: MyBalsamiq tutorial & references.	+ Unit 5.5: Demo: Tool-Supported Prototyping
	+ Unit 6: Evaluating UIs	+ Unit 6: Evaluation: Ch 13.3, 13.5, 15.2-15.4. (Skim 12.4) (If you're using the 3rd Edition of the required textbook, use the following chapter numbers: Ch 12.3, 12.5, 15.2-15.4. (Skim 12.4)	+ Unit 6.1: Lecture: Evaluation with GOMS/KLM + Unit 6.2: Lecture: Evaluation with Heuristic Eval. & Cog. Walkthrough + Unit 6.4: Lecture: Empirical Evaluation with Users I
6	+ Unit 6 (cont): Evaluating UIs	No new readings. Midterm (proctored)	+ Unit 6.6: Lecture: Empirical Evaluation with Users II

Week	Units and Topics	Readings (do these prior to the other items this week in that unit)	Lectures and Activities
7	+ Unit 7: Foundations and strategies for UI design	+ Unit 7: "Harnessing curiosity" in ACM CHI 2003, by Wilson et al. To get this for free, go to the OSU on-line library (http://osulibrary.oregonstate.edu/), "search" for the ACM Digital Library and "Advanced search" it for the title or doi 10.1145/642611.642665. + Unit 7: (Optional: "First steps in programming" in IEEE HCC 2002, by Blackwell. To get this for free, go to the OSU on-line library (http://osulibrary.oregonstate.edu/), "search" for the IEEE Digital Library, then "search" it for the title or doi 10.1109/HCC.2002.1046334)	+ Unit 7.1: Lecture: Attention Investment + Unit 7.3: Surprise-Explain-Reward
8	+ Unit 7 (cont): Foundations and strategies for UI design	+ Unit 7: "Usability and the bottom line" by George Donahue, in IEEE Software, Jan/Feb 2001. To get this for free, go to the OSU on-line library (http://osulibrary.oregonstate.edu/), "search" for the IEEE Digital Library, then "search" it for the title or doi 10.1109/52.903161.	+ Unit 7.5: Lecture: Information Foraging
9	+ Unit 7 (cont): Foundations and strategies for UI design	+ Unit 7: "Gender differences and programming environments" by Burnett et al., in ACM/IEEE ESEM 2010. To get this for free, go to the OSU on-line library (http://osulibrary.oregonstate.edu/), "search" for the ACM Digital Library and "Advanced search" it for the title or doi 10.1145/1852786.1852824.	+ Unit 7.9: Lecture: Gender and Software
10	+ Unit 8: Practicum	+ Unit 8: (No readings.)	
Final		Comprehensive Final exam(proctored)	

Grading/Evaluation

This course requires that you take 2 exams under the supervision of an approved proctor. Proctoring guidelines and registration for proctored exams are available online through the Ecampus [testing and proctoring website](#). It is important to submit your proctoring request as early as possible to avoid delays.

Area	% of your grade
Participation (quality of participation in discussions & interactions)	5%
Assignments	10%
Quizzes	10%
Midterm (proctored)	20%
Final Exam (proctored)	25%
Project. This score is shared by the team and comes from:	30%
Progress Reports	5%
Proposal	10%
Formative research into your users and their tasks	20%
Prototype	30%
Evaluation Plan	10%
Evaluation	20%
Peer & Self Evaluation	5%

The grading scale for this class is demonstrated in the below table. Some assignments or exams might be curved, at the discretion of the instructor. At the end of the term, some borderline scores may also be adjusted due to participation quality.

Grade	%
A	93 or greater
A-	90 -92
B+	87-89
B	83-86
B-	80- 82
C+	77-79
C	73-76
C-	70-72
D+	67 - 69
D	63 - 66
D-	60 - 62
F	Below 60

Note: Inordinately low or high participation in team projects will also cause grade adjustment. This will be determined by peer estimates of how much everyone on the team contributed to the project.

Specific Grading Policies

- Online quizzes do not have time limits. The quizzes are intended to cover reading materials in the class. They are all multiple-choice questions.
- Midterm and Final are proctored exams containing short answer questions. You are allowed to use a Word processor to compose your answers before transferring them to Canvas. While they do have a time limit, it is not intended to be a stress factor. Based on prior experience with the class, the time limit is set at twice amount of time that you would normally need.
- Electronic gadgets are not allowed during the exams. It's closed book, however, you can bring one single sided 3x5 note with you for the midterm. You are welcome to fill up the front and back of the card, for the final.

Learning resources

- The textbooks will be:
 1. (Required) ***Interaction Design: Beyond Human-Computer Interaction*** by Sharp, Rogers & Preece, 4th Edition, 2015. (Available at OSU bookstore) ISBN 978-1-119-02075-2. (Note that the 3rd edition is OK, too.)
 2. (Optional) ***Simple and Usable: Web, Mobile, and Interaction Design*** by G. Colborne, 2011. (Available at OSU bookstore) ISBN 978-0-321-70354-5.
 3. (Optional) ***Rocket Surgery Made Easy*** by S. Krug, New Riders, 2010. (Available at OSU bookstore.) ISBN/SKU 978-0-321-65729-9.
- myBalsamiq prototyping tool (available online, instructor will send invitations in week 3).
- Online lectures, demos, and web locations (all free)

NOTE to prospective students: Please check with the OSU Bookstore for up-to-date DVD, course packet, and textbook information for the term you enroll (<http://www.osubookstore.com/> or 800-595-0357). If you purchase course materials from other sources, be very careful to obtain the correct ISBN.

Course Policies

- **Late Assignments:** Plan ahead of time to avoid turning anything in late. Your assignments will receive a 20% deduction in points for each day they are late for up to 3 days. We will accept late work up to 5 days after the due date, but no later.
 - **Example:** The assignment is 10 points and is due on Sunday. You did a great job and would have gotten 10 points. If you turn it in on Monday, you receive 8 points. Tuesday, 6 points. Anytime between Wednesday and Friday, 4 points. On Saturday or any day after that, the assignment would not be accepted.
- **Exam Policies:** Preparing makeup exams requires a significant effort on the part of the instructor. Consequently, no makeup exams will be given; however, important excused absences, if arranged in advance, can cause an exam to be entirely waived. Waiving of exams will generally not be given after the absence has occurred, except under very unusual circumstances. Any requests for reconsidering/regrading an exam must be made within 3 class days of the day the exam is returned. Midterm and final exams are

closed book, however, you can bring one single sided 3x5 note with you for the midterm, and one double sided 3x5 note for the final.

- **Incompletes:** Take this course only if you can commit to finishing it this term. I assign an "I" or incomplete only when there is a strong and compelling case for doing so (e.g., health reasons, military commitment). If you are having any difficulty that might prevent you completing the coursework on time, please don't wait until the end of the term; let me know right away.

Statement Regarding Students with Disabilities

Accommodations are collaborative efforts between students, faculty and [Disability Access Services \(DAS\)](#). Students with accommodations approved through DAS are responsible for contacting the faculty member in charge of the course prior to or during the first week of the term to discuss accommodations. Students who believe they are eligible for accommodations but who have not yet obtained approval through DAS should contact DAS immediately at 541-737-4098.

Expectations for Student Conduct

Student conduct: In an academic community, students and faculty, and staff each have responsibility for maintaining an appropriate learning environment, whether online (e.g., on discussion boards, email postings) or in the classroom. Students, faculty, and staff have the responsibility to treat each other with understanding, dignity and respect, and refrain from harassing behavior, personal insults, and/or inappropriate language.

Disruption of teaching, administration, research, and other institutional activities is prohibited by [Oregon Administrative Rule 576-015-0015 \(1\) and \(2\)](#) and is subject to sanctions under university policies, [OSU Office of Student Conduct](#). Student conduct, as governed by the university's policies, is explained in the [Office of Student Conduct: information and regulations](#).

Academic Integrity: Students are expected to comply with all regulations pertaining to academic honesty, defined as: *An intentional act of deception in which a student seeks to claim credit for the work or effort of another person or uses unauthorized materials or fabricated information in any academic work.* For further information, visit [Avoiding Academic Dishonesty](#), or contact the office of Student Conduct and Mediation at 541-737-3656.

Ground Rules for Online Communication & Participation:

- **Tone:** Online threaded discussions are public messages, and writings in this area will be viewable by the entire class or assigned group members, so think through your posts. If you prefer that only the instructor sees your communication, send it to me by email, and be sure to identify yourself and the class.
- **"Netiquette":** All your online communications need to be composed with fairness, honesty and tact. Spelling and grammar are very important in an online course. What you put into an online course reflects on your level of professionalism. Here are a couple of references that discuss

- Writing online: <http://goto.intwg.com/>
- Netiquette: <http://www.albion.com/netiquette/corerules.html>.
- Guidelines for our online classroom:
 - The discussion board is your space to interact with your colleagues related to current topics or responses to your colleague's statements. It is expected that each student will participate in a mature and respectful fashion.
 - Respect your peers' thoughts and opinions; ask clarifying questions when appropriate and value your peers' different knowledge that they're bringing to the class.
 - Value the diversity of the class.
 - Disagree with ideas constructively (e.g., "have you thought about how your UI supports a variety of age groups?"), but do not make personal attacks.
 - Do not demean or embarrass others.
 - Do not make sexist, racist, homophobic, or victim-blaming comments.
 - Be open to be constructively challenged or disagreed with on your ideas or prejudices. Listening to constructive criticism usually makes your ideas, projects, and ultimately your grades, better than they would be otherwise.
- Posting of personal contact information is discouraged (e.g. telephone numbers, address, personal website address).
- Please check the Announcements area and the course syllabus before you ask general course "housekeeping" questions (i.e. how do I submit assignment 3?). If you don't see your answer there, then please contact me.
- *Online Instructor Response Policy:* I will check email frequently and will respond to course-related questions within 48 hours.

Student Assistance

- **Technical Assistance:** If you experience computer difficulties, need help downloading a browser or plug-in, assistance logging into the course, or if you experience any errors or problems while in your online course, contact the OSU Help Desk for assistance. You can call (541) 737-3474, email osuhelpdesk@oregonstate.edu or visit the [OSU Computer Helpdesk](#) online.