User Experience and Extended Reality

This four-days seminar aims to teach students about fundamentals of user experience along with its application to designing extended reality (Augmented, Mixed and Virtual Reality) experiences. The seminar consists of two mini-courses focusing on these distinct topics.

Mini-course 1: Fundamentals of User Experience

Instructor: Aykut Coşkun, aykutcoskun@ku.edu.tr

Course description: Foundations of user experience (UX); definition of key terms and concepts. Introduction to UX research. Formative and summative user studies. An overview of user research methods used in UX. Introduction to UX design process and principles.

Course objectives: This mini course aims to,

- familiarize the students with key concepts in UX,
- teach the fundamentals of UX research and design,
- and help students understand the relationship between UX research and UX design.

Course outcomes: Students successfully completing this mini course will,

- be able to demonstrate an understanding of the fundamental concepts of UX research and design,
- be familiar with a typical UX research and design process,
- acquire a basic knowledge of UX research and design terminology.

Teaching method: The teaching method is based on lectures, tutorials, exercises, and interactive discussions in which students have an active role. Each day, a specific subject will be covered through various teaching methods outlined below.

· Lectures: These are interactive lectures where the instructor introduces concepts pertaining to user experience (e.g., user research, UX design) through example works.
· Tutorials: These are sessions where teaching assistants and tutors introduce the basics of digital design tools that will be used in this class.
· Exercises: Tasks in which the students are expected to apply the theoretical knowledge obtained in the lectures into practice.
· Critique sessions: These are sessions in-which students showed the results of exercises (e.g. ideas, concepts, research results and so on) to gather feedback from the instructor, teaching assistants and classmates.

Course materials: There is no required coursebook for this mini course. However, it is recommended that the students have access to a copy of the following books:

- Goodman, E., Kuniavsky, M., & Moed, A. (2012). *Observing the user experience: a practitioner's guide to user research (2nd edition). Elsevier.*
- Buxton, B. (2007). *Sketching User Experiences. San Francisco: Morgan Kaufmann.*
- Lazar, J., Feng, J. H., & Hochheiser, H. (2017). *Research methods in human-computer interaction. Morgan Kaufmann.*

Course outline

March 11, Monday 1st session 10.00-13.00

Lecture 1: User Experience (UX) Fundamentals

Lecture 2: UX space (Platforms, devices and interaction techniques in UX)

    Briefing: Introducing the UX challenge

    Exercise 1: Problem framing / group work

    2 x 10 min. breaks.

March 11, Monday 2nd session 14.00-18.00

Lecture 3: UX Research Part I (UX research basics and exploratory UX research)

    Exercise 2: Planning for exploratory research (Creating a recruitment strategy, deciding on interview procedure and questions) / group work

    Exercise 3*: Conducting user interviews and reporting interview results / individual work

    2 x 10 min. breaks.

* This exercise will start during the class and be finished as homework.

March 12, Tuesday 1st session 10.00-13.00

Lecture 4: UX Design (Design process, tools to synthesize, explore and prototype)

    Exercise 4: Creating personas and HMW questions / group work

    Exercise 5: Idea generation (Brain writing & Reversed brainstorming) / groupwork

    2x 10 min. break

March 12, Tuesday 2nd session 14.00-18.00

Lecture 5: UX Research Part II (Evaluative UX research)

    Exercise 6: Creating project descriptions / groupwork

    Project presentations

    2 x 10 min. breaks.

Mini-course 2: Designing experiences for Extended Reality

Instructor: Asım Evren Yantaç, eyantac@ku.edu.tr

Course description: Foundations of Extended Reality (XR) - Augmented, Mixed and Virtual Reality - technologies and experiences; definition of key terms and concepts. History and state-of-the-art in XR hardware and software. A walk through of XR cases from different fields; industry, healthcare, learning, culture, etc. Stages of XR design process. User experiences with major emerging topics such as; Metaverse, Intelligent Agents, Digital Twins, etc.

Course objectives: This mini-course aims to,

- familiarize the students with fundamentals of XR experiences,
- introduce the software and hardware technologies behind XR,
- and help students understand how to think for XR experiences.

Course outcomes: Students successfully completing this mini-course will,

- acquire a basic knowledge of XR terminology.
- be able to make sense of what technologies are used for an XR experience,
- be familiar with a typical XR design and ideation process,

Teaching method: The teaching method is based on lectures, exercises and interactive discussions in which students have an active role. Each of these methods work the same way as the first session.

Reading material:

Chuah, S. H. W. (2018). *Why and who will adopt extended reality technology? Literature review, synthesis, and future research agenda.* Literature Review, Synthesis, and Future Research Agenda (December 13, 2018).

Guilbaud, P., Guilbaud, T. C., & Jennings, D. (2021, July). *Extended Reality, Pedagogy, and Career Readiness: A Review of Literature.* In International Conference on Human-Computer Interaction (pp. 595-613). Springer, Cham.

Schäfer, A., Reis, G., & Stricker, D. (2022). A Survey on Synchronous Augmented, Virtual, andMixed Reality Remote Collaboration Systems. ACM Computing Surveys, 55(6), 1-27.

Books:

Greengard, S. (2019). *Virtual reality.* Mit Press.

Jason Jerald. 2015. *The VR Book: Human-Centered Design for Virtual Reality.* Association for Computing Machinery and Morgan & Claypool Publishers. http://doi.org/10.1145/2792790

Course outline

March 13, Wednesday, 1st session 10.00-13.00
Extended Reality Fundamentals (lecture)
    The Extended Reality phenomenon (Virtual, Augmented and Mixed Reality), use cases from different application areas, hardware and software technologies behind, how it works and human factors.
    2 x 10 min. breaks.

March 13, Wednesday, 2nd session 14.00-18.00
UX for XR Experiences Part II: From User Needs to Ideas
UX for XR Experiences Part I: Briefing, Research and Ideation for Case Studies
    Briefing: Definition of the group case study topics (Finance, Healthcare, Tourism, Culture, Education), defining the groups.
    Exercise 1: Research on the state-of-the-art case studies from each topic and in-group discussions. (individual)
    Exercise 2 - UX Phase 1 (personas): Creating 2 personas for each group's topic. (individual)
    Exercise 3 - UX Phase 2 (needs): Define UX methods that can be used for understanding user needs for each group's topic. Create a list of user needs for the personas. (individual)
    Exercise 4 - UX Phase 3 (ideation): Individually create at least 3 application ideas (individual)
3 x 10 min. breaks..

March 14, Thursday, 3rd session 10.00-13.00
Design for XR Experiences Part III: Ideation and Scenario Based Design
    Presentation: Presentation of individual ideas and group feedback session. (group)
    Exercise 5: Elimination of individual ideas to define the needs and requirements of one main application idea for each group. (group)
    Exercise 6: Building a detailed user scenario and a User Journey Map (UJM) for the presentation of XR application of each group. (group)
2 x 10 min. breaks.

March 14, Thursday, 4th session 14.00-18.00
Design for XR Experiences Part III: Presentation of Ideas Generated
    Presentations: 15 min presentation of UJMs, 10 min feedback for each group. 5 groups in total.
    Closing Discussions: Reflecting on the 4-day experience.
2 x 10 min. breaks.

Grading

The course grade will be based on attendance, participation in class discussions and exercises. The letter grades will be assigned according to the following scheme:

A 90–100	C+73–76	F below 60
A- 87–89	C70–72	
B+83–86	C- 67–69	
B 80–82	D+63–66	
B- 77–79	D60–62	

UX mini course **(50)**

    Attendance and participation in class discussions   (5)

    Exercise 1-2-4   (15)

    Exercise 3-5-6   (30)

XR mini course **(50)**

    Attendance and participation in class discussions   (5)

    Exercise 1   (5)

    Exercise 2   (5)

    Exercise 3   (5)

    Exercise 4   (10)

    Exercise 5   (5)

    Exercise 6   (15)