



CSCI 699: User Experience – Methods of Research and Analysis

Units: 4.0

Spring 2024 – Mondays – 3:00-6:20PM

Location: TBD

Instructor: Souti Chattopadhyay

Office: SAL 332

Office Hours: TBD

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Catalogue Description

Introduction to data driven user research. Designing and gathering user data through interviews, surveys, and experiments. Statistical and ML tools to analyze user data, drawing inference about user needs and experience. Ensuring validity and ethical concerns.

Course Description

This course will provide an overview of the different quantitative and qualitative empirical research methods that can be used to understand and improve user experience. It is akin to an accelerated research class; students will work on a research problem throughout the semester that involves user research to investigate or solve a software/system related problem and by the end of the semester build an academic publication to report the findings. No prior experience with user studies, research methods, statistical analysis is expected. The course will provide students with the skills to

- understand how to choose research methods and design data collection methods
- form and answer research questions using empirical analyses techniques
- be cognizant of validity and ethical issues of studying humans

The class includes research methods for studying human-machine, human-AI, human-Robot interactions; planning and designing good user interfaces; study design strategies; software evaluation methods; related guidelines and standards.

Learning Objectives

Building good software systems requires an empirical investigation of the nature of the problem that the tool or approach solves and an evaluation of the tool or process itself. In this class, students will learn about the different research methods and how they can be used for a particular software development process or tool.

The goals are that by the end of this course, students will be able to:

1. Choose when a research method is a right choice for empirical work.
2. Design, conduct, and gather data in case studies...
3. ... according to accepted ethical principles of dealing with human subjects.
4. Synthesize findings using mixed (qualitative and quantitative) methods.
5. Report findings in the format of research publications.

Course Notes

Grading type: Letter of Credit/No Credit.

The class will take place in traditional classroom format. Copy of the lecture materials and readings will be posted on Blackboard. Assignments and other required submissions may also make use of Blackboard. Exams will be in person, and are necessary, to facilitate students' ability to design. Specific exemptions about the mode of exams may be made under the discretion of the instructor.

Technological Proficiency and Hardware/Software Required

Most of the software required for the course are open source and free. Students will need to use [Figma](#) (free for education), [RStudio](#) (or R, now Posit), and [Overleaf](#).

Additional information about how to access free versions of the products can be found at [Software available to USC Campus](#). Students may choose to use advanced software like those included in Adobe Creative Cloud Suite, iMovie, and Aptana Studio.

Additionally, students might also find the following links useful: [USC Computing Center Laptop Loaner Program](#), [Zoom information for students](#), [Blackboard help for students](#).

Required Readings and Supplementary Materials

1. [Guide to Advanced Empirical Software Engineering, Shull et al., Springer, 2008. ISBN/SKU 9781848000438](#) (TextBook [TB])

Other reading and supplementary materials associated with every week's topics will be provided by the instructor and linked in the detailed course schedule on the course website, and on blackboard.

Optional Readings and Supplementary Materials

2. Saldaña, J. (2009). The coding manual for qualitative researchers. Sage Publications Ltd.
3. [Introductory Statistics with R. Peter Dalgaard](#)
4. [Experimentation in Software Engineering by C. Wohlin et al., Kluwer, 2000. ISBN 0-7923-8682-5](#)

Description of Assignments and How They Will Be Assessed

Presentation & Paper:

At the end of the class, students will have a final project that defines a problem requiring user research, conduct user study and analyze the data, and write an 8-page academic paper to convey findings. Students can use their own graduate research project or choose a project involving user research. Students will present their term paper in a conference style 20 min presentation.

Assignments:

There will be 3 assignments (due Sunday of week 4, 9, and 14) which include student studying and implementing the research methods and submitting required materials to show progress on solving their term research project. Groups can use their own graduate research project or choose a project involving user research.

Exams:

There will be one take home midterm exam on materials covered until week 8.

In-class activities:

In-class activities include participation in class discussion and design session. Activities will lead to higher engagement with materials, improve conceptual understanding, and promote collaboration among peers.

Participation

Participation in in-class activities and discussion will constitute 5% of grade.

Grading Breakdown

Assessment Tool (assignments)	% of Grade
Paper	30%
Presentation	20%
Midterm	15%
Assignments	30%
In-class activities	5%
TOTAL	100%

Grading Scale

Letter grade	Corresponding numerical point range
A	95-100
A-	90-94
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	59 and below

Assignment Submission Policy

Assignments should be submitted on blackboard (or in specific cases to a USC maintained folder) before 11:59pm on the due date.

Course-Specific Policies

Late submissions will be considered at 50% scale (i.e., if student gets 60/100, they'll be given 30 points), unless previously discussed with the instructor and an alternate agreement is reached.

Attendance

Student athletes with approved Travel Request Letters, students who give advance notice of religious or cultural observation, and students with approved medical leave documentations will be allowed to participate in at most 3 in-class activities to make up for the grades lost due to missing in-class activities and discussions.

Academic Integrity

Unless otherwise noted, this course will follow the expectations for academic integrity as stated in the [USC Student Handbook](#). The general USC guidelines on Academic Integrity and Course Content Distribution are provided in the subsequent "Statement on Academic Conduct and Support Systems" section.

For this class, students are expected to adhere to the following guidelines:

- Assignments that require you to complete computer programs, plagiarism will include the submission of code written by, or otherwise obtained from someone else.
- Assignments designated as "group work", all assignments are expected to be completed individually.
- For assignments marked individual submissions, you are expected to submit work that demonstrates your individual mastery of the course concepts.

If found responsible for an academic violation, students may be assigned university outcomes, such as suspension or expulsion from the university, and grade penalties, such as an "F" grade on the assignment, exam, and/or in the course.]

Please ask the instructor [and/or TA(s)] if you are unsure about what constitutes unauthorized assistance on an exam or assignment, or what information requires citation and/or attribution.

You may not record this class without the express permission of the instructor and all other students in the class. Distribution of any notes, recordings, exams, or other materials from a university class or lectures — other than for individual or class group study — is prohibited without the express permission of the instructor.

Use of Generative AI in this Course

Generative AI permitted but limited as follows: In this course, you are permitted to use artificial intelligence (AI)-powered programs to help you, but only on assignments that explicitly indicate a permitted use of AI. However:

- You should also be aware that AI text generation tools may present incorrect information, biased responses, and incomplete analyses; thus, their answers may not meet the standards of this course.
- To adhere to our university values, *you must cite any AI-generated material (e.g., text, images, and other content) included or referenced in your work and provide the prompts used to generate the content.* Using an AI tool to generate content without proper attribution will be treated as plagiarism and reported to the Office of Academic Integrity.

Please review the instructions in each assignment for more details on how and when to use AI Generators for your submissions.

Course Evaluations

Course evaluation occurs at the end of the semester university-wide. It is an important review of students' experience in the class. The process and intent of the end-of-semester evaluation should be provided. In addition, a [mid-semester evaluation](#) is may occur for early course correction.

Course Schedule

	Topics/Daily Activities	Readings/Preparation	Deliverables
Week 1	Introduction & Case Studies	Selecting Empirical Methods for Software Engineering Research	
Week 2	No Class		
Week 3	Qualitative and Quantitative Studies	TB Chapter 2	
Week 4	Surveys	TB Chapter 3	Assignment 1
Week 5	Interviews	TB Chapter 2	
Week 6	Qualitative Analysis		
Week 7	No class		
Week 8	Triangulation & Mixed methods	Chapter 13	
Week 9	Statistical and Learning Based Analysis	Wohlin, Chapter 10	Assignment 2 Midterm
Week 10	No class – Spring break		
Week 11	User Studies - Methods		
Week 12	Controlled User Experiments - Design	Chapter 8	
Week 13	Validity and Ethics	Chapter 9	
Week 14	Presentation Session		Assignment 3
Week 15	Presentation Session		
FINAL	Term Paper		Term Paper due on the university-scheduled date of the final exam.

Statement on Academic Conduct and Support Systems

Academic Integrity:

The University of Southern California is a learning community committed to developing successful scholars and researchers dedicated to the pursuit of knowledge and the dissemination of ideas. Academic misconduct, which includes any act of dishonesty in the production or submission of academic work, comprises the integrity of the person who commits the act and can impugn the perceived integrity of the entire university community. It stands in opposition to the university's mission to research, educate, and contribute productively to our community and the world.

All students are expected to submit assignments that represent their own original work, and that have been prepared specifically for the course or section for which they have been submitted. You may not submit work written by others or "recycle" work prepared for other courses without obtaining written permission from the instructor(s).

Other violations of academic integrity include, but are not limited to, cheating, plagiarism, fabrication (e.g., falsifying data), collusion, knowingly assisting others in acts of academic dishonesty, and any act that gains or is intended to gain an unfair academic advantage.

The impact of academic dishonesty is far-reaching and is considered a serious offense against the university. All incidences of academic misconduct will be reported to the Office of Academic Integrity and could result in outcomes such as failure on the assignment, failure in the course, suspension, or even expulsion from the university.

For more information about academic integrity see [the student handbook](#) or the [Office of Academic Integrity's website](#), and university policies on [Research and Scholarship Misconduct](#).

Please ask your instructor if you are unsure what constitutes unauthorized assistance on an exam or assignment, or what information requires citation and/or attribution.

Course Content Distribution and Synchronous Session Recordings Policies

USC has policies that prohibit recording and distribution of any synchronous and asynchronous course content outside of the learning environment.

Recording a university class without the express permission of the instructor and announcement to the class, or unless conducted pursuant to an Office of Student Accessibility Services (OSAS) accommodation. Recording can inhibit free discussion in the future, and thus infringe on the academic freedom of other students as well as the instructor. ([Living our Unifying Values: The USC Student Handbook](#), page 13).

Distribution or use of notes, recordings, exams, or other intellectual property, based on university classes or lectures without the express permission of the instructor for purposes other than individual or group study. This includes but is not limited to providing materials for distribution by services publishing course materials. This restriction on unauthorized use also applies to all information, which had been distributed to students or in any way had been displayed for use in relationship to the class, whether obtained in class, via email, on the internet, or via any other media. ([Living our Unifying Values: The USC Student Handbook](#), page 13).

Students and Disability Accommodations:

USC welcomes students with disabilities into all of the University's educational programs. [The Office of Student Accessibility Services](#) (OSAS) is responsible for the determination of appropriate accommodations for students who encounter disability-related barriers. Once a student has completed the OSAS process (registration, initial appointment, and submitted documentation) and accommodations are determined to be reasonable and appropriate, a Letter of Accommodation (LOA) will be available to generate for each

course. The LOA must be given to each course instructor by the student and followed up with a discussion. This should be done as early in the semester as possible as accommodations are not retroactive. More information can be found at osas.usc.edu. You may contact OSAS at (213) 740-0776 or via email at osasfrontdesk@usc.edu.

Support Systems:

[Counseling and Mental Health](#) - (213) 740-9355 – 24/7 on call

Free and confidential mental health treatment for students, including short-term psychotherapy, group counseling, stress fitness workshops, and crisis intervention.

[988 Suicide and Crisis Lifeline](#) - 988 for both calls and text messages – 24/7 on call

The 988 Suicide and Crisis Lifeline (formerly known as the National Suicide Prevention Lifeline) provides free and confidential emotional support to people in suicidal crisis or emotional distress 24 hours a day, 7 days a week, across the United States. The Lifeline is comprised of a national network of over 200 local crisis centers, combining custom local care and resources with national standards and best practices. The new, shorter phone number makes it easier for people to remember and access mental health crisis services (though the previous 1 (800) 273-8255 number will continue to function indefinitely) and represents a continued commitment to those in crisis.

[Relationship and Sexual Violence Prevention Services \(RSVP\)](#) - (213) 740-9355(WELL) – 24/7 on call

Free and confidential therapy services, workshops, and training for situations related to gender- and power-based harm (including sexual assault, intimate partner violence, and stalking).

[Office for Equity, Equal Opportunity, and Title IX \(EEO-TIX\)](#) - (213) 740-5086

Information about how to get help or help someone affected by harassment or discrimination, rights of protected classes, reporting options, and additional resources for students, faculty, staff, visitors, and applicants.

[Reporting Incidents of Bias or Harassment](#) - (213) 740-5086 or (213) 821-8298

Avenue to report incidents of bias, hate crimes, and microaggressions to the Office for Equity, Equal Opportunity, and Title for appropriate investigation, supportive measures, and response.

[The Office of Student Accessibility Services \(OSAS\)](#) - (213) 740-0776

OSAS ensures equal access for students with disabilities through providing academic accommodations and auxiliary aids in accordance with federal laws and university policy.

[USC Campus Support and Intervention](#) - (213) 740-0411

Assists students and families in resolving complex personal, financial, and academic issues adversely affecting their success as a student.

[Diversity, Equity and Inclusion](#) - (213) 740-2101

Information on events, programs and training, the Provost's Diversity and Inclusion Council, Diversity Liaisons for each academic school, chronology, participation, and various resources for students.

[USC Emergency](#) - UPC: (213) 740-4321, HSC: (323) 442-1000 – 24/7 on call

Emergency assistance and avenue to report a crime. Latest updates regarding safety, including ways in which instruction will be continued if an officially declared emergency makes travel to campus infeasible.

[USC Department of Public Safety](#) - UPC: (213) 740-6000, HSC: (323) 442-1200 – 24/7 on call

Non-emergency assistance or information.

[Office of the Ombuds](#) - (213) 821-9556 (UPC) / (323-442-0382 (HSC)

A safe and confidential place to share your USC-related issues with a University Ombuds who will work with you to explore options or paths to manage your concern.

[Occupational Therapy Faculty Practice](#) - (323) 442-2850 or otfp@med.usc.edu

Confidential Lifestyle Redesign services for USC students to support health promoting habits and routines that enhance quality of life and academic performance.