HUMAN-CENTERED RESEARCH DESIGN

CS 8803-LRD (CS 6458)
Fall 2026
Professor Jessica Roberts, PhD
Office hours: Tuesdays 1-2pm or by appointment.

COURSE DESCRIPTION AND LEARNING OBJECTIVES

In this applied methods course, students will explore theoretical and practical aspects of the design and execution of human-centered computing research. Students will explore a human-centered research topic of their choice, with an emphasis on identifying situated human learning and conceptual change in technology-mediated environments. You will work with a cohort of students in a general topic area to create operational definitions of your key constructs in a particular domain and design and pilot a research agenda to measure these constructs empirically.

As a result of this course, students will be able to:

- Operationalize constructs within a research study
- Match research methods and analysis to targeted constructs
- Synthesize a body of research literature in a human-centered domain
- Analyze qualitative data to support claims

COURSE FORMAT

This course will be conducted fully face-to-face in accordance with USG guidelines. Class meetings will be structured whole-group and small group discussions, class activities, and presentations. This is *not* a lecture-based course, and class sessions will not be streamed or recorded under most circumstances.

COURSE MATERIALS

Hardware and Software

You will need to bring to class a laptop or internet-enabled tablet capable of accessing Canvas, other websites, qualitative data analysis software, and Microsoft Teams.

We will be using the qualitative data analysis software MaxQDA. You will be provided with a free license for use in this course. NOTE: Per the developer's requirements, students may use the license within the framework of their methods course, i.e. to complete practice exercises or guided research projects. Students are not permitted to complete bachelor's, master's or diploma theses using the course license. For these purposes students can purchase a 6-month or 24-month student license. See https://www.maxqda.com/shop/order for details.

Readings

All required readings will be shared electronically via Canvas. Some readings may require access through Georgia Tech's network either on campus or though VPN. There are no required textbook purchases for this course. However, we will cover chapters from multiple educational research textbooks that you may choose to purchase to support your ongoing research efforts:

- Miles, M. B., Huberman, A. M., & Saldaña, J. (2014). *Qualitative data analysis: A methods sourcebook*.
- Diamond, J., Horn, M., & Uttal, D. H. (2016). Practical evaluation guide: Tools for museums and other informal educational settings. Rowman & Littlefield.
- Glesne, C. (2016). *Becoming qualitative researchers: An introduction*. Pearson. One Lake Street, Upper Saddle River, New Jersey 07458.
- Creswell, J. W., & Poth, C. N. (2016). Qualitative inquiry and research design: Choosing among five approaches. Sage publications.
- Green, J. L., Camilli, G., & Elmore, P. B. (Eds.). (2012). *Handbook of complementary methods in education research*. Routledge. NOTE: full text available online via GT library.

COURSE DELIVERABLES

Mini Analysis Project (group) [15%]

To familiarize yourself with qualitative data analysis (QDA) software, you will work in small groups (2-4 students) to collectively analyze a small dataset of the instructors' choosing. You will present your findings and a review of the software to the class and submit a group report during week 6 of the course.

Conjecture Map & Discussion Lead (cohort) [15%]

For the bulk of the semester you will work in a cohort according to the general topic area of your final project (e.g. engineering education; literacy; designing for blind and visually impaired learners; other area of your choice). Cohorts will organize during week 4. Each cohort will create a conjecture map (Sandoval, 2014) and annotated bibliography to outline their domain/problem space. In weeks 12-15, each cohort will lead the class discussion for one meeting, assigning readings and structuring the discussion for their classmates.

Final Project (individual or pairs) [45%]

You will design a study and analysis scheme for studying learning, cognition, or behavior in the context of your choosing. This context will be related to the domain of your cohort, but the final project will be an individual or paired contribution focusing on one specific question within that domain. You will prepare a conference-style talk and paper related to your work. Your project may present a fully complete research study, if feasible, or you may present preliminary data and analysis. The latter is appropriate if, for example, you propose a longitudinal study for which data collection could not be completed in a single term. Students presenting a complete project may consider submitting the paper for publication at a relevant venue, in which case authorship credit should be discussed with the cohort and instructor in advance of submission. Presentations will be held during the final course meetings and/or the final exam period, and papers will be due by the end of the final exam period.

Classwork and Participation (individual) [25%]

Class sessions will involve a variety of interactive components, such as peer feedback, mini-presentations, reflections, quizzes, interactive polling, design activities, and small group work. In some cases, you will be asked to submit artifacts created during these activities (e.g. photo of whiteboard work) to Canvas for credit. Submissions must be made during class or by the deadline specified by the instructor in class.

COURSE POLICIES

Attendance

Class sessions will be aligned with—but not redundant to—the required readings and will include discussions, activities, and presentations not easily replaced with notes. If you need to miss class for a legitimate reason, contact the professor in advance of the class meeting. You should also inform your project partners of an impending absence, as it will impact any group work time in class that day.

Communication

Course materials, updates to the syllabus, reminders about assignments, and any other announcements will be made via Canvas. If you have a question about the course materials or content, first check Canvas and the syllabus. If the information is not available on the syllabus or Canvas, contact the instructor via direct message in MS Teams (use @ so I get a ping). You can also use the General channel in EdDiscussion to post questions that might be shared by your classmates.
OR… come to office hours!

Late Policy

Assignments need to be submitted by their posted due date and time for 100% credit. Assignments submitted late will be penalized 10% of the assignment's grade if submitted within 24 hours of the posted deadline and penalized 25% if submitted between 24-48 hours after the deadline. After 48 hours work will not be accepted without instructor approval.

One MTO ("Missed That One") pass will be accepted per student during the semester. Your MTO pass grants you one extra day to complete the work, i.e. an assignment can be submitted 24 hours late without penalty, 48 hours late with only a 10% penalty, or 72 hours late with a 25% penalty. If the MTO pass is used on a group assignment, all students will be deducted their pass. Therefore, if one or more team members has already used their MTO pass, those students will receive the full penalty for a late assignment. To use your MTO pass, add a comment on the submission in Canvas that you intend to use it. You must notify the instructor *within 48 hours of the assignment deadline* if you are using your MTO pass. **NOTE: MTO passes cannot be used for any assignment involving an in-class presentation, including the cohort discussion.**

Grading Scale

A	90-100%
B	80 – 89.9%
C	70 – 79.9%
D	60 – 69.9%
F	< 60%

Assignment Re-Grading

If you have a concern about a grade on an assignment, or would like more feedback than you have received, please return your graded assignment to me within two class periods, along with a written explanation of your question(s)/concern(s) – aiming to articulate your thoughts respectfully and as clearly as you can. I will take another look at your assignment and will make every effort to respond within one week of receipt to address your concerns.

Collaboration, Group Work, & Academic Integrity

All assigned work in this course is expected to be individual, except where explicitly written otherwise. You are encouraged to discuss assignments with your classmates. However, what you hand in should be your own work. Any student suspected of cheating or plagiarizing will be reported to the Office of Academic Integrity, which will investigate the incident and identify the appropriate penalty for violations.

Academic and Research Honesty/Integrity Statement

Georgia Tech aims to cultivate a community based on trust, academic integrity, and honor. Students are expected to act according to the highest ethical standards. Review the Student Code of Conduct and the Academic Honor Code, especially Appendix A: Graduate Addendum to the Academic Honor Code.

Students are expected to perform research in an ethical and responsible manner. All Doctoral and Master's Thesis students are required to take the Responsible Conduct of Research training, and it is expected that students abide by the principles taught in that training while performing research.

Any student suspected of cheating or plagiarizing on a quiz, exam, or assignment will be reported to the Office of Student Integrity, who will investigate the incident and identify the appropriate penalty for violations.

Allegations of scientific or scholarly misconduct are handled in accordance with the procedures outlined by the Policy for Responding to Allegations of Scientific or Other Scholarly Misconduct.

Policy on the Use of Large Language Models (LLMs)

This course will follow policy recommendations from the GT Writing and Communication Program (WCP) regarding the use of generative AI in this course, as found at https://sites.gatech.edu/bfhandbook/requirements-for-developing-generative-ai-tool-policies-in-wcp-courses/. Specifically:
This course is about growing in your ability to write, communicate, and think critically. Generative AI agents such as ChatGPT, DALL-E 2, and others present great opportunities for learning and for communicating. However, AI cannot learn or communicate for you, and so cannot meet the course requirements for you. As with any technology, generative AI tools need to be used critically and according to academic and professional

expectations. Thus, in instances in which your instructor allows generative AI tool use, you are expected to adhere to these principles:

- **Responsibility:** You are responsible for the work you submit. This means that any work you submit should be your own, with any AI assistance appropriately disclosed (see "Transparency" below) and any AI-generated content appropriately cited (see "Documentation" below). This also means you must ensure that any factual statements produced by a generative AI tool are true and that any references or citations produced by the AI tool are correct.
- **Transparency:** Any generative AI tools you use in the work of the course should be clearly acknowledged. This includes not only when you use content directly produced by a generative AI tool but also when you use a generative AI tool in the process of composition (for example, for brainstorming, outlining, or translation purposes). For each written assignment you will include an AI Acknowledgement statement that (1) identifies what, if any, AI tools you used in the assignment; (2) describes how you used the tools; (3) explains the steps you took to ensure reliability of AI-generated content.
- **Documentation:** You should cite any content generated by an AI tool as you would when quoting, paraphrasing, or summarizing ideas, text, images, or other content made by other people. That is, in most cases, AI-generated content should be treated as content produced by someone other than the student, and therefore needs to be quoted/paraphrased/summarized and documented. The APA style guide has provided standards for citing LLMs here: https://apastyle.apa.org/blog/how-to-cite-chatgpt

Using generative AI tools at times not allowed by the instructor will be considered an infraction of the Georgia Tech Honor Code subject to investigation by the Office of Student Integrity. Likewise, using generative AI tools in the course without adhering to these principles will be considered an infraction of the Georgia Tech Honor Code subject to investigation by the Office of Student Integrity.

Submission Format

All written assignments should be uploaded to Canvas as docx, pptx, or PDF files. Use Times New Roman or comparable font, 12 pt., single-spaced, 1" margins. Templates may be provided for some assignments. Any statements in your written work that do not present common knowledge or your own original thoughts need to be properly cited. You may use the reference style of your preferred venue (e.g. APA, ACM), but you must be consistent within a document.

Recordings of Class Sessions and Required Permissions:

Class sessions may be recorded by the instructor. Classes may not be recorded by students without the express consent of the instructor unless it is pursuant to an accommodation granted by the Office of Disability services. Class recordings, lectures, presentations, and other materials posted on Canvas are for the sole purpose of educating the students currently enrolled in the course.

Students may not record or share the materials or recordings, including screen capturing or automated bots, unless the instructor gives permission.

Support Resources

Georgia Tech offers a variety of support services to students. If you are in need of assistance, contact the Counseling Center (404-894-2575 I counseling.gatech.edu), the After-Hours Assistance Line (404-894-2500), or one of the other mental health and well-being services on campus (https://studentlife.gatech.edu/content/mental-health-well-being). If you are not sure who to call, reach out to the instructor for help.

Core IMPACTS

Not applicable

Accommodations for Students with Disabilities

If you are a student with learning needs that require special accommodation, contact the Office of Disability Services as soon as possible to make an appointment to discuss your special needs and to obtain an accommodations letter. Please also e-mail me as soon as possible in order to set up a time to discuss your learning needs.

Student-Faculty Expectations

At Georgia Tech, we believe that it is important to strive for an atmosphere of mutual respect, acknowledgement, and responsibility between faculty members and the student body. The Student-Faculty Expectations articulates some basic expectations that you can have of me and that I have of you. Additional information for research-related work is given in The Expectations of Advisors and Advisees. In the end, simple respect for knowledge, hard work, and cordial interactions will help build the environment we seek. Therefore, I encourage you to remain committed to the ideals of Georgia Tech while in this class.