

MS-HCI Research Project Requirements

OVERVIEW

Students in the MS-HCI program complete a 6-credit project over two semesters. This project is a comprehensive assessment of the knowledge and skills acquired throughout the program. There is freedom for great diversity in project topics and options for investigating, designing, and/or developing artifacts that are relevant to HCI. Students are expected to take a user-centered perspective as well as ensure that they interact with individuals in the target user group, representative users, and/or stakeholders during the project. All projects are required to demonstrate evidence-based decision making from start to finish. Therefore, a critical objective is for students to engage in activities that generate evidence to inform and reflect on design in HCI.

While most students choose to complete an individual project, groups of 2-3 students may also work together on projects. Additionally, industry-related projects are encouraged, but need to meet the project criteria discussed in this document. Projects are typically completed during the second year of the program and are graded based on satisfactory progress towards the expectations set forth in the project syllabus. Deliverables include (but not limited to) a midpoint presentation, final written report, and completion presentation.

SCHEDULE OF PROGRESS

Timeframe/Deadline	Activity/Deliverables	Action
Year 1 Fall – Year 1 Spring	Explore advisor and project options	Self-directed; engage in strategies listed in Proposal section
Year 1 Spring: end of 15 th week of classes	Proposal and Project Proposal Form	Turn in hard copy of proposal and form; Upload proposal to DropBox
Year 2 Fall: End of 1 st week of classes	Course Syllabus and Permit	Meet with advisor to customize syllabus; Turn in syllabus to Renee by Thursday of 1 st week
Year 2 Fall: by mid-September	Initial Progress and Planning Meeting	Sign up for a meeting with Research Director
Year 2 Fall: final weeks of semester	Midpoint Presentation	Sign up to present your work to date; Prepare and give presentation for feedback
Year 2 Spring: April	Research Showcase Poster	Sign up to present your work as a poster at the GVU Showcase; Prepare and present
Year 2 Spring: final weeks of semester	Final Presentation	Sign up to present your project; Prepare and give presentation of project
Year 2 Spring: last day of semester	Final Report and Project Completion Form	Turn in hard copy of project completion form; Upload report and presentation to DropBox

SUMMARY OF DETAILS

Proposal: It is your responsibility to identify a project and faculty project advisor (and industry contact, if applicable). You are encouraged to begin exploring ideas during your first semester. Do not expect to be successful by sending random or generic emails to faculty asking them for a research project or GRA. Do your homework and find out what is going on around campus by actively seeking information. Some suggestions for gaining inspiration for proposals are:

- Visiting or joining labs in your first semester. A partial list of labs is available on the MS-HCI and GVU websites.
- Attending the GVU Brown Bag series (Thursdays 12-1).
- Attending the 3-Minute Madness presentations in CS/ID/LMC/PSYC 6753 (Seminar class). This session is intended to showcase the work of HCI-related faculty and potential project ideas.
- Visiting projects during the GVU Research Showcase. In October and April each year, there is a half-day event in TSRB to demonstrate projects from GVU faculty and students.
- Talking with PhD students, research faculty, and others about their work. Getting to know the work of others is a useful skill for your professional career.
- Reviewing previous projects
- Exploring the various Georgia Tech school, faculty, lab, department, center, and program websites to learn about the wide range of projects and interests across campus.

You will develop your project proposal during the Spring semester of your first year, in consultation with an HCI faculty project advisor working in an area of interest to you. You should discuss your project idea with the Research Director or the Program Director to ensure that it will meet the criteria set by the program. If you are planning to work with an industry partner, you will need to get approval from the Research Director or the Program Director. Information about the content of the proposal is listed in a later section of this document. Before the end of the 15th week of classes you are required to turn in a hard copy of your proposal and signed project proposal approval form to the Research Director or the Program Director. You must also upload an electronic version of your proposal to the DropBox site. The specific deadline for the proposal will be announced early in the Spring semester.

Project Advisor: All students must have a project advisor who is an HCI-related faculty member. Your Project Advisor serves as the academic leader, and in many cases, is an expert in the project topic, methods, technology, population of interest, etc. Typically, you will work directly with your Project Advisor to perform the project work. Therefore, you should identify a faculty advisor who can facilitate your learning. Some criteria to consider: shared research and design interests, knowledge or skill in your project area, needs for project oversight, lab and resource supports, and availability. Start your search process early so that you have some experience with multiple faculty members. Students are often less successful at finding an advisor when they wait until late in the Spring semester to start the process. In addition, faculty members are more likely to be interested in working with you if they have had previous

interaction with you during a course, through a GTA/GRA, in their lab, or by other similar means. You should consult with the Research Director or the Program Director if you have questions about faculty availability or eligibility. A listing of possible HCI faculty Project Advisors is available on the MS-HCI website.

If you change your faculty Project Advisor, you must notify the Research Director. You may be required to register for additional credits (CS/ID/LMC/PSYC 6998) with the new advisor, regardless of the number of credits you have already completed with the previous advisor. You may also be required to submit a new proposal document, signed proposal approval form, and syllabus.

In some cases, you may have secondary “project mentor” – typically an expert in the domain of your project, but not an HCI faculty member. You will still need an HCI faculty Project Advisor. A project mentor can be a GT researcher or academic faculty member from a non-HCI field or who is unable to assign grades for project credits. Project mentors may also be industry or government professionals who are associated with your project work and contribute specific expertise. If you think your project might involve a project mentor, talk with the Research Director or the Program Director.

Registration for Project Credits: The project requires two semesters each of 3 credits of CS/ID/LMC/PSYC 6998 (for a total of 6 credits). You will register for the credits associated with the School of your faculty project advisor (if the advisor is not able to assign credit, you will need to discuss your options with the Research Director or the Program Director). As a general guideline, one credit hour equals roughly three hours of work per week, resulting in 9+ hours per week for 3 credit hours of project work. *This translates to 144-160 hours per semester for your project.* Your course grade is assigned by your faculty Project Advisor in consultation with the Research Director and the Program Director. You must achieve an “A” or “B” grade in these credits to graduate. If you receive a grade lower than a “B” in either semester of the credits, you are required to retake the credits in a following semester.

Before the start of your third semester (or the semester in which you enroll in your first 3 credits), you will review your proposal with your advisor, make any updates, and agree to the syllabus associated with your project credits. This syllabus contains details about deliverables, deadlines, and grading criteria. You must complete the proposal update and syllabus process by the end of the registration period (first week of classes) in order to receive your permit to register for the project credits. You will not be able to register for CS/ID/LMC/PSYC 6998 (project course) credits if you have not completed this process.

Progress Reporting: During both semesters of your project credits, you will be expected to make satisfactory progress on your project. To report on your progress, you will provide your faculty advisor with periodic updates according to his/her preferred methods (e.g., reporting during lab meetings, demonstrations, written reporting documents, etc.). You must also:

- Have an initial meeting with the Research Director and your advisor to review your progress and planned work during the first semester of your project. This will be scheduled for early in the first semester of your project and count towards your grade.

- Prepare a Midpoint Presentation to be given at the end of the first semester of your project. This will serve as an opportunity to share the work you have performed to date and discuss your plans for completion. Your presentation will be brief to allow for ample time to thoroughly discuss your work with faculty and other invited experts. This will also be a chance to assess your plans for the second semester and adjust accordingly. This presentation will count towards your grade.
- Have a progress meeting with the Research Director to give an update on your project and discuss your completion plan. This meeting will be scheduled for the 2nd month of the 2nd semester of your project and count towards your grade.

IRB Protocol: Most projects will need at least one approved Institutional Review Board (IRB) protocol to perform human subjects research. You should develop an IRB protocol as early as possible with your advisor as the Principal Investigator. *You should not perform research with human subjects without an approved IRB protocol.* Your work cannot be published or presented outside of the MS-HCI program without an approved protocol. You should consult with the MS-HCI Research Director and include her as research personnel when you submit the protocol.

Project Poster: During the final semester of your project work, you are required to present a project poster at the GVU Spring Showcase (mid-April) or the GVU Fall Research Showcase (end-October). If you work with a faculty advisor who has a lab in TSRB, you will sign up to present in his/her lab area. If you need space to present your work, please talk with the Research Director so that she can assist. This will count towards your grade.

Final Deliverables: In order to graduate, you will turn in a high-quality final report document (or other agreed upon equivalent document) and present your work to the program (i.e., the Program Director, four MS-HCI faculty coordinators, the Research Director, fellow MS-HCI students, other interested faculty members, and invited experts). These deliverables are graded as part of your project credits and must be completed to a level deemed satisfactory by your advisor, the Program Director, faculty coordinators, and the Research Director. The signed project completion form is due by the last day of finals in the semester you expect to graduate. This form should not be signed until all project deliverables have been submitted.

DELIVERABLES

Project Proposal

The project proposal is a 5-10 page document. Discuss the format and content details with your advisor. In general, you should address the following:

1. Introduction/Background: Overview of the problem area that your project will address. Discuss the history of the problem including any literature, statistics/data, specific examples, related work that you or others have done. Describe the target user or subject group, behavior of interest, stakeholders, context of use, and/or business or market situation. Discuss the significance of addressing the problem -- what are the benefits, innovations, valuable aspects, etc.?
2. Potential Intervention, Solution, or Contribution: What is the general nature of the work you hope to complete? What do you expect to develop, design, or investigate? Do not get overly descriptive in this section because these details should be informed by the work you do to understand the user needs/design criteria.
3. Expected Methods: What you will do in each stage of the project (many of the steps listed in the schedule will be discussed in this section). How will you understand your users/subjects and their needs? How will you find the users, subjects, stakeholders to work with? What behaviors, systems, or products will you be investigating to understand the context? How will you collect data? How will you develop and get feedback about your concepts or ideas? How will you develop and test a prototype or draft of your design? What methods will you use to get experts' feedback?
4. Expected Resources: Description of resources you will need and how you will obtain them. This includes hardware, software, data sets, access to people, payment for subjects, specific expertise, etc.
5. Schedule: This list of milestones is suggestive, not definitive. You may adapt it, in consultation with your advisor, based on the specific characteristics of your work:
 - Literature review
 - Submission to IRB (Institutional Review Board)
 - Methods to understand the users/subjects and their needs
 - Ideation and concept feedback activities
 - Rough prototype
 - Midpoint Presentation
 - User testing of rough prototype
 - Implementation of a functional system
 - User testing of functional system
 - Final report and other deliverables
 - Presentation to MS-HCI faculty advisors and students

If you will be doing this project as part of a paid job (summer internship, co-op, research assistantship, etc.), you will need to determine, along with your project advisor and/or work supervisor, how much your paid work overlaps with the required hours of the project credits. You should not expect that your paid work time covers the time expected for your project (although this may happen).

You must turn in your signed project proposal approval form and proposal document to the Research Director and upload an electronic version of proposal to the MS-HCI Project Deliverables Folder on DropBox.

Midpoint Presentation

At the end of your first semester of project work, you will give a presentation to the Research Director, Program Director, and others on your progress to date and plan for completion. You are expected to summarize your efforts towards the 3 credits of project work. This presentation will include a 5-minute overview of your work and a faculty-led discussion about your progress and future plans. The outcome of this presentation will be considered as part of your grade for the semester.

Your brief presentation should orient your audience to your problem space, review the tasks you have completed, and propose the next steps. While you will not have time to get into specific details of your work to date or future plans, you should have those details available in case you are asked to discuss them. Your presentation should include 4 slides: 1) Problem Overview; 2) Completed Work; 3) Completed Work cont.; and 4) Planned Work.

Final Report

This is an expanded and updated version of your project proposal, typically 30-40 pages, including screen shots and appendices containing resources like surveys, interview questions, and usability testing procedures. Because there is a range of acceptable project contexts, your project may not have all of the details listed below. If you expect significant deviation from this outline, please discuss your needs with the Research Director or the Program Director. A **typical** outline is:

1. Introduction: Statement of problem, why it is a problem, intended user/subject characteristics, general capabilities of your solution/contribution.
2. Background: Previous work, theoretical foundations. Literature review. Describe the general application domain; what else has been done, what is the context of thinking and making things in which your work is situated.
3. Design Requirements or Investigation Plan: The work you performed to inform design requirements (criteria) or plan of investigation, and the resulting definition or description of design requirements or plan of investigation. Provide details about the formative research activities, information/data collected, and your interpretation. Common types of data include user/subject characteristics, task needs, study protocol details, design criteria, etc. Include personas, use cases, empathy maps, conceptual frameworks, or any other descriptions that help illustrate your findings and build the case for your next step in the process.

An example for how this section could be structured if your project context is app or product design focused:

- a. Description of users: methods for identifying who, demographics and other characteristics
 - b. Description of tasks/context of use: methods for identifying tasks/contexts, characteristics
 - c. Competitive analysis or other analysis of related solutions
 - d. Development of design requirements: mapping to identified needs, specific criteria/features/attributes, and their purpose, use cases
4. Artifact Details
 - a. Early design work or piloting of methods: How you tried out your methods, or created your rough concept/prototype, how you got feedback or tested your idea, and what you learned (include sketches, photos, graphs, screen shots, etc.).
 - b. Design or study implementation: How you implemented your design or study– discussion about the methods, technologies involved, resources required, information architecture, design principles used. Also discuss any iterative processes or activities including feedback from experts or users.
 5. Evaluation or Validation of Artifact:
 - a. Methods: Details about the testing or assessment of your artifact (describe with whom, what, where, and how). Discuss the study design (e.g., between or within subjects, pre/post, comparison). Describe subject characteristics, metrics, tools, tasks, procedures, and testing location. Testing tools, such as scripts and questionnaires, should be in an appendix.
 - b. Results: Reporting or presentation of your data-- NOT an interpretation of what the data mean (that comes in the Discussion section).
 6. Discussion and Conclusions: What does your data tell you, what does it mean? How does your data relate to other work? Is this solution an improvement over existing solutions? What could be the next steps? What did you learn as a future professional in doing this project?

Sections 3 (Design Requirements or Investigation Plan) and 5 (Evaluation or Validation of Artifact) will be the longest AND required for satisfactory completion. This outline is suggestive, not definitive. You may adapt it, in consultation with your faculty project advisor, based on the specific characteristics of your work.

If you are writing a full-length conference (extended abstracts do NOT count) or journal paper about your work, that paper might be acceptable as your final report. The paper may be co-authored with your advisor and others; you must be the first author and do a substantial amount of writing. Consult with the research project director about this option.

As per your project proposal milestones, you **must** have a draft final report for your faculty project advisor prior to the due date (last day of exams) for the completion form to be signed. Confer with your advisor to determine how far in advance of the due date the draft is expected to be ready for review.

Final Presentation

You will prepare and give an 18-minute (or 35 minutes for teams) PowerPoint or similar style presentation near the end of the semester to the program (i.e., the Program Director, four MS-HCI faculty coordinators, The Research Director, fellow MS-HCI students, other interested faculty members, and invited experts). Your presentation will be graded according to the following elements:

1. Presentation of Information:
 - a. Story of work: statement of goals/purpose, framing/context of work, structure/flow
 - b. Appeal/appearance: graphics, text balance/quantity, quality of multimedia (not blurry or hard to hear), quality of results charts and graphs
 - c. Speaker skill: loudness level, speaking rate, eye contact, confidence, enthusiasm/interest
2. Discussion of Design Requirements or Investigation Plan:
 - a. Description of users/subjects: methods for identifying who, demographics and other characteristics
 - b. Description of tasks/context of use: methods for identifying tasks/contexts, characteristics
 - c. Review of competitive analysis or other analysis of related solutions
 - d. Review of rationale for study protocol
3. Discussion of Artifact:
 - a. Description of implementation: show the connection between identified requirements and features included in the design or investigation/study, steps or stages for implementing (including outside help, specific resource needs)
 - b. Implementation quality: clarity of approach, accessibility of design (are certain users excluded?), information architecture, integration of and conformance with effective design principles, quality of UI demo (video/audio, real-time, screenshots)
4. Discussion of Evaluation or Validation:
 - a. Description of methods: study design (e.g., between or within subjects, pre/post, comparison), subject characteristics, metrics, tools, tasks, procedures, location
 - b. Description of results: adequate mention of analysis methods, appropriate amount and type of data relevant to the “story”, clarity of data presentation (e.g., charts, tables, text are helpful and understandable).
 - c. Presentation of conclusions: packaging/discussion of the meaningful findings, effective “wrap up” (e.g., what happens next with research/product?)

Given the 18-minute time limit (or 35 minutes for teams), you should structure your presentation to efficiently and effectively tell the story of your work. Keep in mind that you are being graded on the elements discussed above. A typical presentation could follow this flow and time structure:

1. Introduction to the problem (1-2 minutes)
2. Design requirements/investigation plan (2 minutes)
3. Design iteration activities (e.g., processes, feedback from others, etc.) (3 minutes)
4. Description and display of final artifact (4-5 minutes)
5. Evaluation/validation description and findings (4-5 minutes)
6. Conclusions and wrap up (1-2 minutes)