

SENG 310 – Project

Throughout the term, you will work on a project in **groups of 4**.

The groups **must**** comprise students from the same lab section.**

In this project, you will design, implement, and evaluate a prototype computer-based user interface. The project will be composed of several assignments. Assignments related to the project account for 70% of the grade. It is crucial to plan in advance and be ahead of the deadlines. These assignments will include both group work and individual assignments.

In addition, there will also be class and lab activities throughout the term that you must take part in. For longer or additional absences see UVic's policy: <https://www.uvic.ca/students/academics/academic-concessions-accommodations/index.php>.

Grading Team Work: All team members will be given the same grade to start with. However, you will submit a **Contribution Document** per assignment (see details in assignment descriptions), which will be used to keep track of individual performances, as well as an individual report at the end of the course that outlines the contributions of each team member. Group project grades will be adjusted individually based on assessed contributions to project as measured by a series of indicators, including your own assessment of your work, your assessment of workload in the group, the contribution documents, the qualitative (textual) feedback you will provide, and the assessment of contributions from teaching assistants; and whether or not you were present for the final presentation, and your participation to the questions and answers session.

Students who have no entry in a contribution document (i.e., did not contribute at all) will receive a 0 for that assignment.

For team submissions on Brightspace, only one student needs to submit, but anyone in the team can submit. Make sure you agree upon who is responsible for submitting the assignments.

ASSIGNMENT 1: PROJECT PROPOSAL (DUE: May 25th)

Assignment 1 goal: To communicate an outline of your ideas and plan

Assignment 1 deliverables:

Each team will submit **one project** idea – Submit your favorite idea that you are willing to work on for the entire term. **Make sure it is something you can actually do.** You will be asked to re-submit if the project scope is too wide or not something that is achievable within the course time and the resources you have access to.

A. Create Project Website:

1. Create a project website:
(<https://onlineacademiccommunity.uvic.ca/what-is-the-oac/>).
One per team. You will use the website to document your project work (assignments) throughout the term.
2. Give the site a descriptive name so we can identify your team and do not use the generic SENG 310 title
3. Select the “E-portfolio” option for creating your website
4. Set Privacy to: Visible only to registered users of this network
5. Add your team members and your TA to the website as administrators.
6. Create a page, “Team Page”, to list the name of your group and the members’ names
7. Contact for help: <https://www.uvic.ca/systems/services/contact/index.php>

B. Post on Project Website:

Create a new page on your website (e.g., “Project Proposal: short title” page) and include the below listed details. The proposal **must not exceed 500 words** (excluding references).

The project proposals must include the following sections:

1. **Problem**: What is the problem you want to explore? Make sure the problem is an HCI problem and not just a technology problem i.e., it involves some form of interaction between a specific end-user (e.g., first-year university students, hobbyist sewers, chefs, novice guitar players, expert soccer players) and specific instance of technology (e.g., wearables, website, phone, public display, kitchen appliances, IoT device, mobile-AR, VR). The best projects have a specific single problem (e.g., ordering take-out food using a smartwatch) consisting of some meaningful sub-problems (e.g., search for restaurants, select items, add notes for specific food items, call restaurants, pick up food items).
2. **Motivation**: Why is it important to solve this problem and for Whom? Boil motivation down to things like alleviating human suffering, decreasing public/private cost, improving productivity, etc. (all people get these motivating factors).
3. **Solution**: How do you think you can solve the problem you identified and meet the motivations identified? Provide 3-5 rough sketches for your initial interface ideas. The sketches should be explained clearly. Think about factors such as end-user abilities and needs, interaction style, and interaction platform. These 3 to 5 sketches can be parts of the same interface or completely different examples that demonstrate possible types of user interfaces.
Some examples of user interfaces sketches:
 - <https://groupvisual.io/sketching-ui-ux/>
 - <https://i.pinimg.com/600x315/1f/dc/ea/1fdceafe63d51dab291327a92181a054.jpg>
 - <https://s3.amazonaws.com/www-inside-design/uploads/2017/12/ux-sketching-1.jpg>
4. **References**: You should cite any sources that you have used (e.g., for quotes, general reference, or images), including books, magazines, journals, and URLs. Any clear, professional citation style is acceptable, e.g., APA style. This does not count towards the word limit.

The writing must clearly present the important facts and be concise. The nitty--gritty details are not needed at this point, but we need enough to evaluate your chosen direction.

C. Submit to Brightspace:

1. **Link to your website page**: Provide a link to the page you created for this assignment

2. **Contribution Document:** To keep track of team member contributions, you will submit as a team an excel document that describes your individual contributions. The excel document should be saved as: TeamName_MemberNames. Below is an example:

Team Member Name	Task	Contributed by:
Assignment 1:		
Name 1	Problem Identification	Reading 2 articles (article A, Article B) to identify an interesting problem
Name 2	Solution Sketch	Developing 2 sketches (Figure a,b in the proposal)

ASSIGNMENT 2: UNDERSTANDING PEOPLE

Assignment 2 goal: To communicate your understanding of people's needs and identification of opportunities for which solutions can be developed

You now have a project idea, but exactly what are the problems/issues that people encounter that you wish to address? And, how can technology help?

Complete the following activities:

1. **Apply data collection methods.** This project component focuses on employing HCI research methods for understanding your potential users in the context of your project. Choose **any two** methods from the Research Methods document shared with you. It is important to choose appropriate methods that complement one another -- for example, interviews could be complemented with photo and video elicitation methods. After collecting the data, you will analyze it to develop task descriptions for your system that you will use in later components. **Finally, you will visualize that information using a Journey Map.**
2. **Provide revised consent forms:** Prepare a modified consent form with appropriate information **regarding your team, project, and research methods.** Submit the revised consent form through Brightspace (Assignment 2). **The consent form has to be approved before you can conduct the user research. Once approved, you can start to recruit participants and begin data gathering.** Since this is a class project, you do not need to engage with many users as suggested in the literature. **Each team member should plan to recruit 1-2 participants.** Focus on selecting good techniques and learning something from their application.
3. **Identify and develop a set of task descriptions.** What will people use your system for? Develop these task descriptions in accordance with the task-centered design methodology (Phase 1 and Phase 2). **Focus on 3-5 key tasks.**
4. **Visualize using Journey Map:** For every task identified in step 3, create a journey map for your end-user. Use your understanding of the end-user (created Persona) to complete the map. You can download a template for Journey Map from here: <https://www.nngroup.com/articles/journey-mapping-101/>.
5. **Create a set of Design Requirements:** Informed by the previous steps, create a succinct list of design requirements for your interface categorized as follows – must be met, should be met if possible, and could be met.

Assignment 2 deliverables:

A. Post on Project Website:

Create a new page (e.g., “User Research”) and include the following:

1. **Participant Summary:** describe who participated in your study and how many people participated. You should describe them **anonymously i.e., no use of personal identifiers**. Explain why you recruited them and how they helped your project goal.
2. **Research Methods:** discuss the research methods you used, provide justification for them, provide a summary of your findings from each method, and reflect on your use of the methods – what went well, what went poorly, and what you would do differently next time. Remember the results should not identify the participants by the use of personal identifiers.
3. **Task descriptions:** include task descriptions for the 3-5 key tasks of how you expect the system to be used and provide justification for why these were identified as key tasks.
4. **Journey Map:** Include images of the completed journey maps for the corresponding key tasks. The diagram should be clear and understandable.
5. **Design Requirements:** discuss the requirements clearly identifying which the interface must, should, and could meet and provide justifications for them.

Be concise in your descriptions. This should not exceed 2000 words.

B. Submit to Brightspace:

1. **Revised consent form:** The consent form has to be approved before you can conduct the user research.
2. **Link to your website page:** Provide a link to the page you created for this assignment
3. **Lab presentation slides:** powerpoint or pdf format, no link to google slides and no keynote format
4. **Contribution Doc:** To keep track of team member contributions, use the excel document you created for assignment 1 and append it with new information about individual contributions.

C. Lab Presentation:

You will present during your lab hour (refer to lab schedule). Focus on **presenting the results of your user research. Briefly mention the goal of your user research and the methods selected.** Each group will have 5 minutes to present and there will be 3 additional minutes for questions from the class.

ASSIGNMENT 3: LOW-FIDELITY PROTOTYPING AND SELF EVALUATION

Assignment 3 goal: To develop and self-evaluate early design ideas

Now that you have developed some understanding of your users and their problems/challenges, the next step is to brainstorm designs for them. The best way to come up with a good idea is to have lots of them and narrow them down. In this assignment, you will brainstorm many designs, and then use some criteria to filter and select the best ideas. You will then polish these ideas, and create a storyboard for one to show the entire scope of the interaction. From here, you will construct a low-fidelity video prototype of how you expect your system to be used and evaluate it using heuristic evaluation.

The goal of this assignment is to show you that if you have an open mind, your first idea is unlikely to be your best idea. Instead, the process of brainstorming and discussing can help you find good ideas that you had not considered before. Further, the video prototyping and heuristic evaluation will also generate new insight as to whether your (current) favourite design is even the best approach!

Complete the following activities:

1. **Brainstorm session:** Schedule a mutual time that you can get together and work together for at least an hour. Brainstorm and sketch ideas – one idea per single sheet of paper. You should aim to create at least **4 sketches per team member**. All ideas are good ideas at this stage – they can be crazy, simple, whole system, a specific feature, or an interaction technique. You are aiming for variance: the ideas should be different from one another.
2. **Discuss and Group Ideas.** Discuss the individual ideas **in relation to the identified user and design requirements, their weaknesses, strengths, and feasibility**. Also discuss originality in relation to related literature and commercial systems. Group the ideas into meaningful categories. From the multiple ideas, select one promising idea and provide descriptions for why it is the most promising idea.
3. **Storyboard:** for the selected idea, construct a storyboard. **Depict how your persona would interact with your interface for one key task** identified in the previous assignment.

4. **Video prototype:** put together a video prototype (no more than 3 minutes) to illustrate system use. Demonstrate how your persona would complete **one task scenario** (pick a different task than the one you used for the storyboard).
5. **Heuristic Evaluation:** conduct heuristic evaluation as a group using the video prototype. Be fair. See the following reference:
<https://www.nngroup.com/articles/ten-usability-heuristics/>

Assignment 3 deliverables:

A. Post on Project Website:

Create a new page (e.g., “Low-Fidelity Prototyping and Heuristic Evaluation”) and include the following:

1. **Brainstorming session results:** describe your brainstorming session and include some of the results (i.e., include the most interesting 3-4 sketches that you created). Describe how you grouped the ideas and selected the most promising idea. Describe the related works you considered during the discussion and list what you think are the key differences between your idea and existing works. Reflect on the process – what worked, what was difficult, and what would you change next time.
2. Include **storyboard** and **video prototype** with concise descriptions of what the prototype is illustrating.
3. **Heuristic evaluation results:** describe your heuristic evaluation results with justifications and reflect on the process – what went well, what went poorly, and would you do different another time.

Be concise in your descriptions. This should not exceed 2000 words.

B. Submit to Brightspace:

1. **Link to your website page:** Provide a link to the page you created for this assignment
2. **Prototype video:** Upload a maximum 3-minute video in mp4 format of your prototype. If your file is too big you can reduce it using free tools such as HandBrake
3. **Lab presentation slides:** powerpoint or pdf format, no link to google slides and no keynote format

4. **Contribution Doc:** To keep track of team member contributions, using the excel document you created for assignment 1, append it with new information about individual contributions.

C. Lab Presentation:

You will present during your lab hour (refer to lab schedule). Present your video prototype and heuristic evaluation. Each group will have 5 minutes to present and there will be 3 additional minutes for questions from the class.

ASSIGNMENT 4: MEDIUM-FIDELITY PROTOTYPING AND EVALUATION PLAN

Assignment 4 goal: To develop an interactive, semi-functional prototype that you can use for evaluation with end-users

In previous assignments, you identified many design ideas for potential interfaces and focused on developing a number of sketches and polishing a limited set. Now it is time to take your favorite interface design and implement it partially so you can eventually conduct user evaluation. Before you approach your end-users for evaluating your interface, you must plan your user evaluation details keeping in mind the prototype you develop and want to test.

Complete the following activities:

1. **Build a vertical prototype:** Using appropriate prototyping tools (e.g., Adobe XD, InVision, Balsamiq or others you know of), build a vertical prototype for the interface design you finalized in the previous assignment. **You must prototype aspects of the interface that address the key (or important subset) design requirements you identified previously.** The goal, remember, is to allow someone to understand how it would feel to interact with your interface to complete 1-2 key tasks. Code sophistication is not important for the purposes of this course. If you use existing code remember to clearly reference the source.
2. **Plan for User evaluation:** Now that you have a prototype plan in mind, think about the following to arrive at your evaluation plan:
 - a. What is the goal for the user-evaluation?
 - b. What evaluation method(s) will you employ and why do you think those methods are appropriate?
 - c. how will you go about a single evaluation session – what are the steps? (be meticulous and detail oriented)
 - d. Are there certain problems or challenges you anticipate?
 - e. Do you have remedies for those problems?
 - f. What kinds of data do you want to collect?
3. **Provide revised consent form:** Prepare a new modified consent form based on your evaluation plan. Submit the revised consent form through Brightspace (Assignment 4). The consent form has to be approved before you can conduct the user research. Once approved, you can start to recruit participants and begin data gathering.

Assignment 4 deliverables:

A. Post on Project Website:

Create a new page (e.g., “Medium Fidelity Prototyping”) and include the following:

1. **Video of the prototype:** demonstrate using a short video (maximum 8 minutes) the features of the interface. **Also show how a user will complete one complete key task identified.** You must include voiceover or subtitles so we can follow along with the video presentation of the prototype.
2. **Description of the prototype:** **Briefly explain the prototype and explain in detail how it meets the design requirements you had identified in Assignment 2.** Provide a rationale (i.e. justification) for your design choices.
3. **Provide evaluation plan:** Following the headers indicated in the section above, describe in details all aspects of your evaluation plan.

Be concise in your descriptions. This should not exceed 2000 words.

B. Submit to Brightspace:

1. **Revised consent form:** The consent form has to be approved before you can conduct the user research.
2. **Link to your website page:** Provide a link to the page you created for this assignment
3. **Video:** Upload a max. 8min long mp4 of your video prototype file. If your file is too big you can reduce it using free tools such as HandBrake
4. **Contribution Doc:** To keep track of team member contributions, use the excel document you created for assignment 1 and append it with new information about individual contributions.

ASSIGNMENT 5: FINAL EVALUATION

Assignment 5 goal: Conduct a user evaluation to improve your interface design, reflect on the evaluation process, and transform the evaluation results into future design recommendations

In the previous assignment, you developed a medium-fidelity prototype that you can show the user, they can interact with it and engage in evaluation. You also developed an evaluation plan. Now it is time to conduct the evaluation with the users, make sense of the feedback, and think about what are the takeaways.

Complete the following activities:

1. **Recruit participants:** If your ethics application was approved by your TA and/or instructor, recruit the participants for the evaluation.
2. **Run a pilot session.** Run a test or “pilot” evaluation session. For this you can request one of your peers from the class to participate. If something doesn’t work well (e.g., very lengthy session or difficulty with interaction), make note of them, discuss small changes you can make and incorporate them into your evaluation plan. Feel free to discuss the changes you plan to incorporate with your TA and/or the instructor to get some more feedback if you would like.
3. **Run the final study:** Run the final study with 5-10 participants (i.e., 1-2 participants per team member). Collect data (participant responses and feedback) as planned. You must be consistent across all sessions and for this, it is best to follow the evaluation plan closely.
4. **Analyze the data:** In light of the tasks and design requirements you identified, think about what the evaluation result means. Employ simple qualitative and/or quantitative data analysis methods to analyze the data.
5. **Formulate evaluation conclusions:** Summarize what you have learned from the user evaluations – what did you expect, what surprised you, were there any outliers? What are some takeaways from the evaluation?
6. **Reflect on the evaluation process:** Discuss your reflection on the evaluation process – what worked well, what didn’t work as planned, what could be improved in the future? Also think about the study limitations – to what extent can you generalize the results? Do your findings apply to other domains/problems/apps/users? What biases might have affected the results?

Assignment 5 deliverables:

A. Post on Project Website:

Create a new page (e.g., "Evaluation Results and Discussion") and include the following:

1. **Describe Study:** Describe the study you conducted – pilot test and improvements made; who were the participants and how many participated; methods used and why; data sources collected and how you analyzed the data. Provide justification for everything. Also, include 1-2 images showing the study setup and participants interacting with the system if they provided consent for being photographed. Remove or blur any identifying attributes such as participant faces from the image if they were captured accidentally.
2. **Results:** Concisely explain the results of the study (3-4 paragraphs). You can include figures that visualize the aggregate results and you are encouraged to include quotes when appropriate. Remember that all results must be reported anonymously.
3. **Discussion:** Explain concisely (3-4 paragraphs) what conclusions you drew from the data analysis
4. **Study limitations and reflections:** Explain concisely (2-3 paragraphs) what the limitations of your study are. Also explain what you learned from the process.

Be concise in your descriptions. This should not exceed 2000 words.

B. Submit to Brightspace:

1. **Assignment document**
2. **Link to your website page:** Provide a link to the page you created for this assignment
3. **Lab presentation slides:** powerpoint or pdf format, no link to google slides and no keynote format
4. **Contribution Doc:** To keep track of team member contributions, using the excel document you created for assignment 1, append it with new information about individual contributions.

C. Lab Presentation:

You will present during your lab hour (refer to lab schedule). Each group will have 5 minutes to present and there will be 3 additional minutes for questions from the class.

ASSIGNMENT 6A: FINAL PRESENTATION

Assignment 6A goal: To disseminate the project work by presenting and discussing it with a broader audience.

You have reached the final stage of this multi-phase and collaborative project work. Now it is time to prepare to present your work in one single presentation, practice public speaking, and persuade an audience of the merit of your work and the validity of your approach.

Assignment 6A deliverables:

A. Project Website

Create a page titled “Final Presentation” and include:

1. **Link to your final presentation slides:** see details below

B. Submit to Brightspace:

1. **Link to your website page:** Provide a link to the page you created for this assignment
2. **Lab presentation slides:** powerpoint or pdf format, no link to google slides and no keynote format, that discusses the following:
 - a. Project overview (goals and motivation)
 - b. Brief related work
 - c. Key user research findings
 - d. Prototype evolution – show the iterations and highlight what changed and why
 - e. Key final user evaluation results
 - f. Lessons learned - – what did you learn new? What was surprising or unexpected? What worked well? What would you improve if you had more time?
 - g. Future work
 - h. Conclusion highlighting contributions of the project

Make it visual and engaging. Aim for roughly 1 slide per point.

3. **Contribution Doc:** To keep track of team member contributions, using the excel document you created for assignment 1, append it with new information about individual contributions.

C. Class Presentation

This will take place in the final couple of weeks of the course. Tentatively, each group will have about 8-minutes to present, 3-4 minutes for questions and 1-minute changeover. Every group member must speak. Final time allocation may change depending on enrollment numbers.

ASSIGNMENT 6B: PEER REVIEW

Assignment 6B goal: To critically reflect upon other research projects

The skill to review other projects is just as important as being able to work on your own projects. Reviewing and critically reflecting upon other works help us understand how we can improve our projects but also your constructive feedback can help other team members to do better.

Assignment 6B deliverables:

A. Submit to Brightspace:

1. **Peer reviews:** every student will review 1 other project. For this, you will be assigned a group. Your peer review should be based on two things: a review of the website provided to you as well as the live presentation of the group you are reviewing. This is an individual activity. As part of the peer review, you will write and submit a 1-page document in PDF format (12 points, Calibri, normal margin) and include the following:
 - a. Discuss 2-3 things you liked about the project you are reviewing and why
 - b. Discuss 2-3 things you think could be improved, why and how