

**Computer Science 321.002  
Human-Computer Interaction Design  
Fall 2018**

**Design Project – Phase One (50 points)  
Due on your team's USB drive and turned in  
by 3:00 PM on Wednesday, September 12, 2018**

This assignment is the start of your team's major design project for this class. Your team's project consists of five major phases:

**Phase One: Project Proposal (50 points) - Due: 9/12/2018**

Your team will formulate a detailed proposal for the design project that you will develop this semester. This project will be a practical application that will require an ambitious user interface. Keep in mind that you will not be developing a full implementation of this application, just prototypes of the user interface with limited functionality. At each stage of the project, your team will bring in other CS 321 teams to analyze, critique, and test your work, so the application your team proposes should be one for which the intended users include your academic peers (i.e., college juniors, CS majors, and/or moderately experienced programmers). However, do not restrict your application so much that there is only one, narrowly defined type of user (e.g., an application for all mobile phone users is fine, but one that is limited to beginning JavaScript programmers is too restrictive).



**Phase Two: Contextual Inquiry, Work Models, & Affinity Diagram (100 points) - Due: 9/24/2018**

Using the assigned members of a second CS 321 team as test subjects, you will make arrangements with these students to meet with at least two of your team members in the HCI Lab to conduct video-recorded contextual inquiry interviews concerning the particular project your team is designing. The purpose of these interviews is to determine aspects of the design that your team might not have considered, but that actual users deem significant. From the results of your contextual inquiry sessions, your team will use Microsoft Visio to develop detailed work models of all three types (flow, cultural, and sequence). These models will consolidate your team's understanding of how the potential users of your proposed software currently perform the tasks that would ultimately be performed with your planned application (i.e., how they perform these tasks without your application). In addition, your team will develop a thorough affinity diagram on Microsoft Word, based on the identified concerns that your design must address.



**Phase Three: Personas & Wireframe (100 points) - Due: 10/17/2018**

Each team member will use Microsoft Word to develop a 250-word persona representing a distinct principal intended user of the planned software application. Using Microsoft Visio, your team will devise wireframe-based low-fidelity prototypes for your proposed interfaces. The members of another CS 321 team will be assigned to meet individually with at least two of your team members and conduct video-recorded prototype sessions to review your preliminary design. The focus of these sessions is to determine whether your planned application will have all of the functionality desired by intended users, not whether the presentation style of the interface is acceptable. The results of these interviews will be analyzed to determine if design revisions are needed.



**Phase Four: High-Fidelity Prototype (150 points) - Due: 11/5/2018**

Using HTML and CSS only, your team will devise a high-fidelity prototype for your project, providing a realistic-appearing interface. The full application will not be implemented, but the appearance of a working interface with working interactions will be set up so that anyone reviewing the design will be able to see how the application would behave under realistic circumstances. For example, if the application involves having the user select from a large inventory of items in order to generate the next display screen, the full implementation would retrieve the inventory from a database and generate the next display screen by querying the database for information related to the user-specified item. In your prototype, however, you should hard-code a portion of the inventory for display on the primary screen and hard-code the information for a particular inventory item for display on the secondary screen. The members of another CS 321 team will meet individually with at least two of your team members and conduct prototype sessions to review your interface via specific walkthrough scenarios. The results will be analyzed to determine whether any final design revisions are needed.



**Phase Five: Usability Test & Post-Mortem (50 points) - Due: 11/14/2018**

The members of other CS 321 teams will be assigned to meet individually with at least two of your team members and conduct usability tests of your final implementation. Unlike the interviews in previous phases, these sessions will be used to measure how much time it takes users to perform particular tasks, whether particular information can be located, etc. The results of these usability tests will be statistically analyzed to determine confidence levels for the usability of specific features of the application. These results will be reported as part of an overall post-mortem document for the project, summarizing your team's perceptions on how the design project went and what changes you might have made in retrospect. The emphasis in this post-mortem document will be on the original choice of application for the project, the design decisions made by the team, and the five-phase approach used in this course.



Phase One of your team's project is a formal proposal of the software application for which you will be designing a user interface. This proposal must include the following considerations:



1. User Breadth

Your planned application must be designed for a broad spectrum of users. For example, a videogame designed to teach preschoolers the alphabet might include a variety of functional mechanisms to accomplish this, with numerous creative techniques for interacting with the application, but the range of intended users is much too narrow. Make sure that your proposed application has a wide variety of intended users, with a wide variety of reasons for using the application. For instance, Microsoft Word might be used by a college student to write papers for a class, by an office worker to write business letters, by a novelist to compose drafts of a chapter, by a medical patient to itemize a list of current prescriptions, etc.

2. Functionality Depth

Your planned application must be designed to have a deep assortment of functions. For example, a software application that merely asks for an employee ID number and then provides that employee's contact information has very shallow functionality. Deeper functionality might involve the ability to input dozens of different combinations of employee data in order to retrieve output consisting of one of hundreds of user-specified combinations of contact information, work history, personnel records, etc. Make sure that your proposed application is original (not just a new version of existing software) and something that your team will want to work on for a whole semester.

3. Interface Height

Your planned application must be designed to include a large variety of user interface widgets and creative interactions. While standard GUI features (e.g., listboxes, radio buttons, checkboxes, pushbuttons, menus) will undoubtedly be utilized, your team should envision the inclusion of more complex features (e.g., carousels, drag-and-drop, voice interfaces, augmented reality). Remember that you do not need to worry about actually implementing these features. At most, you will hard-code simulated versions of such features in a prototype, which will give users a sense of what it would be like to interact with an actual implementation.

***It is strongly recommended that your team consult with the instructor before submitting your final project proposal. If your submitted proposal is insufficiently ambitious or overly vague, the instructor may enhance the proposal by adding extensive functionality and design features. If the proposal is extremely inadequate, your team will be required to develop new proposals until the instructor deems one acceptable, with substantial penalties to your grade in all project phases.***

**Phase One Deliverable:**

1. One Microsoft Word document detailing your team's proposed design project for the rest of this semester. This document will include:
  - a. A 200-word overview of the software application, explaining the purpose of the application and how your team envisions it differing from existing software of a similar nature.
  - b. A list of at least six (6) distinct types of intended users of your planned application and how each user would use the software for different reasons and with different goals.
  - c. A list of at least twelve (12) distinct functionalities of your planned application. For example, Elucian Banner has these functionalities
    - i. Student registration for upcoming classes
    - ii. Student retrieval of recently posted semester grades
    - iii. Advisor examination of student transcript
    - iv. Advisor determination of student's remaining degree requirements
    - v. Instructor access of current class roster
    - vi. Instructor input of final course grades for completed semester
    - vii. Chairperson's scheduling of course offerings and classroom assignments
    - viii. Bursar's determination of student's financial aid status
    - ix. Bursar's tabulation of student's unpaid parking tickets
    - x. Dean's calculation of retention rates for each college department
    - xi. Housing office's assignment of incoming freshmen to student housing
    - xii. Payroll office's establishment of direct deposit for university employees
  - d. A preliminary list of your team's ideas of advanced user interface widgets and interactive techniques that could be used for your project, including the functionality that they will facilitate.
  - e. Detailed list of each team member's participation in this phase of the project, including who wrote each of the items listed above, who reviewed and proofread those items, how frequently the team met in person to prepare this assignment, what online correspondence was used for this phase, and the estimated time spent by each team member on each activity.

**Place this document on your team's instructor-provided USB drive and submit it to the instructor at the beginning of class (at 3:00 PM) on Tuesday, September 12, 2018.**