

# Improving Introduction to Design: A Restructuring of Human Computer Interactions (CS 3205)

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## ABSTRACT

Human Computer Interactions (CS 3205), an introductory course to user experience (UX) design at the University of Virginia, suffers from poor enrollment and course reviews. I propose a restructuring of how assignments are presented and how important design concepts are introduced. Many students are not aware of UX design as a field in computer science and their first impressions of the topic are critical as they choose sub-specialties. With the proposed solutions, students will gain a better understanding about the world of UX design and its importance as a field within software development. Future work may include the introduction of additional design courses to further promote education of the subject.

## 1. INTRODUCTION

UX design is a relatively new field in the world of software development, having its official description and name coined in the mid-90's by Don Norman [1], it has quickly grown to be a crucial presence in the software development cycle. A good application is a user-centered application, which is what the field of UX is all about - the user's needs, wants, and inner workings [2]. In fact, without UX design, the process would move much slower and would be less cost efficient in the long run [3]. It is important for both parties—UX designers and software

developers—to be informed about what the other's in order to ensure a well-received and timely final deliverable.

Human Computer Interactions (HCI, CS 3205) at the University of Virginia is an introductory elective in the computer science department that focuses heavily on the topic of UX design. First introduced in the year 2013, the course has been taught every semester since. HCI was the first design elective made available in the computer science department, although recently a special topic course (CS 4501: Engineering Interactive Technologies) was introduced with a more specific focus on hardware rather than software.

Enrollment numbers have seriously decline in the last two semesters (as shown in Figure 1), with the fall semester of 2022 experiencing the lowest enrollment to date at 47 out of a possible 150 students [4]. Although the class does not seem to be in peril of elimination from the regular electives offered, it is alarming to see the level of disinterest in the field by students in the department. This is especially true when considering that a vast majority will graduate with a job in the software engineering industry. It is imperative to keep in mind both sides –UX and software development- when working on a project, which is why getting more students interested and involved with the class is of utmost importance.

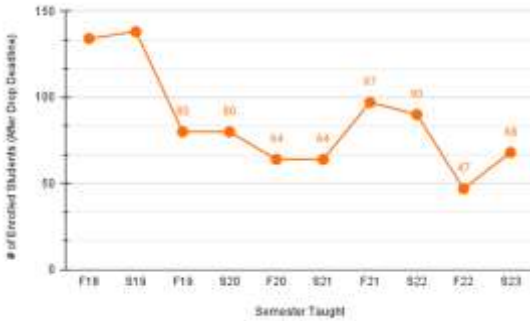


Figure 1. HCI enrollment numbers in the last 10 semesters

## 2. RELATED WORKS

By far the most telling resource with which we are able to see the specifics, or the *whys*, of a lower enrollment rate comes from former students themselves. CourseForum, a student run course review website at the University of Virginia, acts as a vessel for these *whys* and is where the following student testimonials are sourced from.

Students reveal several core pain points within the course. One mentions: “UX/HCI is taught in a boring way, through a wordy textbook”, implying the course seems dull due to the “traditional” method with which it’s taught (Student A, 2023). This is indeed an issue that has been circulating throughout the world of education, as a whole, for years and one that has been shown to cause inattention from students. In the same review the student also mentions: “the professor also just isn’t that up to date with UX/UI trends and tech, making the class feel outdated”. This might refer to the absence of current UX methods, such as consumer journeys, key performance indicators, and competitive audit, from the current curriculum, in spite of their frequent use in most UX careers (FlowMapp, 2022).

Rounding out the major breaking points within the class, another student mentions the convoluted nature of the assignment pages, but more specifically the rubric given at the end of it: “His rubrics are always incredibly vague, to the point that I’d say many of them

are intentionally misleading” (Student B, 2022). Although I am not in agreement with this assumption about the “intentions” of the rubric, it is clear that students struggle to comprehend what they are meant to do and include in their final deliverables.

## 3. PROPOSED DESIGN

The discussion of possible improvements of this UX course must include research being done on three of the most highly regarded UX “bootcamps”: CareerFoundry, Springboard, and Flatiron. I examine what they do/do not share with HCI and whether what they do not share is important enough to warrant restructuring.

Most notably, these three courses teach the entirety of their content before having students work on their major project- usually following an entire cycle of the design process as individuals. Most also provided exercises for the student to do throughout the “teaching section”. HCI also focuses on a major project, taking the student through the entire design cycle, but it is done in groups throughout the course. However, HCI implements a different approach to the introduction of material, since on Tuesdays there is typically a lecture for the topics of the week and on Thursdays an in-class assignment is run to reinforce whatever is taught in the previous class. Another difference between HCI and its bootcamp counterparts is the lack of instruction on career-building elements, such as making a portfolio or creating a case study.

With the amount of success/satisfaction of students that participate in these bootcamps, it would be negligent to consider changing some of these differences. However, students typically dedicate around 40 hours a week to whichever bootcamp they have enrolled in. This is something that simply cannot be replicated with the typical structure of a university student’s schedule. That is why I do not believe that changing the current set up

for teaching HCI would be the best idea. Instead, I would shift my efforts towards updating lecture slides and the material found within them.

The way the class lectures are currently set up is by reiterating information and ideas from the course textbook, even though some students believe that the material in it is too dense to understand completely. As one student stated: “At the beginning of the course I attempted to read the chapters in the textbook that the slides aligned with, but I found it to be very dense and gave that up after a while.”

The way the textbook is structured and, therefore, how the lectures are structured, just does not seem to resonate with current students, leading to their disinterest in the core knowledge of the course. HCI would benefit from shifting to a different source material, or at least providing alternative examples or definitions to base the rest of the course on.

Updating the previous slides or creating new ones would also create the opportunity to focus on more modern UX methods, since the textbook was published in 2012, about a decade ago. These methods could include user journeys, which are widely used in today's UX industry. More of an emphasis on competitive research one of the foundations for modern UX projects, would also be helpful.

To address the other component missing from HCI that the exemplar bootcamps offer, appropriate measures should be taken to address UX career-building skills, including making portfolios and rendering whole projects down to case studies to populate these portfolios. Currently, the entire project is presented in a google site with the intention that once a student is finished with the class, they will have a physical representation of their project to show recruiters. Recruiters will not have time to look at sample projects in the amount of detail presented on these

websites. The inclusion of these topics in the course becomes more important when the lack of design classes in the university as a whole is taken into account. Students who do not learn these skills in a course will have to go out of their way to learn on their own time if they want to try their hand at a UX internship or job.

The last component to rework would be the assignment pages of each project phase. Currently the project is divided into four “phases” and each has its own set of unique deliverables, dictated by their respective assignment pages on the class Canvas. The problem that students have identified with these assignment pages is the amount of information presented at one time. As it stands, each assignment page has a “what to do” section, a “deliverables” section, and an “assessment” section that includes a rubric dictating the number of points granted for each section of the phase. These could all be condensed into one uniform set of objectives to complete for the phase. I do recognize that this course is based on student creativity and overly-guided objectives could counteract that aspect. The new objectives would have to find a balance between relaying what information is needed while maintaining an open-endedness that would fuel that creativity.

#### **4. ANTICIPATED OUTCOMES**

If the changes that I have proposed for HCI are put into place, the class will surely experience an upward trend of enrollment. With the assignment pages changed, students will have less trouble when trying to figure out what they should include in their project. This will lead to less frustration when receiving their grade feedback and will allow them to enjoy the subject and process of UX design without needless stress.

For those who will seriously consider pursuing UX design in the future, the introduction of more modern methods in

lecture will better prepare them for any future UX positions that they may hold. These positions will also be made more accessible with the teaching of portfolios and case studies.

All of these changes combined will hopefully result in positive end-of-the-semester reviews from students who take the course. This will impact the interest of prospective students and will hopefully lead to an increase in the amount enrolled.

## 5. CONCLUSION

HCI has been experiencing lack of enrollment in the last four semesters, causing concern as it is the only class in the computer science department that focuses on UX design as a subspecialty within the field. Poor reviews seem to be the primary cause of the declining enrollment numbers, and were used to find the sources of the problem. Using those reviews as a basis of understanding students' frustrations adequate changes to the course were suggested. These include updating the course material, demystifying the assignment pages for project phases, and the inclusion of career-development as part of the curriculum.

With these changes made, it is anticipated that students will leave more favorable reviews to entice prospective students into enrolling in the course and exploring what the world of UX design has to offer. As a teaching assistant of this course for three semesters it holds a special place in my heart and I personally am excited to see it and the design community at UVA thrive.

## 6. FUTURE WORK

As interest grows for HCI, the expansion of UX design courses will also have to grow with it. A new special topics class is being taught in the fall semester of 2023 called Usability Engineering (CS 4501), and it will be delving into some concepts from HCI in a deeper context, such as usability principles. If

interest in these two classes continue to grow, then maybe Usability Engineering can graduate to a course that is permanently offered within the department.

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