Interaction Design and User Experience (729G85)
9 ECTS Credits:

Study Guide

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Syllabus

https://liu.se/studieinfo/kurs/729g85/ht-2020

Editions

Edition 1: First published version.
Edition 2: Added Code of Conduct for Distance Education

Contents

Intended Learning Outcomes

The student shall after the course be able to:

- Conduct user research (data collection, analysis, modelling with e.g. interviews, people and scenarios).
    - o   Examined in PRA1 and RED1.
- Generate ideas and sketch concept proposals in interaction design.
    - o   Examined in PRA1, RED1, and UPG1.
- Evaluate proposals and argue for a proposal based on results from user research in communication with clients.
    - o   Examined in PRA1 and RED1.
- Specify requirements for, and sketch, develop and present prototypes of interactive products and services for a client.
    - o   Examined in PRA1 and RED1.
- Use design principles and guidelines in sketching and prototyping user interfaces.
    - o   Examined in PRA1, RED1, and UPG1.
- Conduct and present to a client the evaluation of prototypes of interactive products and services with regard to basic measurement and identification of problems in the user experience.
    - o   Examined in PRA1 and RED1.
- Make judgments in user experience and interaction design with regard to social and ethical aspects, such as gender and sustainability.
    - o   Examined in PRA1.
- Identify one's own need for further knowledge and expertise in user experience and interaction design.
    - o   Examined in UPG1.

Course Contents

The course deals with professional process knowledge in interaction design and user experience (UX). It is especially focused on setting up and implementing a human-centered design process for interactive products and services from earliest ideas to tested prototypes. The course is based on design challenges from external clients.

Skills: Implement an interaction design process with customer and user perspective for a client. Design well-functioning interactive products and services at the level of prototypes. Study and evaluate user experience.

Topics: Basic concepts in human-computer interaction. Design principles as well user interface guidelines. Prototyping of interactive products and services. Design Methods. Different types of user interfaces. Methods for evaluating user experience and usability.

Technology: Prototyping tools (LoFi and HiFi) for the development of interactive products and services. Different kinds of interaction technology.

Course Evaluation from Last Year

This is the first time the course is given and there is therefore no course evaluation from last year. The course which is replaced by this course was perceived as too heavy and the workload per credit has been reduced in comparison to the old course.

Working and Teaching Methods

Lectures (Swe. föreläsningar) introduce or broaden the perspectives given through the readings and seminars. Lectures are held in Zoom and a link to the meeting for the course will be announced at the Lisam course room. Lectures describe what, why and how of a certain topic. Smaller exercises are also conducted at some lectures. Groups will be presented at the first lecture. The lectures are:

1. Introduction to Interaction Design and UX
2. User Research and Design Objectives
3. Dos and Don'ts for Design Consultants
4. Ideation and Concept Selection
5. Interaction Design Principles and Requirements Specification
6. User Interface Sketching and Design Patterns
7. LoFi Prototypes and Formative Usability Tests
8. Visual Interface Design
9. HiFi Prototypes and Summative Usability Tests

Presentations (Swe. redovisningar) have compulsory attendance and will be held in Zoom. Links to meetings are announced at the Lisam course room. The two first presentations are held as critique sessions with two project groups at the time. The third and final presentation is in full class. Critique sessions are conducted around a show-and-tell format about produced materials. Two groups have presentation at the same time so that learning may occur between groups. The ones who present should think about what kind of feedback they need. The ones who listen should give constructive critique on the others group work. For the presentation, every group has 10 minutes for presentation and 5 minutes for critique (good and bad). There are three presentations:

1. Concept presentation (critique session)
2. Revisions presentation (critique session)
3. Final presentation (full class)

Workshops focus on exercises that are prepared by the lecturer. They will be in physical meetings in half class (in accordance to the current guidelines from Folkhälsomyndigheten). The three workshops are:

1. Radical concept ideation
2. Sketching madness
3. Test my product

Supervisions (Swe. handledningar) focus on what has been done, in relation to what is expected by the course examiner, and what the next steps should be. Prepare questions that you may have for the teacher. We expect all students to attend supervision sessions, and if someone repeatedly is missing, we will consider that an indication that something is wrong in the project group. Super visions will

be with two groups at the time in physical meetings (the room is specified in the timetable at TimeEdit). There are three supervision sessions:

1. Concept phase supervision
2. Detailing phase supervision 1
3. Detailing phase supervision 2

Group work (Swe. grupparbete) in the practical design work is done in groups of approximately five students. You have a group room in the course Lisam room, but you are also free to use other means of communication (i.e. Discord, Slack, Miro, Mural). The work includes also collaboration with different user groups and stakeholders. There is time in the course time table marked as group work (without teacher and without a lecture hall) for the groups to use as they please.

Individual work is required in reading up on how to do the practical design work in the group. There are also individual assignments (UPG1).

Cod of Conduct for Distance Education

This code of conduct is written to clarify what we as teachers expect of you as students during distance education, and what you can expect from us in turn:

- Online sessions should be treated as any other educational activity; respect the teacher's and fellow students' time and focus fully on the educational activity without other distractions.
- Everyone should join the online sessions in a timely manner, i.e. a few minutes before the scheduled start, so that it can start on time.
- For live lectures and seminars, students and teachers should always have a web camera feed on.
- Everyone should mute their microphones when not speaking.
- Everyone should join online sessions using a stable connection to prevent drop-out issues. If anyone lacks or has unreliable home wi-fi, that person is expected to find alternative solutions (e.g., joining from a room on campus using Eduroam).
- Everyone must be mindful of speaker turn taking during the seminars, and make sure that everyone gets the chance to talk. Hand raising functions in Zoom can be used for both seminars and lectures to indicate that you wish to say something.
- To prevent "Zoom-bombing", passwords will be used for live sessions. Do not distribute these passwords to anyone outside the course.
- If you are not already familiar with Zoom, take a look at the guide available at LiU's website: https://www.student.liu.se/itsupport/zoom-student?l=sv

Examination

The course is assessed through a practical groupwork module (PRA1, 4 ECTS study credits) with presentations with compulsory participation (RED1, 1 ECTS study credit), and an individual assignment module (UPG1, 4 ECTS study credits).

Course Grades

This course uses the ECTS grading scale. Course grades are only given if all examination parts have been completed and given a passing grade (pass or E) or higher (D–A). The final course grade is based on the Individual assignment (UPG1).

Individual Grading of Group Work

The group work is graded pass or fail. The grades are based on the work performed by the group, but the examination is individual. This means that individual students may receive a different grade than the rest of the group if there are reasons for that. Such reasons could for example be that the group members have different ambition levels, or if there are large differences in how much work that different group members have done. Individual supplementary examination assignments can also be given by the examiner. The group members need to tell the examiner if there are reasons for different grades in a group. More precise grading criteria are specified in below for each assignment.

Compulsory Attendance and Supplementary Tasks

Presentations (Swe. redovisningar) have compulsory attendance, which is examined in the RED1 module, but there are a few valid reasons for missing a presentation.

If you cannot attend you must firstly notify your supervisor in advance about why you cannot participate. The supplementary task is to write a description of what you personally did in the group work, and a reflection on lessons learned from the group work (about 800 words). The supplementary tasks must be delivered by email to the examiner within four weeks after the presentation.

Time Budget

You could potentially spend in an infinite number of hours on each assignment, but you should not. Make a time budget on hours for each part of the assignment and stick to it. You are expected to spend two and a half workdays per week on this course including reading the course literature. The expectations on quality of deliveries and amount of work is adjusted according to what is possible to do given your time constraints on a halftime course.

Deadlines

The practical group work and the individual assignment has a deadline at *2020-11-13 17:15*.

There are two deadlines for *re-examination*:
- Re-examination 1: 2021-01-15, midnight.
- Re-examination 2: 2021-03-26, midnight.

A missed deadline means the grade F will be reported in Ladok. Assignments for re-examination 1 and re-examination 2 will be posted on Lisam at least one month before the re-examination deadlines. Students that miss the last deadline for re-examination must do the assignments the next time the course is given. Students cannot try for higher grade by re-examination. No assignments are graded between deadlines.

Conduct

The following set of rules apply to the assignments in this course. It is a slightly modified version of IDA's general rules for labs:

- The assignments are in a group or individually, according to the instructions given for the course. However, examination is always individual.
- It is not allowed to hand in solutions copied from other students, or from elsewhere, even though modifications have been made. If unauthorized copying or other forms of cheating is suspected, the teacher is required to make a report to the University Disciplinary Board. The consequences of cheating can be a warning or suspension from studies.
- You should be able to explain the details of the assignment. It is also possible that you may have to explain why you have chosen a specific solution. This applies to everyone in a group.
- If you anticipate that you cannot meet a deadline, contact your teacher. You may get some support and possibly a deadline at a later date. It is always better to discuss problems than to cheat.
- Policy for presentation. A definite end date, deadline, generally apply to the submission of assignments in the course. This deadline may be during the course or at the end. If presentation is not done in time, you may have to do a new set of assignments the next time the course is offered.

Communication and Feedback

Lisam and e-mail will be used for asynchronous communication from the teachers to the students. The web page at the IDA-server will not be updated during the course.
Formative feedback on design process and design product is given orally during supervisions and presentations. Feedback on the individual assignment is of a summative rather than formative nature.

Course Literature

Reading the course literature should be done continuously during the course.
The following book on *visual design* is mandatory reading (available electronically through the university library):

Schlatter, T., & Levinson, D. (2013). *Visual Usability: Principles and Practices for Designing Digital Applications*. Morgan Kaufmann.

Choose **one** of the following two books as your *main book* on interaction design and UX:

Arvola, M. (2020). *Interaktionsdesign och UX: Om att skapa goda användarupplevelser (2. uppl.)*. Studentlitteratur.
Benyon, D. (2019). *Designing user experience: A guide to HCI, UX and interaction design* (4. ed). Pearson. (We will use Part I and Part II.)

If you use Benyon's book and not Arvola's: Choose **one** of the following two articles to read on *sustainability* and design:

DiSalvo, C., Sengers, P., & Brynjarsdóttir, H. (2010). Mapping the landscape of sustainable HCI. In *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems (CHI '10)* (pp. 1975-1984). ACM. https://doi.org/10.1145/1753326.1753625

Lou, Y. (2018). Designing Interactions to Counter Threats to Human Survival. *She Ji: The Journal of Design, Economics, and Innovation, 4*(4), 342-354. https://doi.org/10.1016/j.sheji.2018.10.001

If you use Benyon's book and not Arvola's: Choose **one** of the following two articles to read on *gender* and design:

Wong-Villacres, M., Kumar, A., Vishwanath, A., Karusala, N., DiSalvo, B., & Kumar, K. (2018). Designing for Intersections. In *Proceedings of the 2018 Designing Interactive Systems Conference (DIS '18)* (pp. 45-58). ACM. https://doi.org/10.1145/3196709.3196794

Wikberg Nilsson, Å. & Jahnke, M. (2018). Tactics for Norm-Creative Innovation. *She Ji: The Journal of Design, Economics, and Innovation, 4*(4), 375-391. https://doi.org/10.1016/j.sheji.2018.11.002

Teachers

- *Mattias Arvola* has a PhD in Cognitive Systems and is Associate Professor in Cognitive Science at Linköping University. He specialises in interaction design and user experience design methods and theory. Course leader, examiner, lecturer. mattias.arvola@liu.se
- *Ludwig Halvorsen* has a Master in Cognitive Science and is a junior lecturer in interaction design at Linköping University. His master thesis focused on design of simulations for cooperative training and testing of medical crisis management. Supervisor. ludwig.halvorsen@liu.se

Examination Modules

RED1 Oral Presentations (1 ECTS study credit)

There are three mandatory oral presentations. One for each phase of PRA1 Design Work (concept, revisions, and detailing). Grading is pass/fail.

PRA1 Design Work (4 ECTS study credits)

Do this module in assigned groups from week 36 to 46.
Deadline: 2020-11-13, 17:15.

Grading (pass/fail) depends on how well the concept, revisions, and detailing of the design work is considered, executed, and presented.

Each group will be assigned one of design briefs from an external client. The design briefs will be available at the Lisam course room under Documents.

The design work follows the process below (Swedish week numbers indicated):

Starting up (week 36)

Set up a kick-off meeting with your clients, and decide on a communication plan with them. Plan for one meeting for each phase:

Group: Budget and time plan 120 work hours on the assignment for every group member, not including reading the course literature for the assignment. This means you should work 12 hours per week on the group work. Decide who takes main responsibility and leadership for what phase. Start each phase with more detailed planning and division of labour. Set up a Sway document where you can record your process and progress (suggested template is "Gör det själv-projekt", Eng. Do it yourself project, but you can set up your own if you wish). Sway is an application which you can find on Lisam/Office 365.

- Introduction to using Sway
- Inspirational example report: The Glass Wall BBC re-design

Individually: Skim through the course literature early and take notes so that you can find the different parts when you need to read them more carefully during the process. Use the literature and the lectures in the planning of each phase so you know what to do and how. Download Adobe XD, sign up for Figma and JustInMind and *familiarize yourself with the tools*. There are excellent tutorials online.

Concept phase (week 37–39)

Focus: For the concept design, it is important that the problem is framed from wide perspectives with many concept design ideas generated. Essential and important aspects should be picked up in ideation. Many elements of exploration and judgment should be considered. The chosen concept should have potential to resolve the identified crux.

Step 1. *Plan and conduct the interviews* firstly with a couple of stakeholders, and then with 1-2 representative users per group member.

Step 2. *Create personas and scenarios/storyboards* that describe the crux of the current situation for the users. Set up design objectives in the form of effect goals, UX goals, and product goals.

Step 3. *Ideate and sketch out a wide variety of design concepts* that are not mere modifications to an existing system, but rather complete re-inventions. The first ten ideas are usually not original. Make rough and simple sketched concept storyboards for at least one concept per group member. Evaluate the sketched concept storyboards using a Pugh-chart.

Step 4. *Develop a concept proposal* in a more presentable storyboard. Make sure to decide what the thing is with the concept (i.e. the core idea or unique selling point, USP), and what the crux it addresses.

Step 5. The *presentation of the concept phase* (mandatory attendance) should be in English if there are exchange students participating, and otherwise in Swedish. Make sure you ask your peers and teachers for the critique you need to bring your design work forward. Prepare a 10-minute sketchboard presentation (Arvola, 2020, Figure 1.7) where you show bring and show your:

- Primary and secondary personas
- Scenarios of current situation
- Design objectives

- Concept selection with motivations in a Pugh chart
- Storyboard that present the thing and the crux of the selected concept.

Consider the critique from peers and teachers at the presentation session and revise your concept if necessary. Document your process and progress in your Sway document.

Revisions phase (week 40–42)

Focus: For the revision of ideas, many variations of solutions and parts of solutions should be considered. The design solution should address the identified problem and strike a balance between simplicity and sophistication.

Step 1. *Establish the most important requirements* for your concept, in terms of functions (what the users should be able to do with the system), data (what contents it should have and their format), qualities (how the system should be), constraints (under what circumstances it should work).

Step 2. *Sketch out and explore different alternative user interface (UI) designs.* Use wireflows, i.e. wireframes in interaction flows ([example 1](#), [example 2](#)). Annotate your sketches with +/- lists and highlight your design decisions. Think through the layout, the controls, and the affordances of the proposed UI designs and select a design (or a synthesis of alternative explored).

Step 3. *Build a paper prototype* that covers the three most important tasks that your design should support. Make it look sketchy, without polished finish. Some of your test users may be non-Swedish speaking. If that is the case, then the prototype needs to have the user interface in English. Consider also the user interface guidelines for the chosen platform:

- [MacOS](#)
- [Windows](#)

- [Android](#)
- [iOS](#).

If you design a website, these user interface guidelines are only partly applicable. Review them anyway to decide what guidelines are applicable and what are not applicable for your particular design.

Step 4. *Test the paper prototype with another group of students in a formative usability test* at the workshop called "Test my product". Respect social distancing. Prepare for pre-test questions, task scenarios, observation protocol, and post-test questions). The following groups are test users for each other:

- Group 1 and 2
- Group 3 and 4 and 5

- Group 6 and 7 and 8
- Group 9 and 10.

Revise your design and your requirements based on your formative usability test results.

Step 5. *The presentation of the revision phase* (mandatory attendance) should be in English if there are exchange students participating, and otherwise in Swedish. Make sure you ask your peers and teachers for the critique you need to bring your design work forward. Consider the critique from peers and teachers at the presentation session and revise your concept if necessary. Prepare a 10-minute sketchboard presentation (Arvola, 2014, Figure 1.7, p. 28) where you bring and show your:

- Most important requirements
- Early UI explorations in sketches

- Paper prototype
- Evaluation results.

Detailing phase (week 43–46)

Focus: The detailed design should be well thought through and resolve the crux you have identified. Highlight also what the thing is in your design. Design features should fit together as a composition.

Step1. *Build an interactive computer prototype* in Adobe XD or Figma. For more advanced prototypes JustInMind (i.e. with drag-and-drop or keyboard input) is recommended. Use (and tweak) existing templates for your chosen platform. The prototype should cover the three most important tasks that your design should support. It should have high fidelity in visual design and interaction. Use templates for your chosen platform.

Step 2. *Recruit users (as representative as possible) for a summative usability test.* One user per group member is the minimum. Recruiting users takes more time than you may think; start contacting people early. Respect social distancing. You might consider using moderated remote usability testing in Microsoft Teams where you give the user control of the window on your computer. Read more here: "What is remote usability testing?" Measure basic usability and user experience metrics (time on task, success rate, SUS), and take note of usability problems. Make changes to your design based on the test results.

Step 3. *The final presentations* (mandatory attendance) will be in full class. The presentation should be in English if there are exchange students participating, and otherwise in Swedish. Prepare a 10-minute presentation where you:

- Show a screencast video that demo the computer prototype
- Show your evaluation results (what you have measured, how, and the results)
- Describe necessary changes in your design
- Highlight challenges you ran into and lessons learned during your work.

Step 4. Report the three phases of you design work—concept, revisions, and detailing—using Sway. Make it visual and elegant, as for example the The Glass Wall BBC re-design. By the deadline, share your Sway document with the teachers and with your clients. The clients may also want you to give an oral presentation for them, but that is not within the scope of the course.

Step 5. *Reflect* on the end of the final chapter of Arvola (2020, pp. 236–240) (or one of the papers on sustainability and design and one of the papers on gender on design). Set up a meeting in your group to discuss the following questions, assign one person to take notes, and send in meeting notes by email to the examiner. Bullet points describing topics is quite enough.

- What is our value proposition and business model?
- What consequences will our design have for people?
- How does our design relate to (un-) sustainability?
- How do we as designers build on and change stereotypes, norms and power structures?

UPG 1 Individual Assignment

Deadline: 2020-11-13, 17:15.

Do the readings for this module during week 36–39.
Do the tasks during week 40–46.

UPG 1 consists of three tasks (sketching, visual design, and reflection). Each of the three task is answered in no more than 1000 words (~2 pages), but it can be quite long with all images. Please, include images where requested and where appropriate. You are expected to put in about one full workday on each task of this individual assignment (reading not included). Write your name and LiU-ID on every page. Write in Swedish or English.

Grading: Each of the three tasks is worth 10 points each. The sum is compared to the following limits for the grades:

F:	<10 points
Fx:	10 points (needs completion, Swe. komplettering)
E:	15 points
D:	17 points
C:	20 points
B:	25 points
A:	28 points

Please note! You have to have more than 5 points on each of the three tasks to get the grade E or higher. Missed deadline means your get the grade F and you will have to do the re-exam assignment, which is published after the course has ended.

Submission: Submit your assignments in PDF on Lisam. Use the following file naming convention: `liuid-729G85-2020-upg1.pdf` (e.g. `matar63-729G85-2020-upg1.pdf`).

Task 1 Sketching (10 points)

Spend one workday (8 h) sketching on your design using pen and paper. Take photos/scan of your paper sketches to show that you ideate and assess concepts as well as more detailed interaction flows, that you reach a proposed design, and that you can apply the readings to your sketching.

- Sketch quickly (scribble sketch for max. one hour) about 10 alternative concepts for *an interactive system for early warning for health risks*. It is up to you to frame and re-frame what that might mean in your sketches. Choose one alternative (or a synthesis of several) to continue working on. (2p)
- For the chosen concept alternative, scribble sketch about 10 sketches with variations of user interface designs in detailed interaction flows (i.e. wireflows, Swe. gränssnittsflöde, as for example in Figure 5.6 in Arvola (2020)). Make sure to explore but reach one design proposal in the end. (2p)
- Annotate your concept and detail sketching by highlighting *issues (?)*, *alternatives (#)* to solving the issues, *pro et contra (+/-)* lists for the

alternatives, and *decisions (!)* on what alternatives to choose (see for example Figure 1.6 and Figure 5.1 in Arvola (2020)). (2p)
- Make also annotations in your sketches that connect your design ideas to design principles and patterns from Arvola (2020) or Benyon (2019) (with page numbers). (3p)

Task 2 Visual design (10 points)

Spend one workday (8 h) refining your visual design on computer. Use a drawing or prototyping tool (i.e. Sketch, Adobe XD, Figma, JustInMind). Go through and elaborate your early warning system step-by-step by considering principles from Schlatter and Levinson (2013) and write headings for each of the eight parts below (8p):

1. Consistency
2. Hierarchy
3. Personality
4. Layout
5. Type
6. Colour
7. Imagery
8. Controls and affordances

State page numbers in your design and report by annotated screen shots of different versions of your design, to show that you have understood the principles from Schlatter and Levinson (2013). (2p)

Task 3 Debriefing (10 points)

Spend one workday (8 h) reflecting on your learning in the course by responding to the following points, and structure your text using the headlines (Description, Feelings, and so on):

- Description
  - What happened in the course? Don't make judgements yet or try to draw conclusions; simply describe. (1p)
- Feelings
  - What were your reactions and feelings to the things that happened in the course? Again, don't move on to analysing these yet. (1p)
- Evaluation
  - What was good or bad about the experience? Make value judgements. (1p)
- Analysis
  - What sense can you make of the situation? Bring in ideas from the course literature to help you (make references with page numbers). What was really going on? Do you think other course students' experiences were similar or different in important ways? (2p)
- Conclusions
  - What can be concluded, in a general sense and in a unique personal sense, from these experiences and the analyses you have undertaken? (2p)
- Personal development
  - What are you going to do differently in this type of situation next time? What do you need or want to learn more about in interaction design and UX? (3p)