User Experience and Interaction Design (TDDE36)
12 ECTS Credits:

Study Guide

Spring Semester 2020

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Syllabus

https://liu.se/studieinfo/kurs/tdde36/vt-2020

Editions

Edition 1: First published version.

Contents

Intended Learning Outcomes

This course is about how to study and evaluate user experience (UX), and how to conduct human-centred design of interactive products and services (interaction design). The overarching aim of the course is that the participant will to develop knowledge in basic user experience research and evaluation methods (qualitative and quantitative), as well as interaction design methods.

The student shall after the course be able to:

- Use and account for basic qualitative user research methods (e.g. interviews, observation, and thematic analysis).
    - The goal is examined in PRA1 Research work (groupwork) and UPG6 Research method (individual work).
- Use and account for basic quantitative user experience testing methods (e.g. task success, time, self-report questionnaires), including analysis of the results using descriptive statistics.
    - The goal is examined in PRA1 Research work and UPG6 Research method.
- Ideate and sketch interaction design concept proposals, assess them, and make a convincing argument for one proposal based on user research results.
    - The goal is examined in PRA2 Design work (groupwork) and UPG7 Design method (individual).
- Sketch, develop and present interaction design prototypes.
    - The goal is examined in PRA2 Design work and UPG7 Design method.
- Conduct and account for a user experience evaluation of interaction design prototypes.
    - The goal is examined in PRA2 Design work (groupwork) and UPG7 Design method (individual).
- Assess user research and evaluations with respect to scientific criteria.
    - The goal is examined in PRA2 Design work.
- Review interaction design projects with respect to societal and ethical aspects, as for example research ethics, gender, and sustainability.
    - The goal is examined in PRA1 Research work and PRA2 Design work.

Course Contents

Skills: Conducting an interaction design process with customer and user perspectives. Designing well-functioning interactive products and services. Researching and evaluating user experience.

Subjects: Fundamental concepts in human–computer interaction. Design principles and guidelines for user interfaces. Prototyping of interactive products and services. User research methods. Design methods. Different kinds of user interfaces. User experience and usability evaluation methods.

Technologies: Prototyping tools for development of interactive products and services. Interaction technologies.

Course Evaluation from Last Year

The course was received well last year. Some changes have however also been made to accommodate the students' experiences:

- The lectures in the course are intended to be information dense. They have been improved by adding examples.
- Keywords in both English and Swedish are added to every lecture.
- Sustainability and gender aspects are woven into a study class during the concept phase of the design work. The scientific articles are changed.
- Basic project management methods are introduced to facilitate the group work (WBS, Gantt chart).
- A couple of steps in the groupwork have been removed.
- Examination assignments are changed to improve the administrative order. The assignments are also changed for the re-examinations.

Working and Teaching Methods

Lectures (Swe. föreläsningar) introduce or broaden the perspectives given through the readings and seminars. They describe what, why and how of a certain topic. Smaller exercises are also conducted at some lectures. Groups will be formed at the first lectures

Presentations (Swe. redovisningar) have compulsory attendance and are held as critique sessions with two project teams at the time (except for the final presentation which is in full class). Critique sessions are conducted around a show-and-tell about produced materials. It is important to give constructive critique on the others work. Two groups have presentation at the same time so that learning may occur between groups. For the presentation, every group has 10 minutes for presentation and 5 minutes for critique.

Teaching sessions (Swe. lektioner) focus on exercises that are prepared by the lecturer.

Supervisions (Swe. handledningar) focus on what has been done, in relation to what is expected by the 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 team.

Group work (Swe. grupparbete) in the practical research and design work is done in groups of approximately five students. It includes collaboration with different user groups (i.e. third-stream activities). There is time in the 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 things in the group work. There are also individual assignments.

Examination

The course is assessed through two practical groupwork modules (PRA1, PRA2) and two individual assignment modules (UPG6 and UPG7). Compulsory attendance is required for presentations in PRA1 and PRA2.

- PRA1 Research work fail (U), pass (G) 2 credits
- PRA2 Design work fail (U), pass (G) 4 credits
- UPG6 Research method fail (U), 3, 4, 5 2 credits
- UPG7 Design method fail (U), 3, 4, 5 4 credits

Reading the course literature should be done continuously during the course.

Course Grades

Course grades are only given if all examination parts have been completed and given a passing grade (G, 3) or higher (4, 5). The final course grade is calculated by adding the points earned on the individual assignment modules UPG6 and UPG7 and comparing the result to the following table:

- Grade U: <15 points
- Grade 3: 15≥ points <18
- Grade 4: 18≥ points <23
- Grade 5: ≥23 points

Individual Grading of Group Work

In the group parts, 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) are part of the examination of the modules Research Work (PRA1) and Design Work (PRA2). There is one presentation for PRA1 and two presentations for PRA2. They all have compulsory attendance, 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 ship in an infinite number of hours on each assignment, but you should not. Make a time budget and stick to it. The examination is adjusted

according to what is possible to do given your time constraints of two days per week on this course.

Deadlines

The *practical group work* deadlines for deliverables on the following dates:

- PRA1 Research work: 2020-02-28, 17:15
- PRA2 Design work: 2020-05-28, 17:30

The *individual assignments* have a deadline at:

- UPG6 Research method: 2020-03-27, 17:15
- UPG7 Design method: 2020-06-05, 17:15.

There are two deadlines for *re-examination*:

- Re-examination 1: 2020-08-29, midnight.
- Re-examination 2: 2020-10-23, midnight.

Students that miss the last deadline for re-examination must do the assignments for the following year's course. Students cannot try for higher grade by re-examination. No assignments are graded between deadlines. *Please note:* Re-examination are made by e-mail to the examiner of the course and not through Lisam. Re-examination assignments are published on Lisam (under Documents) no later than one month before the re-examination deadline.

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.
- 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.
- If you do not follow the university and a course examination rules, and try to cheat, by for example plagiarizing or using unauthorized assistance, then it may result in a complaint to the University Disciplinary Board. The consequences of cheating can be a warning or suspension from studies.
- 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.

Feedback

Formative feedback on design process and design product is given orally during supervisions and presentations. Feedback on written reports are given in writing on submissions in Lisam. Feedback on the take home exam assignments is limited and of a summative rather than formative nature.

Course Literature (Mandatory)

The **three** following text are all *mandatory* reading:

Blandford, A. (n.d.). Semi-structured qualitative studies. In *The Encyclopedia of Human-Computer Interaction, 2nd Ed.*. The Interaction Design Foundation. https://www.interaction-design.org/literature/book/the-encyclopedia-of-human-computer-interaction-2nd-ed/semi-structured-qualitative-studies (accessed 2019-12-04)

Cairns, P. (n.d.). Experimental Methods in Human-Computer Interaction. In *The Encyclopedia of Human-Computer Interaction, 2nd Ed.*. The Interaction Design Foundation. https://www.interaction-design.org/literature/book/the-encyclopedia-of-human-computer-interaction-2nd-ed/experimental-methods-in-human-computer-interaction (accessed 2019-12-04).

Tullis, T., & Albert, W. (2013). *Measuring the User Experience: Collecting, Analyzing, and Presenting Usability Metrics* (2nd Ed). Amsterdam: Morgan Kaufmann. (electronically available through the university library)

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

Arvola, M. (2014). *Interaktionsdesign och UX: Om att skapa goda användarupplevelser*. Lund: Studentlitteratur.

Saffer, D. (2009). *Designing for Interaction: Creating Innovative Applications and Devices*, 2nd Ed.. Berkeley: New Riders.

Preece, J., Rogers, Y., & Sharp, H. (2018). *Interaction Design: Beyond Human-Computer Interaction*, 5th Ed.. Chichester: John Wiley & Sons

Preece, J., Rogers, Y., & Sharp, H. (2016). *Interaktionsdesign: bortom människa-dator-interaktion*. Lund: Studentlitteratur.

Choose **one** of the following 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). New York, NY: 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

Choose **one** of the following 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). New York, NY: 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

Reference Literature (Non-mandatory for the interested student)

Buxton, B. (2007). *Sketching User Experiences: Getting the Design Right and the Right Design*. Amsterdam: Morgan Kaufmann.

Goodwin, K. (2009). *Designing for the Digital Age: How to Create Human-Centered Products and Services*. Indianapolis: Wiley.

Greenberg, S., Carpendale, S., Marquardt, N., & Buxton, B. (2011). *Sketching User Experiences: The Workbook*. Amsterdam: Morgan Kaufmann.

Johnson, J. (2010). *Designing with the Mind in Mind: Simple Guide to Understanding User Interface Design Rules*. Amsterdam: Morgan Kaufmann.

Krug, S. (2014). *Don't Make Me Think, Revisited: A Common Sense Approach to Web Usability*. Berkeley: New Riders.

Löwgren, J., & Stolterman, E. (2004) *Design av informationsteknik: Materialet utan egenskaper*. Lund: Studentlitteratur. (English version: Thoughtful Interaction Design, MIT Press, 2007)

Norman, D.A. (2013). The Design of Everyday Things: Revised and Expanded Edition. New York: Basic Books.

Tidwell, J. (2011). Designing Interfaces: Patterns for Effective Interaction Design, 2nd Ed. O'Reilly.

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
- *Emma Chilufya* is a PhD student in Cognitive Science at Linköping University. Her thesis topic is the design of interactive artificially intelligent virtual agents. Course assistant. emma.mainza.chilufya@liu.se
- *Eva Ragnemalm* has a PhD in Computer Science and is Senior Lecturer at Linköping University. One of her main research areas is design for learning. Course assistant. eva.ragnemalm@liu.se

Examination Modules

PRA1 Research Work

Do this module in assigned groups from week 4 to week 9.
Presentation date: February 25–27, 2020.

Grading (pass/fail) depend on how well the students consider, execute, and present both the qualitative research and the quantitative research. Information produced in the research should facilitate you in framing a fruitful design challenge the design work (PRA2).

The research work follows the process below (with Swedish week numbers indicated).

The budget is 64 work hours for on for every group member, not including reading the course literature for the assignment.

Starting up (week 4)

Step 1. Choose a group of people to interview about their activities and the interactive systems they use. You need to recruit them yourself, so you need to have some ideas about how to get into contact with them. The user group should not be other students. Here is a list of suggestions:

- Club and association activities
    - Members of a specific club, association or society
    - Board members of a specific club, association or society
- Education
    - Students (pre-school, primary school, or secondary school)
    - Teachers at a specific level or unit
    - Administrators at a specific level or unit
    - Principals, coordinators or directors of study at a specific level or unit
- Family and home
    - Kids
    - Parents
    - Elderly
    - Relatives
- Public
    - Visitors or tourists
    - Citizens in a specified life situation
    - Clerks at a specified public service provider
- Professional
    - Janitors
    - Librarians
    - Hotel or restaurant staff
    - Construction workers
    - Project managers
    - Scientists and researchers
    - Storehouse workers
    - Store employees
    - Café workers

  - Self-employed
  - Small entrepreneurs

Step 2. Assign roles and tasks to the group members.

Step 3. Skim through the readings early and take notes so that you can find the different parts when you need to read them more carefully during the process:

- Blandford (n.d.)
- Tullis and Albert (2013, Ch. 1–6)
- Cairns (n.d.).

Qualitative research (week 5–6)

Step 1. Start recruiting users early since it takes more time than you would expect. Follow the guidelines on for planning, sampling, and recruitment in Blandford (n.d). Make an interview guide with the purpose of gaining insights about the users and how they experience their situation and the systems they use:

- Who are the users?
  - What are their roles?
  - What characterise them?
  - What do they know?
- What are their goals and tasks?
  - What they do and why?
  - What tools and interactive systems do they use?
  - How do they use the tools they use (in what manner and in what steps)?
- What are their situations of use?
  - When is it used?
  - Where is it used?
  - How do they feel about the situation where systems are used?
  - What is important for them in the situation of use?
- What are their user experiences?
  - How do they feel about the systems they use?
  - What are the pain points?
  - What possibilities of improvement do they see?

Step 2. Conduct 1-2 situated (not over Skype or phone) *interviews* per group member. Follow the guidelines by Blandford (n.d.) for gathering data.

Step 3. Analyse your qualitative data using *thematic analysis*. Follow the guidelines by Blandford (n.d.) for analysing data.

Quantitative research (week 7–8)

Step 1. Choose one interactive system you have encountered in the qualitative research to focus on. It should be a system that is problematic from a usability and user experience perspective.

Step 2. Follow the guidelines on for planning, sampling, and recruitment in Tullis and Albert (2013, Ch. 3). Plan the quantitative study with the purpose of testing the

user experience for the chosen system by measuring task success rates; time on task; and the System Usability Scale (SUS) (Tullis and Albert (2013, Ch. 3–6). Consider also if there are other metrics described in the course literature that also are relevant to measure.

Step 3. Test the usability and user experience of the system with at least one user per group member and gather data on the metrics. Follow the guidelines given by Tullis and Albert (2013). Use descriptive statistics to analyse quantitative results. Make sure you choose the correct measures of central tendency (Swe. lägesmått) and dispersion (Swe. spridningsmått) depending on the levels of scale (Swe: skalnivå): nominal, ordinal, interval, or ratio (Swe. kvot).

Reporting (week 9)

Step 1. Write a report in Swedish or English. Use the Research Report Template at Lisam. Protocols and questionnaires can be placed in appendices. References to course literature can be made in the introduction and in the method sections. References to previously introduced literature can also be used in the discussion section to describe your results in terms of what you have read.

Step 2. Prepare and give a 10-minute oral presentation where you describe the system, the qualitative insights about the use situation, and the quantitative measurement of UX and usability. It should be in English if there are exchange students participating, and otherwise in Swedish. The presentation is held with two groups at the time and it is important that the other group should work as a constructive and well-willing critic. We want to have a good dialogue.

Step 3. Upload your report with the presentation material (preferably posters, but slides are also OK) as an appendix in PDF on Lisam. File naming convention (replace # with your group number): `group#-tdde36-2020-pra1.pdf`

Consider also sharing the report with stakeholders that you may have encountered in during the design work to show the results of their participation in your project.

PRA2 Design Work

Do this module in assigned groups from week 10 to 22.
Presentation of Interaction Concept Design: April 2–3, 2020.
Final presentations: May 14.
Report deadline: 2020-05-28, 17:30.

Grading (pass/fail) depends on how well the concept design, prototyping, evaluation, and review is considered, executed, and presented.

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

The budget is 120 work hours on the assignment for every group member, not including reading the course literature for the assignment.

Starting up (week 10)

Step 1. Assign roles and tasks to the group members.

Step 2. 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). Sway is an application which you can find on Lisam/Office 365.

Step 3. Skim it through early and take notes so that you can find the different parts when you need to read them more carefully during the process:

- Arvola (2014), Saffer (2009), OR Preece, Rogers, & Sharp (2015, 2016).
- DiSalvo, Sengers, and Brynjarsdóttir (2010) OR Lou (2018).
- Wong-Villacres, Kumar, Vishwanath, Karusala, DiSalvo, and Kumar (2018) OR Wikberg Nilsson and Jahnke (2018).

Concept phase (week 10–11, 14)

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

Step 1. Create personas and scenarios/storyboards that describe the crux of the current situation for the users, based on your research results from PRA1. Set up design objectives in the form of effect goals, UX goals, and product goals.

Step 2. Ideate and sketch out a wide variety of design concepts that are not mere modifications to the existing system, but rather complete re-inventions of it. 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 3. Develop a concept proposal in a more presentable storyboard. Make sure to decide what *the thing* is with the concept, and what *the crux* it addresses.

Step 4. The presentation (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, 2014, Figure 1.7, p. 28) where you show your:

- Primary and secondary personas
- Scenarios of current situation
- Main different design concepts in sketches
- Concept selection with motivations supported by a Pugh chart
- Storyboard that present the value proposition (i.e. the thing) of the selected concept and the crux it addresses.

Step 5. 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.

The revisions phase (week 15–17)

> *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. It should not be too simple, yet not unnecessarily complicated.*

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 alternative user interface designs. Use wireflows, i.e. wireframes in interaction flows (example 1, example 2). Annotate your sketches with +/- lists and highlight your design decisions.

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 a user interface in English. Consider also the user interface guidelines for the chosen platform:

- MacOS
- The Universal Windows Platform (UWP) and the Fluent Design System
- 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 on the study class (Swe. lektion) dedicated for it in the timetable. Prepare and conduct a formative usability test. Prepare for pre-test questions, task scenarios, observation protocol, and post-test questions). For the observation protocol, take inspiration from the note-taker's guide at usability.gov. The following groups are test users for each other:

- Group 14 and 1
- Group 2 and 3
- Group 4 and 5
- Group 6 and 7
- Group 8 and 9
- Group 10 and 11
- Group 12 and 13.

Step 5. After the test, revise your design and your requirements based on your formative usability test results. Document your process and progress in your Sway document. Make sure to include your most important requirements, early sketches, paper prototype and evaluation results.

Detailing phase (week 18–22)

> *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.*

Step 1. Develop the visual design and build an interactive computer prototype using one of the following tools:

- Adobe User Experience CC
- Figma
- Axure RP
- InVision.

The prototype should cover the three most important tasks that your design should support. It should have high fidelity in visual design and interaction.

Step 2. Recruit representative users for the final usability test. One user per group member is the minimum. Recruiting users takes more time than you may think; start contacting people early. Prepare and conduct a usability and user experience evaluation of the interactive computer prototype. *Measure* basic usability and user experience metrics (e.g. 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 will be in full class (mandatory attendence). The presentation should be in English if there are exchange students participating, and otherwise in Swedish. Prepare a 10-minute presentation where you:

- Demonstrate the computer prototype
- Show your evaluation results
- Describe necessary changes due to the evaluation results
- Highlight challenges you ran into and lessons learned.

Document your process and progress in your Sway document.

Step 4. Share your Sway document with the teachers. It covers now the three phases of you entire design work: concept, revisions, and detailing. Make it visual. Consider

also sharing it with stakeholders that you may have encountered in during the design work to show the results of their participation in your project.

Review (week 22)

Step 1. Read one of the two papers on sustainability (DiSalvo, Sengers, & Brynjarsdóttir, 2010); Lou, 2018), and one of the two papers on gender (Wong-Villacres, et. al, 2018; Wikberg Nilsson & Jahnke, 2018).

Step 2. Have a meeting to discuss the following questions in your groups and submit simple meeting notes from your discussion (one page for sustainability and one page for gender. It can be a bullet list of what you talked about.

- Questions for discussion on sustainability:
    - What is sustainability in human-computer interaction? Are there different ways of conceptualising the concept of sustainability?
    - In what ways does your project contribute to sustainable development? In what ways does it not contribute?
    - Would your proposed interactive system be worthwhile, considering it from the perspective of sustainability?
- Questions for discussion on gender:
    - What are the issues of gender, heteronormativity, and intersectionality that are relevant in your project?
    - Are your perceptions of the users in your project stereotypical, and how could you avoid stereotyping users in future projects?
    - To what degree does your design work depend on normative structures, and should you try to change them by means of your design?
    - Should you, or should you not, try to change the power structures between stakeholders and users by means of your design work?

Step 3. The review meeting notes are submitted in an email to the examiner as text (no attachments).

UPG6 Research Methods

Do this module individually during week 13. Deadline: 2020-03-27, 17:15

UPG6 consists of two tasks (qualitative research and quantitative research). Each task is answered in about 1000 words. Include images where appropriate. You are expected to put in less than one day of work on each task (reading not included). Write your name and LiU-ID on every page. Write in Swedish or English.

Grading: Both tasks are worth five points each.

- Fail (U): If one of the three tasks gets less than three points, then a time limited opportunity to supplement (Swe. komplettera) a task might be given. This only applies if the examiner assesses that that it is close to three points.
- Grade 3: ≥6 points <8
- Grade 4: ≥8 points <10
- Grade 5: =10 points

Submission: Submit your assignments in PDF on Lisam. File naming convention: `liuid-tdde36-2020-upg6.pdf` (e.g. `matar63-tdde36-2020-upg6.pdf`).

Task 1 Qualitative Research

A. Interview someone you don't know very well about their breakfast habits. Conduct the interview in their home so that they can both show you and tell you about their habits. The purpose is to learn more about how the breakfast takes place and what features of the situation that make it work well and not so well. Focus on who your interviewee is, what they do, how they do it, why they do it the way they do, and when and where they do it. Make also inquiries into how they experience it. Write field notes by hand of as much as possible of what you hear and see, but make also what you smell, taste and feel. Draw a line in the middle of the pages one which you note and record observations on one side of the line, and your thoughts, feelings, and ideas about what is happening on the other. Take 2–3 photos of your field notes to submit (do not write up your notes). (2 p)
B. Describe your interview method in terms of what Blandford (n.d.) write about techniques for data gathering. Contrast also your observation to other data gathering techniques that Blandford writes about. (2 p)
C. Discuss your interview method in terms of what Blandford (n.d.) write about assessing and ensuring quality in qualitative research. (1 p)

Task 2 Quantitative Research

A. Based on your reading of Tullis and Albert (2013): (i) what are the different types of quantitative data (levels of scales, Swe. skalnivåer); (ii) how do you choose what UX metrics (time on task, success rate, SUS) to measure; and (iii) how do you analyse the gathered quantitative data with descriptive statistics? (2 p)
B. What are the different kinds of validity according to Cairns (n.d.) and what do they mean when measuring UX or usability? (2 p)
C. What metrics would you use, and how would you ensure validity if you were to evaluate a machine that mixes personalized granola for home use? Motivate your answer and highlight what is particular about the evaluation of granola mixer for home use. (1 p)

UPG 7 Design Methods

Do this module individually during week 23. Deadline: 2020-06-05, 17:15.

UPG7 consists of three tasks (concept, prototyping, and evaluation). Each task is answered in about 1000 words. Include images where requested and where appropriate. You are expected to put in less than one day of work on each task (reading not included). Write your name and LiU-ID on every page. Write in Swedish or English.

Grading: Every task is worth five points each.

- Fail (U): If one of the three tasks gets less than three points, then a time limited opportunity to supplement (Swe. komplettera) a task might be given. This only applies if the examiner assesses that that it is close to three points.
- Grade 3: ≥9 points <11
- Grade 4: ≥11 points <14
- Grade 5: ≥14 points

Submission: Submit your assignments in PDF on Lisam. File naming convention: `liuid-tdde36-2020-upg7.pdf` (e.g. `matar63-tdde36-2020-upg7.pdf`).

Task 1 Concept

A. Work on paper. Sketch quickly (scribble sketch for max. one hour) about 10 alternative concepts for an interactive system for early warning for health risks. Assess the alternatives using pro et contra (+/-) lists and choose one alternative (or a synthesis of several) to continue working on. Scribble sketch about 10 sketches with variations of user interface design in detailed interaction flows (i.e. wireflows, Swe. gränssnittsflöde) for the chosen concept alternative. Take photos of your paper sketches to show that you ideate and assess concepts as well as more detailed interaction flows, and that you reach a proposed design. (3 p)
B. Explain why and how your solution came about and evaluate how far your solution satisfied potential needs. Relate your explanation to concept design methods described in the course literature (i.e. Arvola, 2014; Saffer, 2009; or Preece et al., 2015, 2016). (2 p)

Task 2 Prototyping

A. Build a paper prototype of your design of the early warning for health risks. Test your paper prototype with one user. Describe step-by-step how you did the prototype (illustrate with photos), how you tested it, and what happened in the test. (3 p)
B. Discuss your prototyping procedure in relation to prototyping methods described in the course literature (e.g. Arvola, 2014; Saffer, 2009; Preece et al., 2015, 2016). (2 p)

Task 3 Evaluation

A. Make a short usability evaluation plan for a HiFi computer prototype of the early warning system for health risks. Consult the Usability Test Plan example provided under Documents/Templates at Lisam for examples of what to include. You do not need to make it as thorough as the example (500 – 700 words is quite enough). Motivate your choices and make also references in your plan to what the course literature has to say about usability evaluation methods. (3 p)
B. What would be the *research ethics* you would need to consider when you do the evaluation of the early warning system for health risks? Relate your answer to what Blandford (n.d.) write about ethics and informed consent. Highlight what is particular in the evaluation of this particular application compared to any other application. (2 p)