

User Experience and Interaction Design (TDDE36)

12 ECTS Credits: Study Guide VT 2019

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Syllabus

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Editions

Edition 1: First published version.
Edition 1.1: Changed a minor error in instructions for trying for higher grades at re-submissions. Changed a typo. Corrected contact information to course administrator.

Contents

Intended Learning Outcomes.....	3
Course Contents	3
Course Evaluation from Last Year	3
Working and Teaching Methods	4
Examination	4
Grading.....	4
Required Attendance.....	5
Deadlines	5
Conduct	5
Group Assignments: The Project	7
UPG1 and UPG2 Qualitative User Research and Quantitative UX Testing (Group).....	8
UPG3 Interaction Concept Design (Group)	10
UPG4 Interaction Design Prototyping (Group)	12
UPG5 Evaluation of Prototype (Group).....	14
Individual Assignments: The Take Home Exam.....	16
UPG1 Qualitative User Research (Individual).....	16
UPG2 Quantitative UX Testing and Descriptive Statistics (Individual)	16
UPG3 Interaction Concept Design (Individual).....	17
UPG4 Interaction Design Prototyping (Individual).....	17
UPG5 Evaluation of Prototype (Individual)	17
Feedback	18
Course Literature (Mandatory)	18
Reference Literature (Non-mandatory)	18
Teachers	19

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 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 UPG1 (group and individual parts).
- 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 UPG2 (group and individual parts).
- 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 UPG3 (group and individual parts).
- Sketch, develop and present interaction design prototypes. The goal is examined in UPG4 (group and individual parts).
- Conduct and account for a user experience evaluation of interaction design prototypes. The goal is examined in UPG5 (group and individual parts).
- Assess user research and evaluations with respect to scientific criteria. The goal is examined in UPG1 and UPG2 (group parts).
- Review interaction design projects with respect to societal and ethical aspects, as for example research ethics, gender, and sustainability. The goal is examined in UPG1, UPG2, and UPG5 (group part).

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 for the first two assignments have been scheduled tighter early on in the semester so that they come before the research works starts.
- The literature on research methods, sustainability, and gender are introduced at lectures, to make it easier to grasp.
- The examiner is scheduled to take care of as many presentations as possible.

- Individual assignment 1 and 2 have a deadline in the first examination period of the spring, instead of at the end.
- Group assignments as well as individual assignments will be described during lectures to avoid misunderstandings.
- Unclear instructions have been clarified.
- Lectures and teaching sessions have been improved.

Working and Teaching Methods

Lectures 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.

Presentations 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 focus on exercises that are prepared by the lecturer.

Supervisions 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 in the design project 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 (Swe. grupparbete, GU) (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 parts of all five assignment, in the form of a take home exam.

Examination

There are five assignments (UPG1–5) in the course and every assignment has one group part and one individual part. The group parts form together a project with five phases. The individual parts form together a take home exam.

Grading

The final course grades are calculated as the *median* of the grades for the four examination assignments. Every assignment has a group part that is awarded pass or fail, and an individual part that is graded U,3, 4, 5. The individual part decides the grade on the assignment, but the group part need to be passed as well. The round-to-nearest with round half up rule is applied (for example, 3.5 is rounded up to 4) in the calculation of course grades.

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.

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.

Required Attendance

Presentations are part of the examination and have compulsory attendance, but there are a few valid reasons for missing a presentation. You must then notify your supervisor in advance about why you cannot attend. 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 should be delivered to your supervisor as soon as possible, but at the latest by the supplementary deadline.

Deadlines

The *group assignments*' deadlines for deliverables on the following dates (consult the timetable on TimeEdit for the exact time of the deadline):

- Assignment 1 and 2: 2019-03-01
- Assignment 3: 2019-03-28
- Assignment 4: 2019-05-10
- Assignment 5: 2019-05-24.

The *individual assignments* have a deadline at:

- Assignment 1 and 2: 2019-03-22
- Assignment 3, 4 and 5: 2019-06-05.

There are two supplementary deadlines for *re-submissions*:

- All assignments: 2019-08-31
- All assignments: 2019-11-01.

Students that miss the last deadline for re-submission cannot supplement or resubmit but must do the assignments for the following year's course. Students can not try for higher grade by handing in material at the deadline for re-submissions. No assignments are graded between deadlines. *Please note:* Re-submissions are made by e-mail to the examiner and not through Lisam.

Conduct

The following set of rules applies 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.

Group Assignments: The Project

The five group assignments make up a project with five phases with compulsory oral presentations during the course. There will be about 5 students in every group. You will have to read the assigned course reading to in advance to be able to complete the group assignments. Group assignments are graded Fail or Pass.

Start reading the literature as soon as the course starts to avoid making unnecessary mistakes. You need to read up and attend lectures to fully understand how to do the assignments.

UPG1 and UPG2 Qualitative User Research and Quantitative UX Testing (Group)

Duration: Week 4 to week 9.

Presentation date: February 26 or 28, or March 1, 2019. Grading (pass/fail) depend on how well the students consider, execute, and present both the qualitative research methods (UPG1) and the quantitative research methods (UPG2).

Information produced in the research should facilitate you in framing a fruitful design challenge for your project.

1. **Start:** Choose a non-trivial interactive system that you would like to re-design. It should be used by students and/or employees at the university so that you can recruit users for research and testing but does not have to be an internal LiU system. Budget and time plan 64 work hours on UPG1 and UPG2 for every group member, not including reading the course literature for the assignment. Assign roles and tasks to the group members.

Assigned readings: Blandford (n.d.), Tullis and Albert (2013, Ch. 1–6) AND Cairns (n.d.).

2. **Plan:** Follow the guidelines on for planning, sampling, and recruitment (Blandford, n.d.; Tullis and Albert, 2013, Ch. 3). Start recruiting users early since it takes more time than you would expect.
 - a. Plan the qualitative study with the purpose of gaining insights about the users:
 - i. Who are the users?
 - (1) What are their roles?
 - (2) What characterise them?
 - (3) What do they know?
 - ii. What are their goals and tasks?
 - (1) Why do they use the system?
 - (2) What they do with it?
 - (3) How do they use it (by what means and what steps)?
 - iii. What are their user experiences?
 - (1) What is important for them?
 - (2) How do they feel about it?
 - (3) What do their experiences of the system mean for them?
 - (4) What are their pain points?
 - (5) What possibilities of improvement do they see?
 - iv. What are their contexts of use?
 - (1) When is it used?
 - (2) Where is it used?
 - b. Plan the quantitative study with the purpose of testing the user experience by measuring suitable usability and user experience variables (e.g. metrics like degree and rate of task success, time on task, self-report questionnaires) (Tullis and Albert (2013, Ch. 3–6).
3. **Execute:** It can be beneficial to plan your study so that you gather qualitative and quantitative data at the same time. For example, for each participant, start with semi-structured interview about the situation of use (qualitative method). Continue with a usability test of the system (quantitative method), while

making observations (qualitative method). Then distribute a post-test questionnaire (quantitative) and make a semi-structured post-test interview about the user experience (qualitative).

- a. Qualitative: Conduct at least one interview or observation session per group member. Analyse your qualitative data using thematic analysis. Follow the guidelines by Blandford (n.d.) for gathering and analysing data.
 - b. Quantitative: Test the usability and user experience of the system with at least one user per group member and gather data on your chosen metrics. Use descriptive statistics to analyse quantitative results. Follow guidelines by Tullis and Albert (2013).
4. Review: Assess your user research with respect to criteria for quality in qualitative research (Blandford, n.d.), and the different forms of validity in quantitative research (Cairns, n.d.). Consider also research ethics. Critique and limitations of method is usually placed in the discussion section of the report, and research ethics is usually placed in the method section of an academic report, but it is sometimes placed in the discussion.
 5. Document: 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.
 6. Present: Prepare and give a 10-minute 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. Physical presentation materials, such as a poster, is preferable, but presentation slides is also OK. 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.
 7. Submit: Upload your report with the presentation material (preferably posters, but slides are also OK) as an appendix in PDF on Lisam. File naming convention: group#-coursecode-year-upg#.pdf (e.g. group3-tdde36-2018-upg1-2.pdf).

UPG3 Interaction Concept Design (Group)

Duration: Week 10 to week 13.

Presentation date: March, 27–28, 2019. Grading (pass/fail) depends on how well the concept design is considered, executed, and presented. The problem should be 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.

1. Prepare: Budget and time plan 48 work hours on the assignment for every group member, not including reading the course literature for the assignment. Assign roles and tasks to the group members.

Assigned readings: Arvola (2014, Ch. 1–3), Saffer (2009, Ch. 1–6), OR Preece, Rogers, & Sharp (2015, 2016, Ch. 9–11.).

2. Execute:
 - a. Create personas and scenarios describing the current situation for the users, based on your research results from UPG₁ and UPG₂.
 - b. Set up design objectives in the form of effect goals, UX goals, and product goals.
 - c. 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.
 - d. Evaluate the sketched concept storyboards using a Pugh-chart.
 - e. 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. Establish the most important requirements for you concept (e.g. functions, data, qualities, constraints).
3. Present: Prepare and give a 10-minute presentation where you show your:
 - a. Primary and secondary personas
 - b. Scenarios of current situation
 - c. Main different design concepts in sketches
 - d. Concept selection with motivations supported by a Pugh chart
 - e. Storyboard that present the value proposition (i.e. the thing) of the selected concept and the crux it addresses.
 - f. Most important requirements.

It should be in English if there are exchange students participating, and otherwise in Swedish.

4. Review: Consider the critique from peers and teachers at the presentation session and revise your concept if necessary.
5. Submit: Upload your presentation material (preferably posters, but slides are also OK) in PDF on Lisam. File naming convention: group#-coursecode-year-upg#.pdf (e.g. group3-tdde36-2018-upg3.pdf).

UPG4 Interaction Design Prototyping (Group)

Duration: Week 14 to week 19.

Presentation date: May 9 –10, 2019. Grading (pass/fail) depends on how well the prototyping is considered, executed, and presented. 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.

1. Prepare: Budget and time plan 48 work hours on the assignment for every group member, not including reading the literature for the assignment. Assign roles and tasks to the group members.

Assigned readings: Arvola (2014, Ch. 4–5), Saffer (2009, Ch. 7–8), OR Preece, Rogers, & Sharp (2015, 2016, Ch. 2–6, 12–14.).

2. Execute:
 - a. 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.
 - b. Build a paper prototype that covers the 3–5 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.
 - c. Test the paper prototype with another group of students. 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:
 - i. Group 12 and 1
 - ii. Group 2 and 3
 - iii. Group 4 and 5
 - iv. Group 6 and 7
 - v. Group 8 and 9
 - vi. Group 10 and 11.
 - d. Revise your design and your requirements based on your formative usability test results.
 - e. Detail the look and feel of your design. Consider the user interface guidelines for the chosen platform:
 - i. [MacOS](#)
 - ii. [The Universal Windows Platform \(UWP\) and the Fluent Design System](#)

iii. [Android](#)

iv. [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.

f. Build an interactive computer prototype using [Adobe User Experience CC](#), [Axure RP](#), or [InVision](#). There are also other prototyping tools that are appropriate in some cases. Discuss the choice of tool with your teacher so that it fits your particular design. Several tools have student licenses or free trials. The prototype should cover the 3–5 most important tasks that your design should support. It should have high fidelity in visual design and interaction.

3. Present: Prepare and give a 10-minute presentation posters or slides where you show your:
 - a. Main different user interface ideas in sketches
 - b. Paper prototype
 - c. Formative test method and results
 - d. Computer prototype.

It should be in English if there are exchange students participating, and otherwise in Swedish.

4. Review: Consider the critique from peers and teachers at the presentation session and revise your prototype if necessary.
5. Submit: Upload your presentation material (posters or slides) in PDF on Lisam. File naming convention: group#-coursecode-year-upg#.pdf (e.g. group3-tdde36-2018-upg4.pdf).

UPG5 Evaluation of Prototype (Group)

Duration: Week 20 to week 21.

Presentation date: Final presentations for the entire class on May 23, 2019. Grading (pass/fail) depends on how well the prototype evaluation, project description, and review is considered, executed, and presented. The final presented prototype 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.

1. Prepare: Budget and time plan 24 work hours on the assignment for every group member, not including reading. Assign roles and tasks to the group members.
2. Assigned readings: Raghavan & Pargman (2017), and Marsden & Haag (2016). Material on usability testing from UPG1, UPG2, and UPG4.
3. Execute:
 - a. 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.
 - b. Use your experiences from UPG1, UPG2 and UPG4 to prepare and conduct a user experience evaluation of the interactive computer prototype.
 - c. Account for the evaluation in a written test report. Use the template called Informal Usability Test Report.
 - d. Make changes to your design based on the test results
 - e. Describe your entire project (UPG1–5) using the template called Design Project Description.
4. Present: The presentations will be in full class. Prepare and give a 10-minute presentation with slides where you:
 - a. Tell the audience about your entire project
 - b. Show materials produced during the design process
 - c. Show your final design
 - d. Highlight challenges you ran into and lessons learned during the course.

It should be in English if there are exchange students participating, and otherwise in Swedish.
5. Review: Read the paper on sustainability in human-computer interaction (Raghavan & Pargman, 2017), and the paper on gender in interaction design (Marsden & Haag, 2016). 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.

- a. Questions for discussion on sustainability:
 - i. What is sustainability in human-computer interaction? Are there different ways of conceptualising the concept of sustainability?
 - ii. In what ways does your project contribute to sustainable development? In what ways does it not contribute?
 - iii. Would your proposed interactive system be worthwhile, considering it from the perspective of sustainability?
 - b. Questions for discussion on gender:
 - i. What are the issues of gender, heteronormativity, and intersectionality that are relevant in your project?
 - ii. Are your perceptions of the users in your project stereotypical?
 - iii. How could you avoid stereotyping the users?
 - iv. To what degree does your design work depend on normative structures, and should you try to change them by means of your design?
 - v. Should you, or should you not, try to change the power structures between stakeholders and users by means of your design work?
6. Submit: The test report and the review report are submitted in PDF, and the design project description is submitted in Word-format. All submissions are made on Lisam. File naming convention: group#-coursecode-year-upg#-part.fileformat (e.g. group3-tdde36-2018-upg5-test.pdf, group3-tdde36-2018-upg5-review.pdf, group3-tdde36-2018-upg5-project.docx).

Individual Take Home Exam Assignments

The individual assignments make up a take home exam with five assignments. The exam periods are intended to be used for individual assignments. UPG1–2 have deadline on March 22, 2019 at 17:15, UPG3–5 have deadline on June 5, 2019, at 17:15. Each assignment is answered in about 1000 words and is supplemented by images where appropriate. You are expected to put in less than one day of work on each individual assignment (reading not included). Individual assignments are graded Fail, 3, 4, or 5. You need to get at least 3 on all five individual assignments. *Formalities:* Hand in every UPG in a separate file. Write your name and LiU-ID on every page. Write in Swedish or English.

Grading: 3 points gives the grade 3 on an assignment, 4 points gives grade 4, and 5 points awards the grade 5. Course grade is calculated as the median of the five individual assignments, if you have been awarded a passing grade on group assignments.

Submission: Submit your assignments in PDF on Lisam. File naming convention: LiUID-coursecode-year-UPG#-individual.pdf (e.g. matar63-tdde36-2019-UPG1-ind.pdf).

UPG1 Qualitative User Research (Individual)

Do this assignment during the first exam period of the spring semester.

- Part A. Find a setting where people interact with technology and with each other. The purpose is to learn more about how the interaction takes place and what features of the setting that make it work well (or not so well). Focus on who the people are, what they do, how they do it, why they might do it the way they do, and when and where the interaction takes place. Observe without interruption for 20–25 minutes. You should not participate in any activities during the observation. Record as much as possible of what you can see, hear, smell, taste and feel about the setting (i.e. the physical surroundings) and the interaction (i.e. the conversations and the nonverbal behaviours) that take place. Draw a line in the middle of your observation notes 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 show that you have done this part. (2 points)
- Part B. Describe your observation 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 points)
- Part C: Discuss your observation method in terms of what Blandford (n.d.) write about assessing and ensuring quality in qualitative research. (1 point)

UPG2 Quantitative UX Testing and Descriptive Statistics (Individual)

Do this assignment during the first exam period of the spring semester.

- Part A: Based on your reading of Tullis and Albert (2013), (i) what are the different types of quantitative data, (ii) how do you choose what UX metrics to measure, and (iii) how do you analyse the quantitative data? (2 points)
- Part B: What are the different kinds of validity according to Cairns (n.d.) and what do they mean when measuring UX or usability? (2 points)
- Part C: What metrics would you use, and how would you ensure validity if you were to evaluate a coffee machine at an office? Motivate your answer

and highlight what is particular about the evaluation of a coffee machine. (1 point)

UPG3 Interaction Concept Design (Individual)

Do this assignment during the second exam period of the spring semester.

- Part A: Sketch quickly (scribble sketch for max. one hour) about 10 alternative concepts for the interaction with a coffee machine. 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) for the chosen concept alternative. Make one or several presentation drawings that explain your final design. Your proposal should be sound in relation to your problem framing. Otherwise, you have to explicitly re-frame the problem. Take photos of your sketches to show that you ideate and assess concepts as well as more detailed interaction flows, and that you reach a proposed design. (3 points)
- Part B: Explain why and how your solution came about and evaluate how far your solution satisfied potential needs. Relate your explanation to methods for developing design concept proposals based your reading of the course literature (i.e. Arvola, 2014; Saffer, 2009; or Preece et al., 2015, 2016). (2 points)

UPG4 Interaction Design Prototyping (Individual)

Do this assignment during the second exam period of the spring semester.

- Part A: Sketch quickly an app to order coffee at a cafe of your choice and build a paper prototype of your design. 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 points)
- Part B: Discuss your prototyping procedure in relation to methods for prototyping described in the course literature (e.g. Arvola, 2014; Saffer, 2009; Preece et al., 2015, 2016). (2 points)

UPG5 Evaluation of Prototype (Individual)

Do this assignment during the second exam period of the spring semester.

- Part A: Make a short usability evaluation plan for a prototype of an app for ordering coffee delivered by a flying drone. 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 enough). Base also your plan on your reading of Arvola (2014), Preece et al. (2015, 2016) and/or Tullis and Albert. (3 points)
- Part B: What would be the *research ethics* you would need to consider when you do the evaluation of the drone coffee delivery service (not ethic considerations in the design but in the evaluation study). Highlight what is particular in the evaluation of this particular application compared to any application. (2 points)

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)

- 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 2017-12-04)
- 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 2017-12-04).
- Marsden, N., & Haag, M. (2016). Stereotypes and Politics: Reflections on Personas. In *Proceedings of the 2016 CHI Conference on Human Factors in Computing Systems (CHI '16)*, (pp. 4017-4031). New York, NY: ACM. DOI: <http://dx.doi.org/10.1145/2858036.2858151> (accessed 2016-08-10).
- Raghavan, B., & Pargman, D. (2017). Means and Ends in Human-Computer Interaction: Sustainability through Disintermediation. In *Proceedings of the 2017 CHI Conference on Human Factors in Computing Systems (CHI '17)* (pp. 786-796). New York: ACM. DOI: <https://doi.org/10.1145/3025453.3025542> (accessed 2017-08-01).
- Tullis, T., & Albert, W. (2013). *Measuring the User Experience: Collecting, Analyzing, and Presenting Usability Metrics, 2nd Ed.* Amsterdam: Morgan Kaufmann.

Tullis and Albert (2013) is electronically available through the library. Choose also 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., & Shrap, H. (2015). *Interaction Design: Beyond Human-Computer Interaction, 4th Ed.*. Chichester: John Wiley & Sons
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