



LUNDS UNIVERSITET
Lunds Tekniska Högskola

Course syllabus

Avancerad interaktionsdesign **Advanced Interaction Design**

MAMN01, 7,5 credits, A (Second Cycle)

Valid for: 2023/24

Faculty: Faculty of Engineering, LTH

Decided by: PLED C/D

Date of Decision: 2023-04-18

General Information

Compulsory for: C3

Elective for: D4-bg

Language of instruction: The course will be given in Swedish

Aim

The course aims to:

- The student should gain in-depth knowledge of advanced (computer) interaction with new forms of information and communication technology (ICT) with a focus on multimodal interfaces and IoT
- Exercise the student in prototyping new interaction ideas where the use of ICT is supported by alternative input methods, eg sensors, while working according to a user-centered design process
- Develop the student's toolbox in terms of iterative design methods, design process and user participation and evaluation

Learning outcomes

Knowledge and understanding

For a passing grade the student must

- Describe theoretical and practical possibilities and limitations of the use of multimodal, distributed and ubiquitous forms of interaction, particularly applied to their own design (report)
- Read scientific articles dealing with advanced human-computer interaction and extract relevant theory from them.
- In a report, written in English, show how to apply a user-centered design process in a

rapid development process by:

- 1: describing the technology and which design decisions are made
- 2: motivate the design decisions based on theory and user tests

Competences and skills

For a passing grade the student must

- Apply and expand their previous programming skills and be able to create an application that reads sensor data, as well as apply skills in multimodal design to perceptualize this data.
- Apply and extend previous knowledge in cognition and interaction design (design processes and methods) in a development project with rapid iterations
- Follow an iterative design process in the project where it is clear how the prototype is developed based on additional requirements and tests and where parallel design is used in the implementation stage to investigate the usability of different variants of interaction
- In a group project be able to create a functioning (T-) prototype of an application that has the necessary detail and the completeness to enable multimodal interaction to be tested by end users

Judgement and approach

For a passing grade the student must

- Consider alternative multimodal forms of interaction beyond the traditional screen metaphor of interaction design
- Apply a design strategy that assumes that multimodal interaction forms give the user freedom to choose how an interface should be used / controlled and how information can be received
- Show the importance of involving relevant user groups in the design process by practically involving representatives during their project and describing this in the report

Contents

The course is largely based on a design- and programming project that is carried out in groups. The project trains the students' ability to work independently in a user-centered design process with fast design iterations that have similarities to XP (eXtreme Programming). Structured tutoring is provided to help achieve the project goals. The course is held together by activities that support the project process:

- Individual tasks to get started with both theory and practice
- Brainstorming
- Multi-group supervision
- Work in progress presentations
- Report in English
- Final exhibition

The project is characterized by experimenting with non-traditional (advanced) forms of interaction, by for example using sensors (GPS, accelerometer and gyro) or speech to provide input signals and, for example, sounds and vibrations to provide feedback. As a

platform, an Android smartphone is used, as it is both programmable and contains many sensors.

A selection of lectures gives theoretical support to advanced forms of interaction based mainly on interaction that lies beyond the traditional screen metaphor, for example:

- Advanced design methodology, methods and processes
- Examples of non-visual interaction such as gestures, voice Interaction, audio, haptics, tangible interaction

Some elements are mandatory (introductory lecture, project introduction, brainstorming, presentations). Compensation task that to some extent compensates for the learning element that has been missed is required in cases when a student has been unable to attend.

Examination details

Grading scale: TH - (U,3,4,5) - (Fail, Three, Four, Five)

Assessment: For a passing grade the student must pass the group project work, actively participate in the compulsory course activities and fulfill individual tasks.

The examiner, in consultation with Disability Support Services, may deviate from the regular form of examination in order to provide a permanently disabled student with a form of examination equivalent to that of a student without a disability.

Admission

Admission requirements:

- Passed article seminar, passed project report and passed half of the assignments in the home exam in MAMN25. At least 100 completed credits (hp) in the engineering program up to and including study period 1
- EDAA01 Programming - Second Course
- EXTA65 Cognition or MAMA20 Cognition and Interaction Design or TEK210 Cognition
- MAMA15 Interaction Design, Basic Course or MAMF60 Interaction Design, Process Course or MAMN25 Interaction Design

The number of participants is limited to: 60

Selection: Admission guaranteed for students for whom the course is mandatory, and who have applied within the time limits. Selection rules for the remaining places: Number of credits achieved or credited to the program in LADOK up to and including study period 1. Priority is given to students enrolled in programmes that include the course in their curriculum.

Reading list

- The course material is handed out during the course. All literature is available on the course website.

Contact and other information

Course coordinator: Kirsten Rasmus Gröhn, universitetslektor, tekn dr,
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Examiner: Charlotte Magnusson, charlotte.magnusson@certec.lth.se

Teacher: Günter Alce, gunter.alce@design.lth.se

Course administrator: Lena Leveen, lena.leeven@certec.lth.se

Further information: Compulsory parts: introduction lecture, oral project presentations and joint project activities.