

Title:**Prototyping and Fabrication Techniques**

(Prototyping og fremstillingsteknikker)

Size: 5 ECTS**Prerequisites:** BSc in Medialogy or equivalent**Objectives:**

In order to be part of a leading design team, it is essential to be able to develop and communicate new interaction design concepts for the implementation and production of future electronic devices. The course rationale is that students need to have an understanding of physical interaction design processes, where ideas are formed, developed and tested in proof-of-concept models that can be demonstrated to others via video, poster presentations, and working prototypes. The focus is on understanding and applying design and development strategies needed to move from concept to working prototype, with the most recent tools and techniques for producing new forms, input/output from computers and embedded systems, and interactive systems and devices. The course incorporates advanced fabrication techniques; students should be able to build a prototype for any concept they can imagine. By incorporating computer-assisted industrial and electronic design techniques, knowledge about specific design tools and procedures is gained. In order to be able to apply this knowledge, a thorough understanding of the many underlying concepts is required.

Students who complete the module must acquire the following knowledge, skills and competences:

Knowledge:

- The student must have **knowledge** about various approaches to Concept Design methodologies
- The student must have **knowledge** about standard methods and techniques for prototyping of new devices and systems
- The student must be able to **understand** the relationship between concept development and implementation/fabrication, specifically regarding research-based prototyping techniques

Skills:

- The student must be able to **apply** concept design methods and prototyping techniques to real world scenarios involving fabrication of objects or systems with intended functionalities (e.g. responsive environments, interactive games, robots, musical interfaces, public installations, etc.) Specific skills to be gained by the student may include many of the following:
 - **Knowledge** of concept development techniques
 - **Knowledge** of modelling and design tools
 - **Knowledge** of rapid prototyping techniques
 - **Understanding** advanced microcontroller programming
 - **Understanding** sensors, actuators, and displays
 - **Understanding** wired and wireless communication protocols
 - **Understanding** 3D input devices and haptics
 - **Understanding** iterative development (redesign/polish of product)
 - **Understanding** circuit design (schematic to printed circuit board)
 - **Understanding** Field Programmable Gate Arrays

Competencies:

- The student must be able to **analyze** a problem, design a solution and translate it into an

rapid prototyping design

- The student must be able to **analyze** his/her solutions in order to compare and assess the potential of different concept design methods and prototyping techniques, iteratively making the proper design choices
- The student must be able to **synthesize** results and concepts in a professional way equivalent to practices in both academic and industrial contexts

Type of instruction:

The types of instruction for this course are decided in accordance with the current Framework Provisions and directions are decided and given by the Study Board for Media Technology.

Exam format: In accordance with the current Framework Provisions and directions on examination from the Study Board for Media Technology:

Oral or written examination with internal censor. The assessment is performed with the Pass/Non-Pass grade.

Evaluation criteria: Are stated in the Framework Provisions.