



**LUNDS UNIVERSITET**  
Lunds Tekniska Högskola

*Course syllabus*

# Rehabiliteringsteknik Rehabilitation Engineering

**TNSF05, 7,5 credits, G2 (First Cycle)**

**Valid for:** 2023/24

**Faculty:** Faculty of Engineering, LTH

**Decided by:** PLED ID

**Date of Decision:** 2023-03-16

## General Information

**Elective for:** BME4-bdr, C4-da, D4, E4-mt, F4, M4, MD4

**Language of instruction:** The course will be given in Swedish

## Aim

The purpose of this course is to be an eye-opener as to how technology can create possibilities for people with disabilities to increase their independence, quality of life and ability to participate in society. Knowledge of the human being and the ability to understand different people's lives will be important characteristics of an engineer to be able to participate in society's aspirations for diversity.

Diversity and inclusion are part of sustainable development, and link to several of the goals in Agenda 2030, eg 3: good health and well-being, goal 4: good education for all, goal 5: gender equality, goal 8: decent work and economic growth, goal 10: reducing inequality, goal 11: sustainable cities and communities, goal 16: peaceful and inclusive communities.

## Learning outcomes

*Knowledge and understanding*

For a passing grade the student must

- be able to identify and analyze the factors that may hinder people with disabilities, with a focus on what the individual wants to do in a concrete situations
- be able to reflect on and describe how technical aids can support and enable people with different disabilities to fulfill their dreams, desires and needs
- be able to evaluate a product for people with mobility impairments, hearing

impairments, visual impairments and cognitive difficulties

### *Competences and skills*

For a passing grade the student must

- be able create a list of requirements and take into account the usability and accessibility aspects for a diverse group of users
- be able to develop a prototype that is suitable for a specific user profile or which has a focus on universal design
- give a brief oral presentation of the prototype and its use
- be able to describe the prototype in an accessible way on a poster and in a handout

### *Judgement and approach*

For a passing grade the student must

- be able to articulate the values that lie in the UN Convention on the Rights of Persons with Disabilities, to fully enjoy all human rights and fundamental freedoms, with or without technical or human assistance
- be able to describe the goal of designing products and services so they are aesthetic and usable for as many people as possible regardless of age and abilities
- to take into account that people are different with a great variety of conditions and abilities and that they have different desires and needs
- be able to express that there is a positive challenge to try to create solutions that increase an individual's independence and quality of life

## **Contents**

In this course, you will meet people who have a disability and who talk about their life situations and technology use in everyday situations. You will carry out empathic modeling exercises where impairments are simulated. You will also train your ability to solve engineering problems in a human-oriented design project where the result is either a universally designed product or a tool designed to solve a specific problem. Specific exercises and tasks are interspersed with theory and opportunities for discussion. Examples of research projects in rehabilitation engineering research are presented.

## **Examination details**

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

**Assessment:** The assessment will be based on individual and group work. A grade of 3 will be given to students who pass individual compulsory assignments, the take-home exam and project work. If you hand in the home exam after the deadline, you can get a maximum grade of 3 on it.

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:**

- At least 120 credits awarded or credited within the study programme

**The number of participants is limited to: 36**

**Selection:** Completed university credits within the program. Priority is given to students enrolled on programmes that include the course in their curriculum.

**The course overlaps following course/s:** TNX097

## Reading list

- Jönsson, B m fl: Människonära design. Studentlitteratur, 2005, ISBN: 978-91-44-04494-1. Jönsson, B (ed.): Design Side by Side. Studentlitteratur 2006. ISBN:978-91-44-01936-9. The book can be downloaded from <http://portal.research.lu.se/portal/files/5694007/3735944.pdf>.
- Arne Svensk: Design av kognitiv assistans, Licentiatuppsats från Certec, LTH. Nummer 1:2001. 2001, ISBN: 91-631-0782-1. Design for Cognitive Assistance. Licentiate Thesis, Certec, LTH. Number 1:2001. The book can be downloaded from <https://lucris.lub.lu.se/ws/portalfiles/portal/6119670/3515739.pdf>.
- Internet links.
- Handed-out material about the seven principles of universal design.
- The HaptiMap project, editors: Charlotte Magnusson, Kirsten Rasmus Gröhn, Konrad Tollmar, Eileen Deane: User Study Guidelines. HaptiMap project, 2009. Download from: [http://www.certec.lth.se/fileadmin/certec/publikationer/HaptiMap\\_d12.pdf](http://www.certec.lth.se/fileadmin/certec/publikationer/HaptiMap_d12.pdf).

## Contact and other information

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