



# DD2413 Social Robotics 7.5 credits

Sociala robotar

This is a translation of the Swedish, legally binding, course syllabus.

## Establishment

The official course syllabus is valid from the autumn semester 2022 in accordance with the decision from the head of school: J-2022-0547. Decision date: 2022-03-28.

## Grading scale

A, B, C, D, E, FX, F

## Education cycle

Second cycle

## Main field of study

Computer Science and Engineering

## Specific prerequisites

Knowledge in foundations of computer science, 6 credits, equivalent to completed course DD1338/DD1320-DD1327/DD2325/ID1020/ID1021.

## Language of instruction

The language of instruction is specified in the course offering information in the course catalogue.

# Intended learning outcomes

On completion of the course, students should be able to

- apply different concepts within social robotics
- choose and justify efficient calculation methods for the ability of social robots to perceive, make decisions and move
- use suitable software design and tools to develop applications for social robotics
- design, analyse and document experiments in human-robot-interaction (HRI)
- demonstrate understanding of the social and ethical aspects of the design, the development and the use of social robots.

## Course contents

- Introduction to the field: types of interaction, anthropomorphism and embodying, design principles of social robotics.
- Building of social robots: generic system design, software components and systems.
- The robot perception of the user: different modalities and sensor fusion.
- Verbal and non-verbal communication: dialogue, movement and animation.
- Social reasoning and decision making.
- Experiment design how to design and carry out HRI-experiments, common measurements for HRI, annotation of data and behavioural analysis.
- Social learning.
- Cooperation between humans and robots.
- Application areas: remote-controlled robots from control to semi-autonomous, social assistant robots for education and healthcare.
- Social and ethical considerations of use in social environments.

## Examination

- LABA - Laboratory work, 1.5 credits, grading scale: A, B, C, D, E, FX, F
- LABB - Laboratory work, 1.5 credits, grading scale: A, B, C, D, E, FX, F
- PROA - Project work, 4.5 credits, grading scale: A, B, C, D, E, FX, F

Based on recommendation from KTH's coordinator for disabilities, the examiner will decide how to adapt an examination for students with documented disability.

The examiner may apply another examination format when re-examining individual students.

If the course is discontinued, students may request to be examined during the following two academic years.

## Ethical approach

- All members of a group are responsible for the group's work.
- In any assessment, every student shall honestly disclose any help received and sources used.
- In an oral assessment, every student shall be able to present and answer questions about the entire assignment and solution.