

# Embedded Perception Systems

Programme course

6 credits

Inbyggda perceptionssystem

TSBB18

Valid from: 2019 Spring semester

**Determined by**  
Board of Studies for Industrial  
Engineering and Logistics

**Date determined**  
2018-08-31

## Main field of study

Computer Science and Engineering

## Course level

First cycle

## Advancement level

G2X

## Course offered for

- Industrial Engineering and Management, M Sc in Engineering
- Industrial Engineering and Management - International, M Sc in Engineering

## Entry requirements

Note: Admission requirements for non-programme students usually also include admission requirements for the programme and threshold requirements for progression within the programme, or corresponding.

## Prerequisites

Programming, signals and systems, digital circuits, computer systems.

## Intended learning outcomes

After the course, the student is able to:

- Program simple integrated hardware and software systems
- Connect inputs from sensors and outputs to control the hardware
- Do simple image processing on images from a camera
- Set up communication to and from the system, e.g., using WiFi

## Course content

A project implemented on a Raspberry Pi.

The course does not introduce new concept and theory to any significant extent. Participants are assumed to be unfamiliar with image processing, and for this reason, a few lectures that introduce basic operations on images are included.

## Teaching and working methods

The course is organized around simple embedded systems, such as the Raspberry Pi.

In a series of 2-3 projects, the participants will gradually become more and more familiar with this type of system, where different types of sensors are used to control hardware. The sensor can, for example, be a camera that produce digital images, and the hardware can be a small radio controlled car.

The projects starts with very simple systems, and gradually becomes more advanced. The final project may use a camera to control the car. Other types of sensors and hardware may also be used.

To a large extent, the course is about going from a product specification, in combination with documentation of the available hardware and software systems, to an implementation of the specification.

The projects are carried out by groups of 3-4 students.

## Examination

PRA1                      Projects                      6 credits                      U, G

## Grades

Two grade scale, older version, U, G

## Department

Institutionen för systemteknik

## Director of Studies or equivalent

Lasse Alfredsson

## Examiner

Lasse Alfredsson

## Education components

Preliminary scheduled hours: 10 h

Recommended self-study hours: 150 h

## Course literature

### Other

