



EP2700 Principles of Wireless Sensor Networks 7.5 credits

Principer för trådlösa sensornätverk

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

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

Establishment

Course syllabus for EP2700 valid from Autumn 2019

Grading scale

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

Education cycle

Second cycle

Main field of study

Electrical Engineering

Language of instruction

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

Intended learning outcomes

The aim with this course is to give a basic understanding of wireless sensor networks (WSN)

On completion of the course the student should

- Know the central tools in communication, automatic control, optimization, and signal processing that are needed to handle WSN
- Know of the design of practical WSN
- Develop a research project within WSN

Course contents

Course focus is on distributed algorithms and protocols for WSN. The course starts with an introduction to applications, hardware, and network architecture. Thereafter, iterative methods for distributed calculations are treated and it is shown how its methods can be applied to design of important aspect in the protocol stack and applications of communication. The course also contains programming of sensors that are useful for implementing experimental research projects.

Disposition

- Introduction
- WSN programming
- Wireless channel
- Physical layer
- MAC, IEEE 802.15.4
- Routing, RPL
- Distributed detection
- Distributed estimation
- Localisation and positioning
- Time synchronization
- WSN network control
- Summary

Specific prerequisites

Completed course EL1000 or the equivalent as well as English B or the equivalent

Course literature

- G. J. Pottie and W.J. Kaiser, “Principles of Embedded Networked Systems Design” Cambridge, 2005
- W. Dargie and C. Poellabauer, “Fundamentals of Wireless Sensor Networks”, Wiley, 2010



Examination

- INL1 - Assignment, 1.0 credits, grading scale: P, F
- INL2 - Assignment, 1.0 credits, grading scale: P, F
- INL3 - Assignment, 1.0 credits, grading scale: P, F
- TEN1 - Examination, 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.

The examiner decides, in consultation with KTH's coordinator for disabilities (Funka), about possible adapted examination for students with documented, permanent disabilities. The examiner may permit other examination format for re-examination of individual students.

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.