**HALMSTAD UNIVERSITY**

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School of Information Technology

**SYLLABUS**

-translated from Swedish
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Course Code: DT8018 / 6

# Networks for Embedded Systems 7.5 credits

Nätverk för inbyggda system 7.5 hp

Second cycle
Main field: Computer Science and Engineering, Second cycle, has second-cycle course/s as entry requirements (A1F)

Syllabus is adopted by the Research and Education Board (2019-02-28) and is valid for students admitted for the autumn semester 2019.

## Placement in the Academic System

The course is included in the Master's Programme in Information Technology 120 credits and Programme Computer Science and Engineering 300 credits. The course is also given as a single subject course.

## Prerequisites and Conditions of Admission

Bachelor of Science degree (or equivalent) in an engineering subject or in computer science. Courses in computer science or computer engineering of at least 90 credits, including thesis. Courses in mathematics of at least 30 credits or courses including calculus, linear algebra and transform methods. The course Data communication 1 7.5 credits or equivalent, the course Cyber-Physical Systems 7.5 credits or equivalent course that provides basic knowledge of embedded systems.

## Course Objectives

The student should acquire an understanding for important problems, methods, protocols, architectures and/or implementations of networks and communication within and/or between embedded systems. The student should gain experience in obtaining information from advanced level literature and scientific papers.

Following successful completion of the course the student should be able to:

*Knowledge and understanding*

- describe technological challenges within the area which have been discussed in the course

- describe and explain how methods, protocols, and architectures treated in the course work and describe their respective advantages, disadvantages, and application areas

*Skills and abilities*

- compare different methods, protocols, and architectures treated in the course

- discuss information from scientific papers and other advanced-level literature

*Judgement and approach*

- analyze in which situations the methods, protocols, and architectures treated in the course can be used, and which of the discussed technological challenges in the area they deal with

- analyze the limitations of the methods, protocols, and architectures treated in the course, and discuss their respective advantages, disadvantages, and application areas

## Primary Contents

Selected topics are treated in the form of lectures. The focus is on currently important fields, which means that the topics will be adapted before every course start. Possible topics treated include:

- examples of applications and systems (e.g., industrial networks, vehicular networks, intervehicular communication, network-on-chip, etc.)
- system demands on networks and communication in/between embedded systems (e.g., demands on real-time communication, dependability, energy efficiency, etc.)
- wired and wireless networks for embedded systems (e.g., bus networks, sensor networks, etc.)
- communication protocols for embedded systems (e.g., IEEE 802.15.1, IEEE 802.15.4, RFC 6282, etc.)

## Teaching Formats

Teaching consists of lectures. Some of the lectures might be in the form of seminars in which scientific literature is discussed.

Teaching is in English.

## Examination

The overall grades of Fail, 3, 4 or 5 will be awarded for the course.
Written exam.

| Name of the test | | Grading |
|---|---|---|
| Written Examination | 7,5 credits | U/3/4/5 |

If a disabled student has been granted learning support through a decision by Halmstad University, the examiner may decide on an adapted or alternative form of assessement for this student.

## Course Evaluation

Course evaluation is part of the course. This evaluation should offer guidance in the future development and planning of the course. Course evaluations should be documented and made available to the students.

## Course Literature

Scientific articles. Additional literature might be added.