

Internet of Things - Networking IoT Devices, 3 Credits

Course Code:	DT103U	Subject Area:	Field of Technology
Main Field of Study:	Computer Science	Credits:	3
Education Cycle:	Second Cycle	Subject Group (SCB):	Computer Science
Established:	2018-03-23	Progression:	AXX
Valid from:	Spring semester 2018	Last Approved:	2018-03-23
		Approved by:	Head of School

Aims and Objectives

General aims for second cycle education

Second-cycle courses and study programmes shall involve the acquisition of specialist knowledge, competence and skills in relation to first-cycle courses and study programmes, and in addition to the requirements for first-cycle courses and study programmes shall

- further develop the ability of students to integrate and make autonomous use of their knowledge
- develop the students' ability to deal with complex phenomena, issues and situations, and
- develop the students' potential for professional activities that demand considerable autonomy, or for research and development work.

(Higher Education Act, Chapter 1, Section 9)

Course Objectives

Knowledge and understanding

Completing this course, the student will know about the fundamental concepts in Internet of Things (IoT) networking, and programming of Internet of Things applications, and ways to choose and apply different networking protocols for resource-constrained IoT devices. Furthermore, the student will learn about ways to evaluate the performance of networks of IoT devices using simulation.

Applied knowledge and skills

Completing this course, the student will be able to design and program solutions for energy-efficient networks of IoT devices.

Making judgments and attitudes

Completing this course, the student will be able to judge the suitability of a networking stack for an IoT application, have understanding of the capabilities and limitations of the considered networking protocol stack, and is able to identify problems or misleading results.

Main Content of the Course

- Core concepts and networking protocols for IoT applications.
- application areas for Internet of Things with resource-constrained devices (such as sensors and actuators),
- networking protocols for collecting sensor data from resource-constrained, connected devices to cloud systems,
- practical programming of resource-constrained, networked devices using the Contiki-NG operating system,
- evaluation of networking protocols using simple simulation,
- additional topics: higher layers in IoT protocols, IoT security.

Teaching Methods

The course is designed as a distance learning course including classroom events. It comprises a series of online lectures, group discussions, obligatory self-study exercises in form of programming exercises and seminar presentations.

Examination Methods

Exercises, 1.5 Credits. (Code: 0100)

Examination is done by written report.

Seminar Presentations, 1.5 Credits. (Code: 0200)

Examination is based on oral presentation at seminars.

Grades

According to the Higher Education Ordinance, Chapter 6, Section 18, a grade is to be awarded on the completion of a course, unless otherwise prescribed by the university. The university may prescribe which grading system shall apply. The grade is to be determined by a teacher specifically appointed by the university (an examiner).

According to regulations on grading systems for first- and second-cycle education (vice-chancellor's decision 2010-10-19, reg. no. CF 12-540/2010), one of the following grades is to be used: fail, pass, or pass with distinction. The vice-chancellor or a person appointed by the vice-chancellor may decide on exceptions from this provision for a specific course, if there are special reasons.

Grades used on course are Fail (U) or Pass (G).

Exercises

Grades used are Fail (U) or Pass (G).

Seminar Presentations

Grades used are Fail (U) or Pass (G).

Deviations from the U-VG grading scale

Under the Vice-Chancellor's decision RB CF 55-135/2009, deviations from the three-step grading scale (Fail, Pass, Pass with Distinction) are permitted for contract education courses.

Other Provisions

The course is given in English.

Reading List and Other Teaching Materials

Required Reading

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Additions and Comments on the Reading List

Ingen kurslitteratur krävs.

No course literature is required.