Technology
Arts Sciences
TH Köln

Course
IOT - IoT Protocols and Applications

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General information

Long name	IoT Protocols and Applications
Approving CModule	IOT_BaET, IOT_BaTIN
Responsible	Prof. Dr. Harald Elders-Boll Professor Fakultät IME
Level	Bachelor
Semester in the year	summer semester
Duration	Semester
Hours in self-study	114
ECTS	5
Professors	Prof. Dr. Harald Elders-Boll Professor Fakultät IME
Requirements	Fundamentals of Computer Networks Network application and Protocols Transport Layer Fundamentals Link Layer Fundamentals Fundamentals of Network Security
Language	German and English
Separate final exam	Yes

Final exam

Details

Form: oral examination, duration: 30 minutes, optional, in case of a loarge number of students: written exam, duration 90 minutes
The topics and problems from different parts of the course are answered or discussed by the students, respectively. Short calculations are performed or sketeched. Different taxonomies are rated according to their complexity and difficulty.

Minimum standard

Basic knowledge can be adequately applied to known and related problems. The execution is in parts faulty. (4,0)

Exam Type

Form: oral examination, duration: 30 minutes, optional, in case of a loarge number of students: written exam, duration 90 minutes
The topics and problems from different parts of the course are answered or discussed by the students, respectively. Short calculations are performed or sketeched. Different taxonomies are rated according to their complexity and difficulty.

Lecture / Exercises

Learning goals

Knowledge

The underlying concept of this module is a combination of lecture and tutorial. After a lecture block the subjects taught are actively trained by solving corresponding problems.

Syllabus:
Introduction to IoT
Applications of IoT
Hard- and Software Fundamentals for IoT
IoT System and Architectures
IoT Communications Protocols
IoT Application Protocols (MQTT, CoAP, HTTP, REST)
Data Analytics and Machine Learning for IoT
IoT Security

Skills

Distinguish different IoT archtectures. Analsye IoT system using suitable tools. Connect Iot end devices to IoT systems. Assess the security of IoT systems.

Expenditure classroom teaching

Type	Attendance (h/Wk.)
Lecture	1
Exercises (whole course)	1
Exercises (shared course)	0
Tutorial (voluntary)	0

Separate exam

none

Practical training

Learning goals

Skills

Connect sensors and actuators to microprocessors and single-board computers
Connect IoT devices to the cloud
Transmit measurement data to the cloud
Compromize hand- and software of IoT devices
Sniffing the communication of IoT devices

Expenditure classroom teaching

Type	Attendance (h/Wk.)
Practical training	0
Tutorial (voluntary)	0

Separate exam

Exam Type

working on practical scenarion (e.g. in a lab)

Details

Sucessful solution of the lab problems in small groups consisting of two students, in general.

Minimum standard

Successful participation of all labs. Per lab the substantial parts have to accomplished individually from each group.