

Title:	IoT Security
Short Code:	EVA_IoTSec
ECTS Credits:	2
UAS:	ZHAW
Organizer Details:	MRU ZHAW Institute of Embedded Systems
Evaluation:	pass/fail based on results of programming assignment
Decision Date:	17 August 2020
Start Date:	14 September 2020
End Date:	30 October 2020
Date Details:	Fall semester, ZHAW Institute of Embedded Systems (Winterthur)
Type:	Full day course on 4 days in the semester plus individual work on assignment
Language(s):	English
Description (max. 300 characters):	The course focuses on the protection of low power embedded system devices. Students will learn how to combine hardware and software to connect such devices to a cloud platform in a secure way. Hands-on experience allows identifying challenges and to come up with appropriate cryptographic solutions.
Contents and Learning Objectives:	<p>Security for Low Power Embedded Systems (IoT)</p> <ul style="list-style-type: none"> • Threats in the IoT • (Upcoming) regulations • Development Life Cycle • Cryptographic concepts • Introduction to secure elements • Individual programming assignments on secure elements • Conclusions <p>Secure elements provide hardware accelerated support for cryptographic operations and tamper proof memory for the secure storage of cryptographically sensitive material. Specifically, they physically isolate sensitive cryptographic material from the application.</p> <p>The first 5 items will be held as an interactive workshop. For the programming assignment, each student will use an individual combination of a Cortex-M development board (to be selected from different vendors) using Zephyr RTOS and one out of five secure elements from different vendors. All five secure elements are provided on the InES SE-shield in Arduino form factor.</p>
Admission:	ET, IT, ST

Literature:	
Conditions:	50% theory, 50% lab work
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Status:	registration open
Specialization:	Computer Science (CS) Electrical Engineering (EIE) Mechatronics & Automation (MA)