**Satakunta University of Applied Sciences**

Training Brochure

­**Training Brochure**

**IoT**

**Applied project**

Title:

How to build an IoT device

Description:

We all can shop IoT devices from a local supermarket with relatively small cost. All kinds of IoT gadgets are widely available from smart speakers to fully automated home appliances. But how do those devices work and communicate? Is it rocket science or is it possible to create gadgets by yourself? In this training we will figure out just that. Training will teach how simple but custom IoT device may be built at your home and “cloud-service” to go along with it. While designing and building devices and needed services you get much wider understanding about how the IoT ecosystem at your home works. Also by doing, you may start to understand better the security issues that some IoT devices may have. For example, it just is not wise to attach just any IoT device that was bought from Wish or Ebay to your home network.

This training is a pre-recorded tutorial that you can watch safely from home. While watching you can also create the same gadget. Below there is a list of parts and devices what you need for this training. Parts are widely available to be purchased from the Internet. Best way to purchase these parts for this training is by using Amazon.de that has relatively short delivery times from a few days to a few weeks.

You can join this training without buying the materials below, but this training is experienced best with doing while watching.

What you will need:

ESP-32 CAM (with camera included) (<https://amzn.to/38n8Vpt> )  
NodeMCU (<https://amzn.to/307VUvg> )  
FTDI Programmer (<https://amzn.to/3e3dw3s> )  
DHT11 sensor (<https://amzn.to/3bbylYT> )  
0,91” OLED display (<https://amzn.to/2NOuhF9> )  
Jumper wires (male-male, female-female and male-female) (<https://amzn.to/3rbiVcw> )  
Any USB charger and micro-usb cable (not USB-C)

~~Start~~ Publish date:

14.4.2021 at 11.00 (CET)

Time consumption:

4–8h

Location:

Web

Registration link:

[https://elomake.samk.fi//lomakkeet/11520/lomakkeet.html](https://elomake.samk.fi/lomakkeet/11520/lomake.html)

Price:

Free (except parts that are required to complete the task. Please read the description)

Preparations for this training:

To get the most out of this training please order parts that were described on the “What you will need” section. To gain the training certificate it is mandatory to have the required parts.

Software used:

Youtube, Arduino IDE, VS Code

Learning objectives:

Hands-on projects are created in a way of learn by doing

Learning outcomes of this training

1. Learn how to how to create simple IoT devices.
2. Create your own “cloud-platform”.
3. Read, send, and analyze data.

Structure of the training

1. ESP 32 Cam setup
2. NodeMCU
3. Thermometer
4. OLED Display
5. Server
6. Designing and 3D-printing case for ESP 32 Cam
7. Wrap up

Who should enroll:

Teachers and educators who’d like to know more about building DIY gadgets.

Why choose this trainings:

The training will give you a wide perspective how IoT works on component level, not just on Ecosystem level. The training will also give skills and inspire you to start creating solutions on your own.

Skills and knowledge gained:

IoT, Arduino IDE, PHP, Lua

Need support?

The training will be published on Youtube. Please use Youtubes comment section to ask support if needed.

Lecturer:

Peter Virtanen, Full-time lecturer, Satakunta University of Applied Sciences