# Industrial IoT Training Lessons

List of available training lessons with step-by-step instructions and solution examples.
To access the workplaces, request a free access key at https://www.hilscher.ch/training/request.

| Topic | No. | Title | Description | Time |
|---|---|---|---|---|
| Basics | 000 | Workplace Introduction | How the workplace is set up and how to connect | 5min |
| | 001 | Edge Gateway OS overview | Learn the basics of the Edge Gateway operating system, which we will use in later trainings | 5min |
| | 002 | Device Management overview | Learn the basics of the cloud platform netFIELD.io, which we will use in later trainings | 5min |
| | 003 | Reset Edge Gateway | To start with a clean set, it is recommended that you reset the Edge Gateway for each new session | 5min |
| Docker | 004 | Docker Hello World | Pull the hello-world image from the official Docker registry and run it as container | 15min |
| | 005 | Docker Hello World CLI | Pull the hello-world image from the official Docker registry and run it as container with the command line interface | 15min |
| | 006 | Docker Hello World netFIELD | Pull the hello-world image from the official Docker registry and run it as container with the cloud portal netfield.io | 15min |
| | 007 | Portainer Docker Manager | Installing the Docker Manager Portainer.io on the Edge Gateway and run a docker container with it | 20min |
| | 008 | Docker Compose | Create a docker compose file and start a container with it | 15min |
| Connectivity | 101 | MQTT | Install a MQTT Broker and publish and subscribe messages with a client | 20min |
| | 102 | Node-RED Basics | Create a simple program with the thing-editor Node-RED | 30min |
| | 103 | PROFINET Device | Exchange IO Data between Edge Gateway and the PLC over PROFINET | 30min |
| | 104 | PROFINET TAP | Extracting PROFINET process data simply by monitoring the network traffic | 30min |
| | 105 | OPC UA Client | Browse with the OPC UA Client an OPC UA Server and get data from it to the Edge Gateway | 30min |
| | 106 | OPC UA Server | Set up and OPC UA Server on the Edge Gateway and use an OPC UA client to connect | 45min |

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| | 107 | S7 Communication Node-RED | Exchange sensor data between Edge Gateway and PLC over Siemens S7 Protocol using Node-RED | 30min |
| Application | 201 | Node-RED Dashboard | Create a Node-RED dashboard which displays sensor data and control a smart light | 30min |
| | 202 | Node-RED Email Alarm | Send an E-mail alarm when the sensor value exceeds a certain value with Node-RED | 20min |
| | 203 | Node-RED Alarm System | create an alarm condition and then send the alarm to the SIGNL4 platform | 20min |
| | 211 | Python MQTT Client | Create a MQTT client with a Python script to get sensor data and control a smart light over PROFINET | 30min |
| | 212 | Time Series DB Influx | Store sensor data into the time series database Influx using a Python script | 30min |
| | 213 | Grafana Dashboard | Use Grafana to display the sensor value which are stored in the Influx database | 15min |
| | 220 | MySQL | Store data into the mysql database using Node-RED | 30min |
| | 221 | PostgreSQL | Store data into the postgres database using Node-RED | 30min |
| Cloud | 301 | netFIELD Platform Connector | transports sensor data from the local network to the netFIELD cloud platform and control the smart light from the cloud | 30min |
| | 302 | netFIELD Dashboard | Display data on the netfield cloud dashboard | 30min |
| | 303 | netFIELD Device Monitoring | Get the health data of the Edge Gateway into the cloud management platform netFIELD.io | 30min |
| | 304 | netFIELD REST API | Using the REST API of the netFIELD.io cloud platform with cURL and Python | 30min |
| | 305 | netFIELD websocket API | Using python to get the sensor data from the netFIELD cloud API | 30min |
| | 306 | netFIELD websocket über Node-RED | Using Node-RED to get the sensor data from the netFIELD cloud API | 30min |
| | 321 | Azure | Using the azure cloud connector to get process data to any azure cloud instance | 30min |
| | 331 | Azure IoT Hub Node-RED | Connect to Azure IoT Hub using Node-RED | 30min |
| | 341 | Google | Using the google cloud connector to get process data to any google cloud instance | 30min |
| | 361 | AWS | Using the aws cloud connector to get process data to any aws cloud instance | 30min |
| | 381 | IBM Quickstart | Using the IBM quickstart to publish sensor data to the IBM cloud | 10min |

| | 383 | IBM IoT Platform | Connect sensor data to the IBM Cloud IoT Platform | 30min |
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| Data Analysis | 410 | Dataiku | For people who attendant the Big Data workshop and want wo setup Dataiku | 15min |
| Developer | 501 | Create own Docker Container | Using a dockerfile to build your own web server as a container | 30min |
| | 502 | Create own Docker Container Advanced | Using build directory to create container for multiple architectures | 30min |
| | 503 | Add Cockpit Plugin | Add a Web-Plugin to the Edge Gateway device manager | 30min |