

# Mobile Computing Overview

CC BY-SA, Ulrich Fiedler, BFH  
and Thomas Amberg, FHNW

Slides: [tmb.gr/mc-how](https://tmb.gr/mc-how)

# Overview

These slides make sure you know what's up:

What you can expect from this course.

What is expected from you.

# Hello

Prof. Dr. Ulrich Fiedler, [ulrich.fiedler@bfh.ch](mailto:ulrich.fiedler@bfh.ch),  
Lecturer at [BFH](#), Department of Engineering and  
Information Technology.

Prof. Thomas Amberg, [thomas.amberg@fhnw.ch](mailto:thomas.amberg@fhnw.ch),  
Lecturer for Internet of Things at [FHNW](#), Institute of  
Mobile and Distributed Systems.

# ECTS and effort

3 ECTS credits => 90 hours:

14 sessions à 3 hours = 42 hours in class.

+ 24 extra hours for an integrated team project.

+ 24 hours of private studies & exam preparation.

# Learning objectives: app development

Students know how to design and implement native applications for mobile devices running Android.

Students have basic knowledge of UI design guidelines and techniques relevant for mobile app design.

Students can describe the integration of their application with a backend Web service.

# Learning obj.: sensors & connectivity

Students know how to use smartphone on-device sensor APIs for motion, position and environment.

Students have basic knowledge of prototyping a peripheral IoT device with an Arduino-compatible hardware platform, sensors and actuators.

Students have basic knowledge of connectivity options like Bluetooth Low Energy (BLE).

# Dates HS21

20.09. Introduction & App.  
Development 1\*

27.09. Android Application  
Development 2\*

04.10. Android Application  
Development 3\*

11.10. Android Application  
Development 4\*

18.10. Sensors &  
Connectivity 1

25.10. Sensors &  
Connectivity 2

01.11. Sensors &  
Connectivity 3

08.11. Sensors &  
Connectivity 4

...

\*Hybrid mode

# Dates HS21

15.11. Project Kick-off

22.11. Independent\*\*  
Project Work 1

29.11. Independent\*\*  
Project Work 2

06.12. Independent\*\*  
Project Work 3

13.12. Independent\*\*  
Project Work 4

20.12. Project Presentation  
Day

W52 (Vacation)

W1-4 (No class)

W5/6 Assessment (TBA)

W8 Results (on demand)

\*\*Remote mode



# Learning objective assessment

A graded team project, due on *Presentation Day*.

A mandatory, written assessment of 120 minutes.

Counting 30% (project) and 70% (assessment).

The final grade will be a Bologna grade.

# Assessment

120 minutes, closed-book, written assessment.

1 A4 sheet\* personal summary is allowed.

No other material (slides, books, ...).

No communication (phone, ...).

\*Both sides.

# Team project

2 student teams, building an IoT system.

10' presentation of the project including demo.

Slides, source code, binaries, README on GitHub.

All team members are able to explain the project.

Details at the project kick-off.

# Plagiarism

Unfortunately has to be mentioned, sanctions apply.

From [Betrug und Plagiate bei Leistungsnachweisen](#):

"Wer in Arbeiten im Rahmen des Studiums Eigen- und Fremdleistung nicht unterscheidet, wer plagiiert, macht sich strafbar." - M. Meyer

Using 3rd-party code? Make it clear, check license.

# Course materials

The official course site is [TSM\\_MobCom on Moodle](#).

Slides and source code examples are on GitHub at

<https://github.com/tamberg/mse-tsm-mobcom>

# Communication

We use **Microsoft Teams** to communicate.

For remote lessons via video stream.

And as a asynchronous chat.

# Tools and languages

[Android Studio](#) for Android native development.

[Arduino IDE](#) for Arduino C development.

[Git version control](#) for source code.

# Smartphone

Bring your own Android smartphone.

Ideally not much older than 3 years.

Android version 8.x or newer.

No such phone? Get in touch.



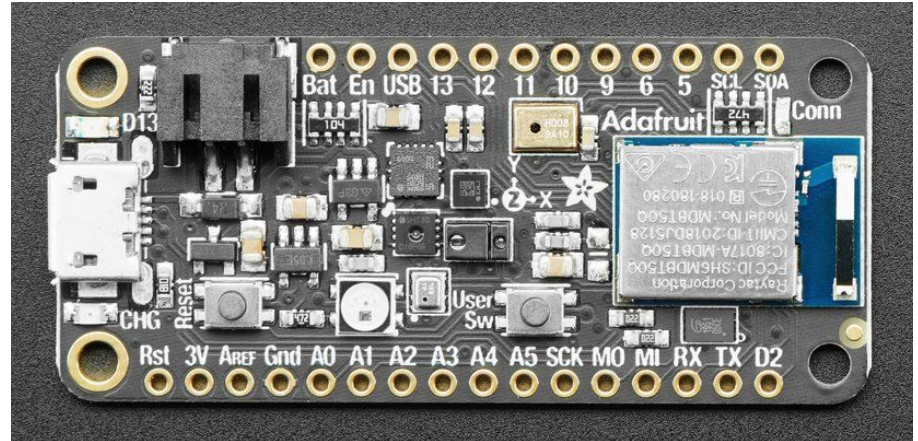
# Embedded hardware

## Adafruit Feather nRF52840 Sense

ARM Cortex M4 based SoC

Bluetooth Low Energy

Built-in sensors



# Feedback or questions?

Join us on [MSE TSM MobCom](#) in MS Teams

Or email [thomas.amberg@fhnw.ch](mailto:thomas.amberg@fhnw.ch)

and [ulrich.fiedler@bfh.ch](mailto:ulrich.fiedler@bfh.ch)

Thanks for your time.