

Modul – No.	785	Mandatory	
Module name	Mobile Software Systems Engineering		
Module coordinator	Prof. Dr. Dotsenko		
Title	Mobile Software Systems Engineering		
Title of examination	Mobile Software Systems Engineering		
Semester	2		
Course Type	Language	Lecture including exercises	English
SWS/ ECTS/ Workload	2/2/0	5	150
Requirements for attendance	None		

1. Content and objectives

Content:

The module focusses on designing and programming mobile applications for Android devices using the Kotlin programming language. (Kotlin knowledge is not a prerequisite.) In particular, processing sensor data and use of common wireless protocols will be highlighted. Native iOS development and cross-platform application development tools will be presented at an overview level.

- Operating System Architecture for Android and iOS
- Types of Android devices and their characteristics, operating system versions
- Introduction to the programming language Kotlin on the basis of Java
- User interface and its lifecycle
- Data persistence
- Processing sensor-generated data
- Using short-range and long-range wireless protocols
- Security and data protection considerations
- Testing strategies for mobile applications
- Publishing apps
- Overview of Swing and Flutter

Objectives:

On successfully completing the module the students will be able to choose the technology for implementing mobile apps depending on the requirements. Furthermore, for Android devices the students will be able

- to design and construct new mobile applications of medium complexity with a user interface and client-server communication
- to plan and implement processing of sensor-generated data
- to assess mobile application design and testing strategies
- to troubleshoot and update native Android application

Recommended Literature:

- Griffiths D. and Griffiths D., Head First Android Development, 2021, 3rd Edition, O'Reilly Media.
- Phillips B, Stewart C, Marsicano K, Android Programming: The Big Nerd Ranch Guide, 4th Edition, Big Nerd Ranch Guides
- Current Documentation of Android Studio (<https://developer.android.com/docs>).

2. Methods of instructions

Lecture with integrated exercises

3. Requirements for attendance

Prerequisites: Working knowledge of the Java programming language

4. Usability of this module

The module is offered as mandatory course in the master study course „Computer Engineering for IoT Systems“ as well as elective course in other master courses of the Engineering Department.

5. Requirements for assessment

Assessment is performed either as written examination (90 minutes) or oral examination. Students need to pass the module examination, which encompasses all contents of the lecture.

6. ECTS credits

5 ECTS credits

7. Frequency of offer

Every summer term

8. Work load
150 h of total work load, from: <ul style="list-style-type: none">• 45 h of presence at lectures/exercises• 55 h of self-study• 50 h of preparation for examination
9. Duration of module
1 semester