

Design and Development of Mobile Applications (E765014)

Course size (nominal values; actual values may depend on programme)

Credits 3.0 Study time 90 h Contact hrs 30.0 h

Course offerings and teaching methods in academic year 2018-2019

A (semester 1)	Dutch	seminar: practical PC room classes	18.0 h
		lecture	12.0 h

Lecturers in academic year 2018-2019

Simoens, Pieter TW05 lecturer-in-charge

Offered in the following programmes in 2018-2019

	crdts	offering
Bachelor of Science in Engineering Technology (main subject Information Engineering Technology)	3	A
Bachelor of Science in Information Engineering Technology	3	A
Linking Course Master of Science in Information Engineering Technology	3	A
Preparatory Course Master of Science in Information Engineering Technology	3	A

Teaching languages

Dutch

Keywords

mobile computing, Android, response UI

Position of the course

This course focuses on the design and development of mobile applications, with a focus on the Android framework.

The course covers all basic concepts, related to the declarative design of user interfaces, navigation, list views on data, etc. The course also contains an introduction to sensor programming.

Besides a profound knowledge on Android, the course also aims to convey to students knowledge on particular design challenges that mobile developers are confronted with. These include: variability of wireless network availability, touch-based user interfaces, sensors, limited on-device resources. We also study energy efficiency.

Contents

- anatomy and lifecycle of Android applications
- basis concepts Activity, Service, Content Provider, BroadcastReceiver, manifest, resource files
- forward, backwards, upwards navigation
- modular UI with fragments
- memory-efficient display of data in a list
- asynchronous programming and how to avoid associated memory leaks
- executing background work
- sensor programming: framework, sensor types, caveats
- recent innovations to Android

Initial competences

Competences to be **acquired** before the start of the course, possibly by having obtained credits for the courses **Informatics II** and **Software Engineering I**:

- programming in Java
- GUI programming, notably JavaFX (events, listeners, UI-elements, declarative GUIs)

Competences that can be acquired at the latest Alle e (e.g. via the courses Web Technologies and Software Engineering II)

- design patterns (adaptor, proxy, factory)
- multi-threading and concurrency

Final competences

- 1 software design in mobile environments with limited and/or unreliable resources
- 2 trading off the advantages and limitations of native programming languages with webbased applications
- 3 skills in Android and HTML5
- 4 mobile app development
- 5 structure and design philosophy of mobile operating systems

Conditions for credit contract

Access to this course unit via a credit contract is determined after successful competences assessment

Conditions for exam contract

This course unit cannot be taken via an exam contract

Teaching methods

Lecture, seminar: practical PC room classes

Extra information on the teaching methods

Theoretical concepts are outlined in lecturing colleges.
Guided computer lab exercises on Android.

Learning materials and price

slides on Minerva

References

- Synthesis Lectures on Mobile and Pervasive Computing, M. Satyanarayanan, 2012, Morgan & Claypool
- Professional Android Sensor Programming, G. Milette, A. Stroud, 2013, Wrox
- Android Programming. B. Phillips and B. Hardy. The Big Nerd Ranch Guide. 3rd edition, 2017.

Course content-related study coaching

- Interaction during colleges
- Supervised lab exercises

Evaluation methods

end-of-term evaluation

Examination methods in case of periodic evaluation during the first examination period

Written examination, skills test

Examination methods in case of periodic evaluation during the second examination period

Written examination, skills test

Examination methods in case of permanent evaluation

Possibilities of retake in case of permanent evaluation

not applicable

Extra information on the examination methods

Theory exam (written)
Practical exercise (also during the examination period)

Calculation of the examination mark

If the student obtains at least 8/20 for both parts of the exam, the score is calculated as the average of both parts (weights: 50 % theory exam, 50 % practical exam).

If the student does not obtain 8/20 or more for one or two parts, we deviate from this rule. The score for this course will then be capped to 8/20.