COURSE DESCRIPTION CARD - SYLLABUS

Course name
Programming for mobile devices - Android [S1MiKC2>PAndroid]

Course

Field of study
Microelectronics and Digital Communication

Year/Semester
3/5

Area of study (specialization)
–

Profile of study
general academic

Level of study
first-cycle

Course offered in
Polish

Form of study
full-time

Requirements
elective

Number of hours

Lecture
15

Laboratory classes
30

Other
0

Tutorials
0

Projects/seminars
15

Number of credit points

4,00

Coordinators

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Lecturers

Prerequisites

Students enrolling in this course should have a basic understanding of object-oriented programming, computer system architecture, and operating system principles. They are also expected to possess the ability to implement simple computational algorithms and efficiently search for information in appropriate sources.Additionally, students are expected to demonstrate readiness for teamworking.

Course objective

The purpose of the course is to familiarize students with the principles of software development for mobile devices and to develop the ability to design, implement and test their own applications. Special attention will be given to the development of applications that integrate with microprocessor systems. In addition, students will improve teamwork during project implementation.

Course-related learning outcomes

Knowledge:
1. Has a structured knowledge of developing applications designed for mobile terminals
2. Has knowledge of how to use the resources available on mobile terminals in solving real engineering problems

Skills:
1. Is able to use the resources available on the Internet (Including English) to develop an application
2. Is able to prepare a complete application with the required documentation (also in English)

Social competences:
1. Knows the limitations of his own knowledge and skills, understands the need for further training
2. Is aware of the need for a professional approach to solving technical problems and taking responsibility for the technical solutions he proposes
3. Has a sense of responsibility for the designed systems and realizes the risks to people and society in the event of their inadequate design or execution

Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

Knowledge acquired in the lecture is verified by a written examination consisting of test and/or open questions.
Skills acquired in the laboratory classes are verified by the performance of assignments given in class. Each of the exercises is assessed in the form of points based on the answers in class.
In both of the above didactic forms, a pass threshold of 50% of the possible points is adopted. The following grading scale applies: < 50% 2.0; 50%-59% 3.0; 60%-69% 3.5; 70%-79% 4.0; 80%-89% 4.5; 90%-
100% 5.0.
The skills and competences acquired in the project activities are verified through the realisation of an application project on a topic agreed with the student. The task is carried out individually or in groups of up to three persons and its progress is described in the project report. The final grade, expressed on a scale of 2-5, depends on the complexity of the task, the functionalities realised and the student's involvement.

Programme content

The programme covers the following topics:
1. Introduction to the development environment and programming language
2. Application architecture and its basic components
3. User interface
4. Libraries and APIs used in mobile device programming
5. Use of mobile devices with microprocessor systems

Course topics

The lecture program includes:
1. Basics of the Android development environment
2. Kotlin language
3. Structure of Android applications
4. Creating the user interface
5. Activities and their life cycle
6. App navigation
7. User interaction
8. Building and debugging the application
9. Persisting data
10. Network communication.
10. Threads and asynchronous programming.
11. Google and Firebase services
The lab program includes:
1. Working with the Android Studio environment - configuration, launching applications
2. Creating user interface - layout design, basic interface elements
3. Creating application components - activities, fragments, dialogs, lists and more
4. Wireless communication

Teaching methods

1.Lecture: tutorial with multimedia presentation
2. Laboratory exercises: Execution of tasks from instructions provided by the instructor and/or project

Bibliography

Basic:
Android documentation: https://developer.android.com
Kotlin documentation: https://kotlinlang.org/docs/home.html

Additional:
Android Development with Kotlin, Igor Wojda, Marcin Moskala
Android Programming with Kotlin for Beginners, John Horton

Breakdown of average student's workload

	Hours	ECTS
Total workload	120	4,00
Classes requiring direct contact with the teacher	60	2,00
Student's own work (literature studies, preparation for laboratory classes/ tutorials, preparation for tests/exam, project preparation)	60	2,00