



COURSE DESCRIPTION CARD - SYLLABUS

Course name

Mobile applications

Course

Field of study

Computing

Area of study (specialization)

Level of study

First-cycle studies

Form of study

full-time

Year/Semester

3/6

Profile of study

general academic

Course offered in

Polish

Requirements

compulsory

Number of hours

Lecture

24

Laboratory classes

18

Other (e.g. online)

Tutorials

Projects/seminars

12

Number of credit points

4

Lecturers

Responsible for the course/lecturer:

dr hab. inż. Rafał Różycki

Responsible for the course/lecturer:

dr hab. inż. Marek Mika

Prerequisites

A student starting this course should have knowledge of the basics of using mobile devices and imperative programming (acquired in the course of the Basics of Programming course) and selected elements of wireless computer networks. He should have the ability to implement simple algorithms, assess their complexity and the ability to independently acquire knowledge from the indicated sources.

Course objective

Providing students with basic knowledge about the specifics and principles of designing mobile applications. Developing students' skills to specify the requirements for a mobile application, the proper selection of programming tools and testing techniques for the created application. Shaping students' teamwork skills during the project implementation during laboratory classes

Course-related learning outcomes

Knowledge

1. has ordered and theoretically founded general knowledge in the field of mobile applications and detailed knowledge in the field of mobile application states.



2. has knowledge of important directions of development and the most important achievements of IT in the field of mobile applications.
3. knows the basic techniques, methods and tools used in the process of solving IT tasks in the field of mobile applications, mainly of an engineering nature.
4. has ordered, theoretically founded general knowledge of the architecture of mobile systems and mobile operating systems.

Skills

1. The student is able to obtain information on mobile applications from literature, hardware specifications and other sources (in the native language and in English), integrate them, interpret and critically evaluate them.
2. can properly use the information and communication techniques (including free multimedia training), applicable at various stages of the implementation of mobile applications.
3. can, when formulating and solving IT tasks in the field of mobile applications, use appropriate tools simulating the operation of a mobile device.
4. can design, formulate a functional specification in the form of use cases, formulate non-functional requirements and implement a mobile application by selecting a programming language and using appropriate methods, techniques
5. has the ability to formulate algorithms and their implementation using at least one of the popular programming environments used to implement the application mobile.
6. is able to plan and implement the process of his own permanent learning and knows the possibilities of further education (second and third degree studies, postgraduate studies, courses and exams conducted by universities, companies and professional organizations)

Social competences

1. understands that knowledge and skills in the field of mobile applications quickly become obsolete
2. is aware of the importance of knowledge in the field of mobile applications in solving engineering problems, knows examples and understands the causes of malfunctioning IT systems.

Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

Formative assessment: a) in the field of lectures: -based on answers to the questions about the material discussed in previous lectures and discussed in the course of the current lecture b) in the field of laboratories: based on the assessment of the current progress in the implementation of tasks, the reports of which are placed on a dedicated the student's website

Summative assessment: a) the assessment of the knowledge and skills acquired during the lectures is made on the basis of the completed mobile application project b) in the field of laboratories, verification of the assumed learning outcomes is carried out by: assessment of partial tasks carried out during the



classes. Additionally, the students' activity during classes is rewarded, which is manifested by: preparing a study on a specific topic, discussing additional aspects of the issue, formulating comments influencing the improvement of didactic materials, informing the teacher about difficulties in understanding the material taught. For people with advanced knowledge and skills in the field of the subject, it is possible to pass it in an alternative way: by preparing a presentation for the lecture and making a mobile application according to the specifications prepared by the laboratory teacher.

Programme content

Lecture: basics and specificity of mobile systems, mobile device positioning systems, methods of mobile systems communication, basics of mobile device architecture, basics of mobile operating systems, classification of mobile applications (web, native and hybrid applications), the idea of Responsive Web Design, hybrid mobile application design environments, structure and characteristics of the Android system, Android application life cycle, basic Android application components, Android mobile application design tools. Ways of using selected hardware resources of a mobile device in the Android system. The use of cloud resources in mobile applications. Distribution of own applications for Android.

Laboratory exercises: creating web mobile applications (the idea of Responsive Web Design based on CSS Media Query), programming hybrid mobile applications in a selected development environment, visual programming of mobile applications (MIT AppInventor), basics of the Kotlin language and a selected mobile application programming environment for Android. The use of selected APIs in network and hardware interfaces of mobile applications.

Project: preparation of the specification of your own project proposal taking into account the specificity of mobile devices, project implementation, preparation of a project report

Teaching methods

Lecture: multimedia presentation, examples of live creating applications.

Laboratory exercises: multimedia presentation, carrying out tasks according to the specifications indicated by the teacher - practical exercises.

Project: implementation of the project in accordance with the principles of programming engineering.

Bibliography

Basic

1. Wydajne aplikacje dla systemu Android : programuj szybko i efektywnie, Sillars D., Helion 2017
2. Android : programowanie aplikacji / Dawn Griffiths, David Griffiths, Helion 2016

Additional

1. Android : aplikacje wielowątkowe, techniki przetwarzania, Göransson A., Helion 2015
2. Android, Deitel P.J., Deitel H.M., Wald A., Matuk, K. Helion 2016. Bilans nakładu pracy przeciętnego studenta



Breakdown of average student's workload

	Hours	ECTS
Total workload	100	4,0
Classes requiring direct contact with the teacher	54	2,0
Student's own work (literature studies, preparation for laboratory classes, project preparation, preparation of specifications and reports on the implementation of the project) ¹	46	2,0

¹ delete or add other activities as appropriate