POZNAN UNIVERSITY OF TECHNOLOGY

EUROPEAN CREDIT TRANSFER AND ACCUMULATION SYSTEM (ECTS)

pl. M. Skłodowskiej-Curie 5, 60-965 Poznań

COURSE DESCRIPTION CARD - SYLLABUS

Course name
Mobile applications

Course

Field of study
Computing

Year/Semester
3/6

Area of study (specialization)

Profile of study
general academic

Level of study
First-cycle studies

Course offered in
Polish

Form of study
full-time

Requirements
compulsory

Number of hours

Lecture	Laboratory classes	Other (e.g. online)
24	18	
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.

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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 terms of lectures: -on the basis of answers to questions about the material discussed in previous lectures and discussed in the current lecture b)in terms of laboratories: on the basis of evaluation of the current progress of the tasks, reports of which are posted on the university's remote learning platform.

Summative evaluation:

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a) evaluation of knowledge and skills acquired during lecture classes is made on the basis of a test solved at the end of the semester on the university's remote learning platform; an alternative way to pass a lecture is to prepare and deliver a lecture on a topic agreed with the lecturer - permission for this form of credit is given by the lecturer at the beginning of the semester.

b) in the field of laboratories, verification of the established learning outcomes is realized by: evaluation of the partial tasks carried out in the course of the classes; obtaining a credit requires obtaining half of the possible number of points; an average of 1 point is to be obtained during a single laboratory class, larger tasks may be carried out during several classes - then the number of points is proportionally higher; an alternative way to pass laboratory classes is to prepare an instructional video/tutorial - this form of credit must be agreed with the lecturer at the beginning of the semester.

c) in terms of the project - the evaluation is subject to the completed project, and the evaluation is influenced by the content of the project and the date of its submission for evaluation (early submission of projects is favored); alternatively, it is possible to obtain credit on the basis of a project completed earlier, for personal or commercial use, provided that the consent (at the beginning of the semester) of the instructor for such a form of credit (condition - appropriate skills of the student) and presentation of their project during classes to other students.

In addition, there may be a bonus for student activity during classes manifested by: preparing a paper on a specific topic, discussing additional aspects of the issue, making comments that affect the improvement of teaching materials, informing the instructor about difficulties in understanding the material taught.

Programme content

Lecture: basics and peculiarities of mobile systems, 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, construction and characteristics of Android, application life cycle in Android, basic components of applications in Android, mobile application design tools in Android. Ways to use selected hardware resources of a mobile device in Android. Use of cloud resources in mobile applications. Aspects of energy saving in mobile applications. Distribution of custom applications for Android. Unity programming environment.

Laboratory exercises: creation of web-based mobile applications (the idea of Responsive Web Design on the basis of CSS Media Query), visual programming of mobile applications (MIT AppInventor), basics of Kotlin language and selected mobile application development environment for Android, steps of implementing a sample application in Android. Use of selected APIs in network and hardware interfaces of mobile applications.

Project: preparation of specifications of own project proposal taking into account the specifics of mobile devices, implementation of the project, preparation of a project report, preparation of a self-assessment of the project.

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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

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[1] delete or add other activities as appropriate