POZNAN UNIVERSITY OF TECHNOLOGY

COURSE DESCRIPTION CARD - SYLLABUS

Course name
Advanced Programming of Mobile Devices [S2EiT2E-TIT>ZPUM]

Course

Field of study	Year/Semester
Electronics and Telecommunications	2/4
Area of study (specialization)	Profile of study
Information and Communication Technologies	general academic
Level of study	Course offered in
second-cycle	English
Form of study	Requirements
full-time	elective

Number of hours

Lecture	Laboratory classes	Other (e.g. online)
30	15	0
Tutorials	Projects/seminars	
0	0	

Number of credit points

4,00

Coordinators
dr inż. Paweł Sroka
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Lecturers

Prerequisites

Student starting this course should have knowledge in computer science and programming, particularly knowning syntax of various programming languages such as: C++ or C# or Matlab and syntax of XML. He/she should know the rules of object-oriented programming. Moreover, students should know the fundamentals of the functioning of the operating systems and databases, have understanding of the architecture and operation of a programmable chip and have deepened knowledge of current available communication systems. Furthermore, students should be able to implement advanced algorithms using selected programming languages and be able to find the required solutions for identified problems in different sources. Students should be also aware of their limitations and skills and the need to pursue with their education. Finally, they should understand the need for professional treatment of the problems and their responsibility for developed solutions.

Course objective

The main goal of the course is to develop student"s skills in programming of mobile terminals focusing on the devices working with iOS operating system and online tools provided by Apple or other parties. After completing the course students will be able to implement their own application using rich resources and tools, test it and, finally, they will know how to publish it in the Internet market.

Course-related learning outcomes

Knowledge:
1. Has ground knowledge in the area of programming of mobile terminals.
2. Has knowledge about the possibilities of usage of various modules and resources available in nowadays mobile devices.
3. Knows how to use the additional tools and libraries to extend the functionality of the implemented application.
4. Knows how to publish the application, including commercial aspects, in the Internet market.

Skills:
1. Possesses the skills of using various resources available in Internet.
2. Is able to prepare the complete application together with the required documentation.

Social competences:
1. Is aware of his/her knowledge and skills limitations; understands the need of further study.
2. Is aware of the need for professional treatment of the problems to be solved.
3. Is aware of his/her responsibilities for the developed systems and applications.

Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

Learning outcomes presented above are verified as follows:
The knowledge acquired in the lectures is verified in form of a written or oral exam. The written exam comprises 6-10 questions that are graded (with points) differently. The written exam is passed if at least 45% of the total score is obtained. The oral exam relies on student"s answer to at least three questions about topics indicated to students during the lectures, with the evaluation taking into account the overal understanding of the problem and the completeness of the answer. The oral exam is passed if more than 50% of the answers are evaluated as sufficient.
The abilities acquired during the laboratories are verified with 3-5 exercises covering the topics introduced during lectures. Each exercise is based on implementation of application and its certain features and might be graded differently (with points) depending on the difficulty and the required work effort. The evaluation is performed based on the written report describing the implemented application and the observed involvement of the student into work. The final grade depends on the number of collected points, with a positive result achieved if at least 50% of the maximum number of points is obtained.

Programme content

The course covers the following topics:
- Introduction to programming for iOS devices.
- Creating basic applications and building of user interface.
- Creating adaptive and responsive user interface. Handling gestures.
- Persistent data storage on an iOS device.
- Networking with iOS devices.
- Other selected features of iOS applications.

Course topics

Lectures comprise the following topics:
- Introduction to programming for iOS devices and to Swift programming language.
- View Controllers in iOS aplication - their role, types and lifecycle.
- Application state perservation in iOS.
- Building of user interface for iOS applicaton. Creating adaptive layout. Handling gestures and different presentation styles.
- Persistent data storage on an iOS device and using cloud resources.
- Notifications and their role in application.
- Multithreading and priorities in iOS.
- Advanced graphics and animations in iOS. Multimedia.
- Networking with iOS devices
- Additional features of iOS applications: obtaining location information, using maps, publishing and

monetizing application.
In the laboratories the following topics are taught:
- Creating of a simple application with basic user interface.
- Introduction to graphics.
- Implementation of a multi-page application.
- Persistent data storage.
- Implementation of adaptive layout and gestures.
- Testing of iOS applications: unit and UI tests.

Teaching methods

Lecture: multimedia presentation supported with practical demonstration/exercises using a Mac computer equipped with iOS device simulator.
Laboratories: laboratory exercises - students develop iOS applications with specific features on Mac computers equipped with iOS device simulator.

Bibliography

Basic
E. Łukasik, M. Skublewska-Paszkowska, "iOS Application Development", Polish Information Processing Society, 2016
Additional
N.Smyth, "iOS 10 App Development Essentials", CreateSpace Independent Publishing Platform, 2016
https://developer.apple.com
https://www.appcoda.com/
https://www.raywenderlich.com/

Breakdown of average student's workload

	Hours	ECTS
Total workload	100	4,00
Classes requiring direct contact with the teacher	58	2,00
Student's own work (literature studies, preparation for laboratory classes/ tutorials, preparation for tests/exam, project preparation)	42	2,00