Bialystok University of Technology									
Field of study	**Computer Science**							**Degree level and programme type**	**Engineer's degree full-time programme**
Specialization/ diploma path	**---**							**Study profile**	academic
Course name	**Mobile Systems**							**Course code**	**FCS-00037**
								Course type	obligatory
Forms and number of hours of tuition	L	C	LC	P	SW	FW	S	**Semester**	1
	30				30			**No. of ECTS credits**	**6**
Entry requirements	Human-Computer Interaction (FCS-00038), Object Oriented Programming (FCS-00012),								
Course objectives	The aim of the course is to prepare students to create applications for mobile devices. Students will learn the operating systems used in mobile devices (Android, iOS), their specific characteristics and constraints imposed of mobile systems architecture. Students will be able to develop applications for mobile devices using a dedicated integrated development environment.								
Course content	Lecture: Mobile devices - architectures, components, limitations. Android: System Architecture. Construction of the application. Activity - the main element of the application. Life cycle. Starting an Activity, using an Intent. Application manifest. Fragments and their use in the construction of the user interface. Application resources. Services, content providers, broadcast recipients. Adaptation of the application to different devices. Using sensors. Communication. iOS: Ability to properly manage memory (retain, autorelease etc.), correct use of ARC (Automatic Reference Counting). User interface, creating new views and controllers (UIView and UIViewController), notifications using NSNotificationCenter, creating application settings for Settings.app, communication using high-level protocols (http, ftp) using CFNetwork API, processes and threads using the NSOperationQueue class, using resources in multiple languages (texts, views), configuring the Info.plist manifest, CoreAnimations, data contributors using CoreData. Classes: Project structure. Controls and views. Application programming interface. Objective-C. Application program resources. Internationalization of the application. Hardware resources of the mobile system. Selected hardware resources of the iOS application. Data storage. Network resources								
Teaching methods	lecture problem, programming, simulation,								
Assessment method	Lecture - written test, practice lab - implementation and documentation of projects, observation of classwork.								

Symbol of learning outcome	**Learning outcomes**	**Reference to the learning outcomes for the field of study**
LO1	knows the architecture of the selected mobile operating systems	K_W03
LO2	knows and applies the techniques for developing mobile applications	K_W09 K_U05
LO3	develops mobile applications using the components available on the device	K_U06 K_U09 K_U11
LO4	implements mobile applications using the available programming environments	K_U05 K_U09

Symbol of learning outcome	**Methods of assessing the learning outcomes**	**Type of tuition during which the outcome is assessed**
LO1	written test	L
LO2	observation of classwork, evaluation of the project	Sw
LO3	observation of classwork, evaluation of the project	Sw
LO4	observation of classwork, evaluation of the project	Sw

Student workload (in hours)	**No. of hours**
Calculation	
1 - Attendance at lectures - 15x2	30
2 - Attendance at laboratories - 15x2	30
3 - Preparation for laboratories - 15x1	15
4 - Preparation and design of projects - 15x4	60
5 - Preparation for the test -	8
6 - Attendance at test -	2
7 - Participation in student-teacher sessions -	5
TOTAL:	**150**

Quantitative indicators	**HOURS**	**No. of ECTS credits**
Student workload – activities that require direct teacher participation	67 (2)+(1)+(6)+(7)	2.7
Student workload – practical activities	105 (4)+(3)+(2)	4.2

Basic references	1. http://developer.android.com/ - web page for Android programmers by the Open Handset Alliance. 2. http://developer.apple.com/ - web page for iOS programmers by Apple. 3. C. Collins, M. Galpin, M.Kaeppler, Android in practice, Manning, 2011. 4. R. Napier, M. Kumar, iOS Programming: Pushing the limits, Wiley, 2014
Supplementary references	1. R. Meier, Professional Android Application Development, Wrox, 2012. 2. W. Lee, Beginning iOS5 Application Development", Willey, 2012.
Organisational unit conducting the course	Department of Information Systems and Computer Networks — **Date of issuing the programme**
Author of the programme	dr inż. Marcin Skoczylas — Feb. 18, 2022

L – lecture, C – classes, LC – laboratory classes, P – project, SW – specialization workshop, FW – field work,S – seminar