MOBILE SYSTEMS

Faculty of Computer Science				
Study programme:	**Computer Science**		Degree level:	**Engineer's degree full-time programme**
Specialization	**---**		Diploma path:	**2026/2027W - 2026/2027S**
Module name:	**Mobile Systems** (Systemy mobilne)			
Module type:	**obligatory**	**Semester: 1**	ECTS:**5**	Module ID:**FCS-00037**
No. of hrs in semester:	Lecture (L) - **30** Classes(C) - **0** Specialization workshop (SW) - **30** Project (P) - **0** Laboratory classes (LC) - **0** Seminar (S) - **0**			
Prerequisites	Human-Computer Interaction (FCS-00038), Object Oriented Programming (FCS-00012),			

Aims and 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.		
Forms of teching activities::	lecture, specialization workshop,	Assessment:	Evaluation must be relevant to the intended learning outcomes:
			Lecture - written test, practice lab - implementation and documentation of projects, observation of classwork.
Module 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:	simulation, programming, lecture problem,		

Learning outcomes

Symbol	Specify min. 4, max. 8 learning outcomes in the following order: knowledge – skills – competence. Each learning outcome must be verifiable	Reference to the programme learning outcomes of education
LO1	knows the architecture of the selected mobile operating systems	
LO2	knows and applies the techniques for developing mobile applications	
LO3	develops mobile applications using the components available on the device	
LO4	implements mobile applications using the available programming environments	

No. of learning outcome	Methods of assessing the learning outcome	Type of teaching activities (if more than one) 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's workload (in hours)	**1** - Attendance at lectures	15x2	30
	2 - Attendance at laboratories	15x2	30
	3 - Preparation for laboratories	15x1	15
	4 - Preparation and design of projects	None	35
	5 - Preparation for the test	None	8
	6 - Attendance at test	None	2
	7 - Participation in student-teacher sessions	None	5
		TOTAL:	**125**
Quantitative indicators	Student's workload - activities that require direct teacher participation: (1)+(2)+(6)+(7)	67	**ECTS** 2.7
	Student's workload connected with practical classes (2)+(3)+(4)	80	3.2

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
Further reading	1. R. Meier, Professional Android Application Development, Wrox, 2012. 2. W. Lee, Beginning iOS5 Application Development", Willey, 2012.

Unit:	Department of Information Systems and Computer Networks	Lecturer/ instructor	
Date of issuing the programme:	31st March 2026	Author of the programme:	dr inż. Marcin Skoczylas

L - lecture, C - classes, LC - laboratory classes, P-project, SW - specialization workshop, S - seminar