



Subject card

Subject name and code	Mobile Operating Systems, PG_00053913						
Field of study	Informatics						
Date of commencement of studies	October 2020		Academic year of realisation of subject		2022/2023		
Education level	first-cycle studies		Subject group		Optional subject group Subject group related to scientific research in the field of study		
Mode of study	Full-time studies		Mode of delivery		at the university		
Year of study	3		Language of instruction		Polish		
Semester of study	6		ECTS credits		3.0		
Learning profile	general academic profile		Assessment form		exam		
Conducting unit	Department of Geoinformatics -> Faculty of Electronics, Telecommunications and Informatics						
Name and surname of lecturer (lecturers)	Subject supervisor		dr inż. Marek Kulawiak				
	Teachers		dr inż. Marek Kulawiak				
			dr inż. Emilia Lubecka				
Lesson types and methods of instruction	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	15.0	0.0	15.0	0.0	0.0	30
	E-learning hours included: 0.0						
Learning activity and number of study hours	Learning activity	Participation in didactic classes included in study plan		Participation in consultation hours		Self-study	SUM
	Number of study hours	30		4.0		41.0	75
Subject objectives	The course discusses the components of the system software (operating system) running on mobile devices (smartphone/tablet). Subject is concentrated mainly around Android. Android is an open source system, which allows for a detailed discussion and study of the examples which demonstrate solutions that were used in the construction of the system. Discussed are all key layers of Android operating system - from bootloaders via kernel (Linux), ending with applications created by users themselves (Java).						
Learning outcomes	Course outcome		Subject outcome		Method of verification		
	[K6_U02] can perform tasks related to the field of study in an innovative way as well as solve complex and nontypical problems, applying knowledge of physics, in changing and not fully predictable conditions		Student is able to use different programming platforms and environments in order to develop specialized applications.		[SU3] Assessment of ability to use knowledge gained from the subject		
	[K6_U01] can apply mathematical knowledge to formulate and solve complex and non-typical problems related to the field of study and perform tasks, in an innovative way, in not entirely predictable conditions, by:n- appropriate selection of sources and information obtained from them, assessment, critical analysis and synthesis of this information,n- selection and application of appropriate methods and toolsn		Student is able to program an application using standard libraries.		[SU4] Assessment of ability to use methods and tools		
	[K6_W07] Knows and understands, to an advanced extent, the general principles of setting up and development of business entities, forms of individual entrepreneurship and running ventures in the field specific to the field of study		Student knows the architecture of popular operating systems, as well as tools utilized for development and maintenance.		[SW1] Assessment of factual knowledge		

Subject contents	History and comparison of mobile operating systems		
	Hardware Platforms (CPU) for mobile systems		
	Architecture of an open mobile system		
	Boot Sequence - from bootloader to user applications		
	Kernel structure and architecture		
	Elements of userspace environment in a mobile system		
	Mechanisms for sharing mobile system memory		
	Native development in Android		
	The virtual machines in mobile systems (on the example of ART)		
	Frameworks application development for mobile systems		
Prerequisites and co-requisites			
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	Exam	50.0%	50.0%
	Laboratory	50.0%	50.0%
Recommended reading	Basic literature	Lecture notes, slides and laboratory instructions.	
	Supplementary literature	Karim Yaghmour. 2013. <i>Embedded Android: Porting, Extending, and Customizing</i> (1st ed.). O'Reilly Media, Inc. Ian F. Darwin. 2012. <i>Android Cookbook</i> . O'Reilly Media, Inc.	
	eResources addresses	Adresy na platformie eNauczanie: Mobilne systemy operacyjne 2022/2023 - Moodle ID: 27265 https://enauczanie.pg.edu.pl/moodle/course/view.php?id=27265	
Example issues/ example questions/ tasks being completed	Android system Architecture		
	Application development with a graphical user interface		
	Programming the main components of the application on Android		
	What is the role of AndroidManifest.xml?		
	What are the features of ART VM?		
Work placement	Not applicable		