



Subject card

Subject name and code	Mobile Operating Systems, PG_00053913						
Field of study	Informatics						
Date of commencement of studies	October 2024	Academic year of realisation of subject			2026/2027		
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					
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). The 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 (Kotlin).						

Learning outcomes	Course outcome	Subject outcome	Method of verification
	[K6_W11] knows and understands to an advanced degree the general principles of the creation and development of economic entities, forms of individual entrepreneurship and conducting enterprises and the fundamental dilemmas of modern civilization, as well as the basic economic, legal and other conditions of various types of activities related to the field of study, including the basic concepts and principles of industrial property protection and copyright law	The student knows the architecture of popular operating systems, as well as tools for their development and maintenance.	[SW1] Assessment of factual knowledge
	[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	The 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	The student is able to program an application using standard libraries.	[SU4] Assessment of ability to use methods and tools
Subject contents	<p>History and comparison of mobile operating systems</p> <p>Hardware Platforms (CPU) for mobile systems</p> <p>Architecture of an open mobile system</p> <p>Boot Sequence - from bootloader to user applications</p> <p>Kernel structure and architecture</p> <p>Elements of userspace environment in a mobile system</p> <p>Mechanisms for sharing mobile system memory</p> <p>Native development in Android</p> <p>The virtual machines in mobile systems (on the example of ART)</p> <p>Frameworks application development for mobile systems</p>		
Prerequisites and co-requisites			
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	Exam	60.0%	50.0%
	Laboratory	60.0%	50.0%
Recommended reading	Basic literature	Lecture notes, slides and laboratory instructions.	

	Supplementary literature	<p>Karim Yaghmour. 2013. <i>Embedded Android: Porting, Extending, and Customizing</i> (1st ed.). O'Reilly Media, Inc.</p> <p>Ian F. Darwin. 2012. <i>Android Cookbook</i>. O'Reilly Media, Inc.</p>
	eResources addresses	Adresy na platformie eNauzanie:
Example issues/ example questions/ tasks being completed	<p>Android system architecture.</p> <p>Application development with a graphical user interface.</p> <p>Programming the main components of the application on Android.</p> <p>What is the role of AndroidManifest.xml?</p> <p>What are the features of ART VM?</p>	
Work placement	Not applicable	

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