GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	Mobile Operating Systems, PG_00053913
Field of study	Informatics

Date of commencement of studies	October 2023	Academic year of realisation of subject	2025/2026
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 -> Wydziały Politechniki Gdańskiej
Name and surname of lecturer (lecturers)	Subject supervisor dr inż. Marek Kulawiak Teachers dr hab. inż. Marcin 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). 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 aplication 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 wel 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
Laboratory	50.0%	50.0%
Exam	50.0%	50.0%

Recommended reading

Basic literature	Lecture notes, slides and laboratory instructions.
Supplementary literature	Karim Yaghmour. 2013. *Embedded Android: Porting, Extending, and Customizing* (1st ed.). O'Reilly Media, Inc. Ian F. Darwin. 2012. *Android Cookbook*. O'Reilly Media, Inc.
eResources addresses	Adresy na platformie eNauczanie:

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