

Subject card

Subject name and code	Programming of Mobile Applications, PG_00155067						
Field of study	Information Science and Econometrics						
Date of commencement of studies	October 2024		Academic year of realisation of subject		2026/2027		
Education level	undergraduate studies		Subject group		Obligatory subject group in the field of study		
Mode of study	part-time studies		Mode of delivery		at the university		
Year of study	3		Language of instruction		Polish		
Semester of study	6		ECTS credits		8.0		
Learning profile	academic		Assessment form				
Conducting unit							
Name and surname of lecturer (lecturers)	Subject supervisor		dr Dariusz Kralewski				
	Teachers						
Lesson types	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	12.0	0.0	40.0	0.0	0.0	52
	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	52		30.0		120.0	202
Subject objectives	- Preparing students to write mobile applications for Android and IOS platforms- Practical implementation of projects on the Android and IOS platform						

Learning outcomes	Course outcome	Subject outcome	Method of verification
	[IiEL3_W05] The student has advanced knowledge of the sources of socio-economic data, their databases and ways of creating them.	The student knows the specific principles of mobile application development The student identifies the different phases of the life cycle of mobile applications on the Android platform Student knows the principles of creating a user interface based on fragments Student knows the principles of creating clean code (Clean Code)	[SW5] implementation of a problem task
	[IiEL3_U08] The student can configure and apply advanced modern information and communication technologies in the process of business management and business communication.	The student creates functionally correct mobile applications for the Android platform The student creates readable and accessible code Student uses available libraries to solve problems The student verifies the correctness of code and applications using unit and functional tests Student uses RESTful Services backend server to exchange data in a distributed environment	[SU6] demonstration of practical skills
	[IiEL3_K01] The student understands the need to constantly supplement and deepen acquired knowledge; is open to new ideas and teaching methods.	The student collaborates openly in a team consisting of developers, designers and testers of mobile applications The student maintains professional contact with clients and translates their expectations into application features	[SK6] demonstration of practical skills
	[IiEL3_W07] The student has advanced knowledge of ethical norms applicable to business, good practices for its conduct and legal regulations for the protection of intellectual property. Has knowledge of the risks and responsibilities associated with the informatization of business processes, knows the principles of netiquette.	The student knows the specific principles of mobile application development The student identifies the different phases of the life cycle of mobile applications on the Android platform Student knows the principles of creating a user interface based on fragments Student knows the principles of creating clean code (Clean Code)	[SW5] implementation of a problem task
	[IiEL3_K05] The student is aware of the need for ethical, sustainable and socially responsible behavior in professional and social life.	The student collaborates openly in a team consisting of developers, designers and testers of mobile applications The student maintains professional contact with clients and translates their expectations into application features	[SK6] demonstration of practical skills
	[IiEL3_K02] The student can communicate with the public on computer science and econometrics topics in and outside the workplace, communicate his knowledge and share his skills through various media.	The student collaborates openly in a team consisting of developers, designers and testers of mobile applications The student maintains professional contact with clients and translates their expectations into application features	[SK6] demonstration of practical skills
	[IiEL3_U01] The student can comprehensibly, orally and in writing, present and justify advanced economic theories and apply them to explain the functioning of the national economy and its elements. Understands and can explain the content of communications of economic institutions, articles published in the economic press and scientific journals.	The student creates functionally correct mobile applications for the Android platform The student creates readable and accessible code Student uses available libraries to solve problems The student verifies the correctness of code and applications using unit and functional tests Student uses RESTful Services backend server to exchange data in a distributed environment	[SU6] demonstration of practical skills

	Course outcome	Subject outcome	Method of verification
	[liEL3_W03] The student has advanced knowledge of man as an entity that creates economic structures and institutions.	The student knows the specific principles of mobile application development The student identifies the different phases of the life cycle of mobile applications on the Android platform Student knows the principles of creating a user interface based on fragments Student knows the principles of creating clean code (Clean Code)	[SW5] implementation of a problem task
	[liEL3_K03] The student can work in, co-create and manage a team; adapts his/her behavior and conduct to his/her role in it; is ready to take responsibility for the team and bear the consequences; understands the necessity of regularity and consistency in action; is open to other team members and critical of himself.	The student collaborates openly in a team consisting of developers, designers and testers of mobile applications The student maintains professional contact with clients and translates their expectations into application features	[SK6] demonstration of practical skills
	[liEL3_U02] The student is able to acquire basic information about economic processes and phenomena by direct observation, planned experiment or database queries, and collect and process it using modern information technology tools.	The student creates functionally correct mobile applications for the Android platform The student creates readable and accessible code Student uses available libraries to solve problems The student verifies the correctness of code and applications using unit and functional tests Student uses RESTful Services backend server to exchange data in a distributed environment	[SU6] demonstration of practical skills
	[liEL3_W04] The student has advanced knowledge of mathematical, statistical, econometric and computer methods of obtaining, processing and analysing data depicting the functioning and development of the national economy and its elements, as well as the phenomena and processes occurring in their environment.	The student knows the specific principles of mobile application development The student identifies the different phases of the life cycle of mobile applications on the Android platform Student knows the principles of creating a user interface based on fragments Student knows the principles of creating clean code (Clean Code)	[SW5] implementation of a problem task

Subject contents	Problems of the lecture 1. Basics and specifics of mobile systems, positioning systems of mobile devices, 2. Communication methods of mobile systems, basics of mobile device architecture, 3. Basics of mobile operating systems, classification of mobile applications (web, native and hybrid), 4. The idea of Responsive Web Design, Hybrid mobile application design environments, 5. System design and characteristics, application life cycle in the system, 6. Basic components of the application, 7. Android mobile application design tools. 8. Ways to use selected hardware resources of a mobile device 9. Use of cloud resources in mobile applications. 10. Distribution of own applications Problems of exercises / conversation / laboratoryAndroid 1. Android Studio and project structure 2. UI elements 3. Resources 4. Creating layouts 5. Material Design and styling 6. Activities, Fragments and lifecycle 7. Creating a list of objects 8. Dialog boxes and notifications 9. Multimedia display and animation 10. Internet connection and downloading 11. Preferences and application settings 12. Xamarin 13. Creating a project and its structure 14. Graphical user interface for applications 15. Xamarin Forms 16. Building reusable code 17. Creating animations and handling user gestures 18. Creating universal components that work with SQLite database and REST service 19. Preparation and publication of the application Ionic 1. Configuration of the development environment 2. Apache Cordova basics 3. Building a card-based application 4. Loading data via HTTP service 5. Ionic navigation model React Native 1. Creating interfaces for native components in React Native 2. Developing custom React Native applications and components 3. APIs and modules created by the React user community 4. Platform-specific components in cross-platform applications 5. State management in a large application using the Redux library in Java 6. Translated with www.DeepL.com/Translator (free version)		
Prerequisites and co-requisites	Basic knowledge of computer programming and software, knowledge of object-oriented programming principles, ability to program in Java		
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	project	51.0%	100.0%

Recommended reading	Basic literature	A.1. wykorzystywana podczas zajęć 1. Szkolenie dla programistów Android: http://developer.android.com/training/index.html 2. Sebastian Mysakowski, React Native. Zostań programistą aplikacji mobilnych, Helion, 2021 3. Marcin Płonkowski, Android Studio. Tworzenie aplikacji mobilnych, Helion, 2017 4. George Taskos, Xamarin. Tworzenie aplikacji cross-platform. Receptury, Helion 2020 5. Wei-Meng Lee: Beginning Android 4 Application Development, Wiley 2012 A.2. studiowana samodzielnie przez studenta 1. Robert C. Martin: Czysty kod. Podręcznik dobrego programisty, Helion 2010
	Supplementary literature	1. Carmen Delessio, Lauren Darcey, Shane Conder, Android Studio w 24 godziny. Wygodne programowanie dla platformy Android. Wydanie IV, Helion, 2016 2. Chris Griffith, Mobile App Development with Ionic, Revised Edition. Cross-Platform Apps with Ionic, Angular, and Cordova, O'Reilly Media, 2021 3. Bonnie Eisenman, React Native. Tworzenie aplikacji mobilnych w języku JavaScript. Wydanie II, Helion, 2018, 4. Steven F. Daniel, Xamarin. Tworzenie interfejsów użytkownika, Helion 2017 5. Belen Cruz Zapata, Android Studio. Podstawy, Helion, 2015
	eResources addresses	Adresy na platformie eNauczanie:
Example issues/ example questions/ tasks being completed		
Work placement	Not applicable	

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