

(faculty stamp)

COURSE DESCRIPTION

1. Course title: MOBILE TECHNOLOGIES		2. Course code: MT		
3. Validity of course description: 2018/2019				
4. Level of studies: BSc programme				
5. Mode of studies: intramural studies				
6. Field of study: COMPUTER SCIENCE (RAU)				
7. Profile of studies: general academic studies				
8. Programme: -				
9. Semester: 5				
10. Faculty teaching the course: Instytut Informatyki (RAU2)				
11. Course instructor: PhD. Eng. Michał Maćkowski, M.Sc. Eng. Michał Sawicki				
12. Course classification: common lectures				
13. Status przedmiotu: compulsory				
14. Language of instruction: English				
15. Pre-requisite qualifications: Before starting the course, the student is prepared with the following subjects: programming in C / C ++ and Java. Introductory subjects: Computer programming.				
16. Course objectives: The aim of the course is to present issues related to the developing application for mobile devices, including smartphones, tablets and wearable computing devices. As part of the course, students will acquire the skills to design and develop applications and user interfaces for mobile devices equipped with selected operating systems. As part of the lectures and laboratory classes, popular programming languages for mobile devices will be presented and discussed.				
17. Description of learning outcomes:				
No.	Learning outcomes description	Method of assessment	Teaching methods	Learning outcomes reference code
1	Student knows the architecture of selected mobile systems.	laboratory task	multimedia lecture, laboratory (ML, L)	K1A_W11 K1A_W13 K1A_U19 K1A_U23
2	Student can develop efficient and secure mobile applications in Java and SWIFT languages.	laboratory task	multimedia lecture, laboratory (ML, L)	K1A_W12 K1A_U20 K1A_U22
3	Student can design ergonomic and useful user interfaces of mobile applications.	laboratory task	multimedia lecture, laboratory (ML, L)	K1A_W08 K1A_U20 K1A_U22

4	Student can use and apply in mobile application selected sensors and location mechanisms.	laboratory task	multimedia lecture, laboratory (ML, L)	K1A_W11 K1A_U23
5	Student can develop mobile applications with elements of 2D and 3D graphics.	laboratory task	multimedia lecture, laboratory (ML, L)	K1A_W08 K1A_U20
6	Student can store data of the mobile application in selected mobile databases.	laboratory task	multimedia lecture, laboratory (ML, L)	K1A_W13 K1A_U25

18. Teaching modes and hours

Lecture / BA /MA Seminar / Class / Project / Laboratory

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19. Syllabus description:

Lecture:

1. The architecture of the iOS and Android operating system;
2. Developing mobile applications for iOS system using the Swift language, the syntax of the Swift programming language;
3. Developing mobile applications for Android using Java and Kotlin languages, multithreaded applications;
4. Procedures during starting Android system. Mechanisms of zygote and intents. Runnable environments ART and Dalvik;
5. Designing an ergonomic user interface for iOS and Android;
6. Architectural patterns of applications for iOS and Android;
7. View controllers in iOS system: Navigation Controller, Table View Controller and Split View Controller;
8. Gesture handling in iOS and Android;
9. Location services in iOS and Android;

Laboratory:

1. Running and testing applications for iOS and Android;
2. Designing an ergonomic user interface for iOS and Android;
3. Developing the application using view controllers in Swift: Navigation Controller, Table View Controller, Split View Controller for iOS;
4. Gesture handling in iOS and Android;
5. Determining location and location API (geocoding and reverse geocoding) in iOS and Android.
6. Controlling the Android mobile application using: gestures, sensors (accelerometer), gyroscope, voice commands, camera image;
7. Designing web applications for Android;

20. Examination: Yes

21. Primary sources:

1. Matt Neuburg. *“iOS 11 Programming Fundamentals with Swift. Swift, Xcode, and Cocoa Basics”*, O'Reilly, 2017.
2. Apple Swift language. <https://docs.swift.org/swift-book/>.
3. Jawwad Ahmad, Jerry Beers et al. *“iOS 11 by Tutorials: Learning the new iOS APIs with Swift 4”*, 2017
4. Neil Smyth. *“iOS 11 App Development Essentials: Learn to Develop iOS 11 Apps with Xcode 9 and Swift 4”* 2018
5. D. Mark, J. Nutting, K. Topley, F. Olsson, „*Beginning iPhone Development with Swift*”, Apress, 2014.
6. D. Jemerov, S. Isakova, “*Kotlin in action*”, Shelter Island, NY : Manning, 2017
7. A. Leiva, “*Kotlin for Android developers : learn Kotlin the easy way while developing an Android App*”, Leanpub, 2017
8. T. Hagos, “*Learn Android Studio 3: Efficient Android App Development*”, Apress, 2018
9. R. Meier, “*Professional Android*”, Wiley, 2018

22. Secondary sources: -**23. Total workload required to achieve learning outcomes**

Nr	Teaching mode	Contact hours / Student workload hours
1	Lecture	30/30
2	Classes	/
3	Laboratory	30/30
4	Project	/
5	BA/ MA Seminar	/
6	Other	/
	Total number of hours	60/60

24. Total hours: 120**25. Number of ECTS credits: 4****26. Number of ECTS credits allocated for contact hours: 2****27. Number of ECTS credits allocated for in-practice hours (laboratory classes, projects): 2****26. Comments: -----**

Approved:

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(date, Instructor's signature).....
(date, the Director of the Faculty Unit signature)