

Module/Course Syllabus
Computer Science
Master Degree Programme

Course:	Advanced Programming in SWIFT
Type of the course:	<i>elective</i>
Course code:	I2S2.11
Year:	1
Semester:	2
Form of the degree programme:	Full-time
Form of classes and number of hours per semester:	60
Lecture	30
Classes	0
Laboratory	30
Project	0
Number of ECTS credits:	3
Form of assessment:	course completion assessment
Course language:	English

Course objective (C)	
C1	Obtaining practical skills in testing the applications in a iOS development environment.
C2	Acquiring programming skills using the RxSwift library.
C3	Understanding the mechanisms of animation execution in the iOS environment.

Prerequisites in terms of knowledge, skills and other competencies	
1	The ability of object-oriented programming.
2	Knowledge of the basics of relational databases

Learning outcomes (LO)	
	In terms of knowledge:
LO 1	The student has detailed knowledge of testing applications on the iOS platform.
LO 2	The student has knowledge of Reactive Programming in SWIFT.
	In terms of skills:
LO 3	The student is able to share and test the developed mobile application, detect errors and correct them.
LO 4	The student has the ability to program mobile applications for the iOS platform using the RxSwift library along with the necessary animations.
	In terms of social competence:
LO 5	The student can organize the process of learning independently and in a group.

Course content	
Form of classes – lectures (L)	
	Course content
L1	Introduction to testing mobile applications on the iOS platform.
L2	Selected methods of making applications available for testing and conducting unit tests.
L3	Instruments tool and the methods of using it.
L4	Basics of animation in SWIFT.

L5	Accessibility in SWIFT.
L6	Ways of obtaining external data in SWIFT language.
L7	Introduction to RxSwift library.
L8	Types of operators and their application.
L9	Introduction to RxCocoa tool.
L10	Error handling in the iOS application.
L11	Table and collection views.
L12	Actions and gestures in the RxSwift environment.
L13	Design patterns in the RxSwift environment.
L14	Scene coordinator and ways of using it.
L15	Building a complete application using the RxSwift library.

Form of classes – laboratories (Lab)

	Course content
Lab1	Testing a one-view mobile application in the iOS environment.
Lab2	Testing the application using the TestFlight tool.
Lab3	Ways to use Instruments and unit tests.
Lab4	Create a multi-view application with animations and accessibility features.
Lab5	Creating an application using external API and databases.
Lab6	Introduction to RxSwift library.
Lab7	Use of operators in iOS applications.
Lab8	Application development with RxCocoa.
Lab9	Error handling, scheduling and application tests.
Lab10	Create an application with view tables and collections.
Lab11	Using the MVVM pattern in the RxSwift application.
Lab12	Creating an application that uses a scene coordinator.
Lab13	Implementation of assigned projects.

Didactic methods

1	Lecture with multimedia presentation.
2	Working in a laboratory in a Swift programming environment using materials available on the e-learning platform.

Assesment methods and criteria (A)

Assessme nt method code	Description of assessment method	Passing threshold
A1	Final test - lecture	51%
A2	Final test - laboratory	51%
A3	Project	51%

Required textbooks and other course materials

1	Florent Pillet, Scott Gardner and Marin Todorov, RxSwift: Reactive Programming with Swift.
2	Reactive Programming with Swift, https://www.raywenderlich.com/books/rxswift-reactive-programming-with-swift

Recommended textbooks and other course materials

1	Swift, https://developer.apple.com/swift/
----------	--------------------------------------------------------------------------------------------

Student workload	
Activity	The average number of hours to complete the activity
Contact hours with the lecturer, including:	60
<i>participation in lectures</i>	30
<i>participation in laboratories</i>	30
Student's own work, including:	15
<i>self learning in laboratories</i>	5
<i>preparing for final quiz</i>	10
Total student work time	75
Total number of ECTS points for the subject	3

Learning outcomes matrix					
Learning outcome	Reference to the outcomes defined for the masters programme	Course objective	Course content	Didactic methods	Assessment methods
LO 1	I2A_W07 ++	CO1, CO3	L1 - L15	1	O1
LO 2	I2A_W08 ++	CO1, CO3	L1 - L6	1	O1
LO 3	I2A_U05 ++ I2A_U06 ++ I2A_U15 +++	CO2	Lab1 - Lab12	2, 3	O2, O3
LO 4	I2A_U05 + I2A_U10 +++ I2A_U13 ++ I2A_U15 +++	CO2	Lab1 - Lab12	2, 3	O2, O3
LO 5	I2A_K01 ++ I2A_K02 ++	CO1, CO2, CO3	Lab1 - Lab12	1, 2, 3	O1, O2, O3

The author of the programme:	dr Paweł Powroźnik, Ph. D.
E-mail address:	p.powroznik@pollub.pl
Organisational unit:	Department of Computer Science