

## DESCRIPTION OF THE STUDY SUBJECT

### Title

<b>PROGRAMMING MOBILE IOS APPS</b>
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### Scope of the subject

Semester	Mode of studies	Structure*				Total number of hours	Number of credits	Group and type of subjects
		L	Lw	C	S			
V	Full-time	13	20	6	42	243	9	Subjects for deepening in the branch
VI		24	42	12	84			
VI	Part - time	6	12	21	42	243	9	
VII		8	28	42	84			

\*L – lectures, PS – practical activities, seminars, LW – laboratory work, PR – practice, CP – course paper, C – consultations, S – self-study

### Aim of the subject

To know and to understand the technologies for development of mobile applications for the *iOS* operating system. To design, implement and distribute mobile applications intended for the *iOS* operating system, to be able to integrate them into the common information system of the enterprise, considering the needs of the enterprise.

### Necessary background knowledge for studying the subject

Students shall have heard subjects basics of algorithmization, basics of programming and object-oriented programming.

### Content of the subject

Title of the topic and description of the content	Number of contact hours			S	Total number of hours
	L	Lw	C		
1. Market of programmes for smart devices, their distribution possibilities. Graphic design of <i>iOS</i> application. Architecture of <i>iOS</i> applications, their types. Design tools of <i>iOS</i> applications, Xcode environment.	4	-	-	-	<b>4</b>
Laboratory work. To design a framework of the mobile application.	-	2	-	3	<b>5</b>
2. Objective-C and Swing programming languages.	3	-	-	-	<b>3</b>
Laboratory works: • To program the application using structures of Objective-C language; • To program the application using structures of Swing language.	-	3	1	5	<b>9</b>
3. Main elements of the graphical user interface.	1	-	-	-	<b>1</b>
Laboratory work. To create and apply elements of the graphical user interface in the application.	-	2	1	4	<b>7</b>
4. Multi-window applications.	1	-	-	-	<b>1</b>
Laboratory work. To create a mobile application with two or more windows.	-	2	1	4	<b>7</b>
<b>Preparation for the defence of laboratory works and their defence No.1</b>	-	2	-	6	<b>8</b>
5. User media (dialogue windows, messages, progress indicators).	1	-	-	-	<b>1</b>
Laboratory work. To program the user's media in the mobile application.	-	2	1	4	<b>7</b>
6. Processing of the events of the user and system, the reaction to the user's gestures. Undoing.	1	-	-	-	<b>1</b>
Laboratory works: • To programme the part of reactions to the user's gestures in the mobile application. • To implement the possibility to cancel actions in the mobile application.	-	3	1	6	<b>10</b>
7. Settings of the <i>iOS</i> application. Management of the <i>iOS</i> memory, optimization of the application.	2	-	-	-	<b>2</b>
Laboratory work. To monitor the speed and other quality parameters of the mobile application.	-	2	1	4	<b>7</b>
<b>Preparation for the defence of laboratory works and their defence No.2</b>	-	2	-	6	<b>8</b>
<b>V semester. Total number of hours</b>	<b>13</b>	<b>20</b>	<b>6</b>	<b>42</b>	<b>81</b>
1. Image effects and animation.	3	-	-	-	<b>3</b>
Laboratory works: • To programme image effects of the graphical user interface (turnover, flashing, fading, etc.) • To programme animation effects.	-	4	2	8	<b>14</b>
2. Processing of video materials.	2	-	-	-	<b>2</b>
Laboratory work. To programme functions of video recording and display.	-	2	1	4	<b>7</b>

Title of the topic and description of the content	Number of contact hours			S	Total number of hours
	L	Lw	C		
3. Usage of the technical equipment (e.g., an accelerometer, video camera). Laboratory work. To programmatically address the hardware of the iOS device in the mobile application.	2	-	-	-	2
<b>Preparation for the defence of laboratory works and their defence No.3</b>	-	2	-	6	8
4. Elements of parallel programming. Laboratory work. To programme threads in the mobile application.	2	-	-	-	2
<b>Preparation for the defence of laboratory works and their defence No.4</b>	-	2	-	6	8
5. Data storage devices CoreData. Laboratory works: • To design and implement a database in the device. • To program the part of communication with the database in the created mobile application.	2	-	-	-	2
6. Lists and tables. Laboratory work. To use elements of the list and table in the created mobile application.	2	-	-	-	2
<b>Preparation for the defence of laboratory works and their defence No.4</b>	-	2	-	6	8
7. Networking. Data exchanges between devices. Laboratory work. To programme the part using other devices (Bluetooth, NFC) in the created mobile application.	2	-	-	-	2
<b>Preparation for the defence of laboratory works and their defence No.5</b>	-	2	-	6	8
8. Elements of network storage and cloud computing. Laboratory work. To use network storage and (or) other elements of cloud computing in the created mobile application.	2	-	-	-	2
<b>Preparation for the defence of laboratory works and their defence No.5</b>	-	2	-	6	8
9. Maps and identification of location. Laboratory work. To use maps and (or) location identification services in the created mobile application.	2	-	-	-	2
<b>Preparation for the defence of laboratory works and their defence No.5</b>	-	2	-	6	8
10. Elements of social networks. Laboratory work. To use Elements of social networks.in the created mobile application.	2	-	-	-	2
<b>Preparation for the defence of laboratory works and their defence No.6</b>	-	2	-	6	8
11. Specificity of iOS game development. Laboratory work. Development of mobile games.	3	-	-	-	3
<b>Preparation for the defence of laboratory works and their defence No.6</b>	-	2	-	6	8
<b>VI semester. Total number of hours</b>	<b>24</b>	<b>42</b>	<b>12</b>	<b>84</b>	<b>162</b>
<b>Total number of hours</b>	<b>37</b>	<b>62</b>	<b>18</b>	<b>126</b>	<b>243</b>

#### Assessment of learning outcomes

Ten-point criteria-based assessment system as well as cumulative assessment using individual cumulative index (ICI) are applied. The overall grade is the sum of grades for the defence of laboratory works (DLw) multiplied by weighted coefficients.

V semester.  $ICI1 = 0,5 DLw1 + 0,5 DLw 2$

VI semester.  $ICI2 = 0,25 DLw 3 + 0,25 DLw 4 + 0,25 DLw 5 + 0,25 DLw 6$

Overall grade.  $ICI = 0,4 ICI1 + 0,6 ICI2$

#### Recommended literature

Key literature						
No.	Year of publishing	Author(s) and title of the publication	Publishing house	Number of copies and/or internet link		
				ŠSSC library	Other premises	Other libraries *
1.	2014	Beginning iOS Programming	Xrow	<a href="http://it-ebooks.info/book/3663/">http://it-ebooks.info/book/3663/</a>		
2.	2013	iOS 7 Programming Fundamentals	O'Reilly Media	<a href="http://it-ebooks.info/book/3084/">http://it-ebooks.info/book/3084/</a>		
3.	2011	Beginning iOS 5 Games Development	Apress	<a href="http://it-ebooks.info/book/1322/">http://it-ebooks.info/book/1322/</a>		
Additional literature						
No.	Year of publishing	Author(s) and title of the publication		Publishing house and/or internet link		
1.	2015	Manning, J. Et al. Swift Development with Cocoa		O'Reilly		

2.	2014	Neuburg, M. Programming iOS 7, 4th Edition	O'Reilly
3.	2014	Richter, K., Keeley, J. iOS Components and Frameworks Understanding the Advanced Features of the iOS SDK	Addison-Wesley
4.	2013	Kalali, M., Mehta B. Developing RESTful Services with JAX-RS 2.0, WebSockets, and JSON	Packt Publishing
5.	2011	Layon, K. The Web Designer's Guide to iOS Apps: Create iPhone, iPod touch, and iPad apps with Web Standards	New Riders
6.	2011	Clair, R. Learning Objective-C 2.0	Addison-Wesley
7.	2011	Harwani, B.M. Core Data iOS Essentials	Packit Press
8.	2011	Hoog Andrew. iPhone and iOS forensics investigation, analysis, and mobile security for Apple iPhone, iPad, and iOS devices	Syngress
9.	2010	Andrew Hoog, Katie Strzempka. Advanced iOS 4 programming: Developing mobile applications for Apple iPhone, iPad, and iPod touch	Wiley

\* ŠAVB – Šiauliai Region Povilas Višinskis Public Library, ŠU – library of Šiauliai University

**Required material resources and their short description**

<ul style="list-style-type: none"> <li>• <b>Equipment (devices):</b> computers (16 units), computers connected to the local network and connected to the Internet, multimedia projector, printer, tablet PCs and / or other smart devices with the iOS operating system.</li> <li>• <b>Software:</b> VMWare virtual machines support program and compatible operating system in computers, iOS operating system for smart devices, virtual machines with Mac OS X operating system and development environment XCode.</li> </ul>
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**The description prepared by:**

Associate Professor Dr. Vaidas Giedrimas