



## COURSE DESCRIPTION

### 1. Program Information

1.1 University	Alexandru Ioan Cuza University, Iasi
1.2 Faculty	Computer Science
1.3 Department	Computer Science
1.4 Study Domain	Computer Science
1.5 Study Cycle	3 <sup>rd</sup> year, first semester
1.6 Study Program / Qualification	

### 2. Course Information

2.1 Course Name	Android programming techniques						
2.2 Course Teacher	Associate Professor Gavrilut Dragos, PHD						
2.3 Seminary Teacher	Associate Professor Gavrilut Dragos, PHD						
2.4 Study Year	3	2.5 Semester	1	2.6 Evaluation		2.7 Course Status	

\* OB – Compulsory / OP – Optional

### 3. Total estimated hours (hours per semester and didactic activities)

3.1 Hours per week	5	in which: 3.2 course	1	3.3 seminary/laboratory	4	
3.4 Hours in curriculum	5	in which: 3.5 course	1	3.6 seminary/laboratory	4	
Time Distribution						hours
Manual study, Course support, Bibliography, and others						
Supplementary Documentation in library, in electronic forums, and on the field						
Seminaries/laboratories preparation, homeworks, reports, portfolios and essays						
Tutoring						
Evaluation						
Other activities (consultations per student)						
3.7 Total hours individual study						124
3.8 Total hours per semester						70
3.9 Credits						5

### 4. Preconditions (if necessary)

4.1 Of Curriculum	Java and C++ languages. OOP notions.
4.2 Of Skills	

### 5. Conditions (if necessary)

5.1 For Course Operation	-
5.2 For Seminary/Laboratory Operation	-



## 6. Specific Skills Acquired

<b>Professional Skills</b>	<b>C1. Application development for Android platform. C2. Low-level programming (JNI) for Android platform. C3. Use of OPENGL ES 2.0+ and GLSL language in Android platform.</b>
<b>Transversal Skills</b>	<b>CT1. The efficient conduct of activities organized in an inter-disciplinary group. Being able to build and validate a product/service that requires inter-disciplinary communication. CT2. The efficient use of development time for building a software product.</b>

## 7. Course Objectives (from the grid of specific skills acquired)

<b>7.1 General Objectives</b>	At the end of this course, the students that attended it will be able to build a software product based on the APIs specific to the Android platform.
<b>7.2 Specific Objectives</b>	At the end of this course the student will be able to : <ul style="list-style-type: none"><li>▪ Build an Android application</li><li>▪ Use OPEN-GL ES 2.0 for different application that requires higher graphic interface (games, video processing applications, etc)</li><li>▪ Will possess knowledge on how to use the native Android interface (JNI)</li><li>▪ Will be able to distribute an application through several distribution platforms such as Google Play market.</li></ul>

## 8. General Description

<b>8.1</b>	<b>Course</b>	<b>Teaching Methods</b>	<b>Observations</b> (hours and bibliographic references)
1.	Introduction to Android environment. Architecture. Zygote processes. Dalvik virtual machine.	C	2
2.	Life cycle of any Android application. Resources.. Views. Layout.	C	2
3.	Styles and themes for Android applications. Menus (popup, context)	C	2
4.	Dialogs and Toast objects. Inter process communication in Android platform: Intents	C	2
5.	SurfaceView. Usage of Android platform for simple graphics. Threads	C	2



6.	Data storage: SharedPreferences, internal storage, data bases.	C	2
7.	Sensors (location, GPS, etc). Using Audio system in Android platform	C	2
8.	Camera object.	C	2
9.	SMS and phone manager.	C	2
10.	Notifications (push system). JNI (Java Native Interface) for Android	C	2
11.	Open GL (1). Building a simple application for Android with OpenGL.	C	2
12.	Open GL (2). Using GLSL language in Android.	C	2
13.	Google services platform.	C	2
14.	Android security concerns. Permissions. Malware and privacy risk applications. Ads.	C	2

**Bibliography****Main references:****Supplementary references:**

8.2	Seminary / Laboratory	Teaching methods	Observations (hours and bibliographic references)
1.	Introduction to Android platform. Emulators. IDE (Eclipse, Android Studio). Building a simple Android application.	S	2
2.	Activity. Layouts and Views.	S	2
3.	Menus and Fragments.	S	2
4.	Dialog and Toasts objects.	S	2
5.	Android graphics – use of SurfaceView object.	S	2
6.	Data storage.	S	2
7.	Sensors.	S	2
8.	Use of Camera object.	S	2
9.	Phone and SMS manager.	S	2



10.	Project development	S	2
11.	Project development	S	2
12.	Project development	S	2
13.	Project development	S	2
14.	Project development	S	2

**Bibliography**

- Professional Android Sensor Programming, Greg Milette, 2012
- Programming Android: Java Programming for the New Generation of Mobile Devices, Zigurd Mednieks
- Android Cookbook, Ian F. Darwin
- Android Studio Development Essentials, Neil Smyth
- OpenGL ES 2 for Android: A Quick-Start Guide (Pragmatic Programmers), Kevin Brothaler
- Game and Graphics Programming for iOS and Android with OpenGL ES 2.0, Romain Marucchi-Foino

**9. Course content synchronization with the expectations of the community representatives, professional associations and employers from the program domain**

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**10. Evaluation**

Activity Type	10.1 Evaluation criteria	10.2 Evaluation methods	10.3 The weight of each evaluation form (%)
<b>10.4</b> Course	60 points	Theoretical examination	37.5%
<b>10.5</b> Seminary/ Laboratory	30 points (lab problems) 70 points (lab project)	Project development and lab assignments	62.5%
<b>10.6</b> Minimal performance standards			
Minim 50 points for the lab examination. Minim 20 points for the course examination. Gauss curve will be applied on the final result.			

Date

Course Teacher  
Gavrilit DragosSeminary/Laboratory Teacher  
Gavrilit Dragos

Department Date of Approval

Director of the Department