VNIVERSITAT ĐVALÈNCIA

COURSE DATA

Data Subject	
Code	34865
Name	Applications for mobile devices
Cycle	Grade
ECTS Credits	6.0
Academic year	2022 - 2023

Study (s)			
Degree	**Center**	**Acad. year**	**Period**
1400 - Degree in Computer Engineering	School of Engineering	4	Second term
1407 - Degree in Multimedia Engineering	School of Engineering	4	Second term

Subject-matter		
Degree	**Subject-matter**	**Character**
1400 - Degree in Computer Engineering	16 - Optional subject	Optional
1407 - Degree in Multimedia Engineering	19 - Optatividad	Optional

Coordination	
Name	**Department**
GIL PASCUAL, MIRIAM	240 - Computer Science

SUMMARY

This subject introduces the student in the components, APIs and tools that allow to develop applications in the Android platform. Specifically, the components that can be used in an application, the visual widgets that can be used and how to listen to events that are produces when the user interacts with de device. Besides, some relevant APIS will be revised, for instance: the communication with sockets and HTTP servers, sensors (geolocation, accelerometer and camera), the access to databases and to native content providers. Finally, the generation and visualization of graphics, images and animations will be presented.

With these contents, the laboratory sessions and homeworks the student will hava a good foundation to develop applications in different fields.

PREVIOUS KNOWLEDGE

Relationship to other subjects of the same degree

There are no specified enrollment restrictions with other subjects of the curriculum.

Other requirements

Have a good knowledge in the Java programming language.
Have a good knowledge in computer graphics.

OUTCOMES

1400 - Degree in Computer Engineering

- TI6 - Ability to design systems, applications and services based on network technologies, including the Internet, the web, e-commerce, multimedia, interactive services and mobile computing.

1405 - Grado en Ingenieria Multimedia

- G1 - Be able to relate and structure information from different sources and to integrate ideas and knowledge. (RD1393/2007)

- MM1 - Have knowledge and ability to understand essential facts, concepts, principles and theories related to multimedia systems including all the disciplines covered by these systems.

- MM2 - Be able to understand and manage the different technologies involved in multimedia systems, both from the point of view of hardware and electronics and of software.

- MM21 - Communicate effectively, both in writing and verbally, knowledge, procedures, results and ideas related to ICT and specifically to multimedia, and know their socioeconomic impact.

LEARNING OUTCOMES

As learning outcomes, the student must be able to:

- Develop applications that contain multiple screens and that can be transitioned between them.
- Develop applications that use existing components in the system in a decoupled way.
- Develop and use the device's notification system.
- Develop and use services in applications.
- Develop and use "broadcast receivers" to receive information from the system.
- Develop applications that use "Sockets" and that make requests to HTTP servers.
- Develop and use databases and "content providers" of the system.
- Develop applications that use the sensors provided by the device.
- Develop applications that use fragments and allow the visualization of graphics, images and animations.
- Design applications that apply the design guidelines.
- Design and create different types of testing to test the application.
- Use the Eclipse development environment and tools provided by the Android SDK for application

development and testing.

DESCRIPTION OF CONTENTS

1. Introduction

Platform architecture
Virtual machine
Types of components that form an application

2. Activities and intents

Activity class
Widgets and containers
Layout of elements in containers
Events
Intents
Permissions

3. Local Storage

Files
Preferences
Databases

4. Concurrent programming, Notifications and Alarms

Concurrent Programming
Notifications
Alarms

5. Network programming

Communication through sockets
Making requests to HTTP servers

6. BroadcastReceiver and Service

BroadcastReceiver
Service

7. Development of advanced user interfaces

Use of fragments
Introduction to animations
Images and graphics
Audio and vídeo
Sensors: motion sensors, position sensors, enviroment sensors, camera

8. Design guidelines

Accessibility guidelines
Usability guidelines
Advanced components
Themes
Typography
Icons

9. Testing

Fundamentals of testing
Unit tests
User interface testing
User interface performance testing

WORKLOAD

ACTIVITY	Hours	% To be attended
Theory classes	30,00	100
Laboratory practices	20,00	100
Classroom practices	10,00	100
Development of group work	10,00	0
Development of individual work	40,00	0
Study and independent work	30,00	0
Readings supplementary material	10,00	0
TOTAL	150,00	

TEACHING METHODOLOGY

Lectures, problem solving, autonomous study and team work.

EVALUATION

In the **first call** we propose a continuous evaluation methodology:

1. Along the course a set of tasks to be assessed individually (laboratory sessions, projects, individual and group work, etc.) will be proposed.
2. Laboratory sessions will be assessed by evaluating the source code, a possible memory and oral presentations of the projects. Each laboratory handout will specify their own evaluation system.
3. Other assessable tasks will be selected by the teacher from the following categories: projects, individual work or group work.
4. Since the responsibility to learn and demonstrate what they have learned is individual, the teacher may request students to explain the work done in any given task.

The following factors are evaluated to obtain the final mark:

- 85% of the laboratory projects
- 15% of additional work

To be able to average it is necessary to obtain a minimum grade of 4 in each one of the laboratory projects, being necessary that the final grade is equal to or superior to 5 to pass.

The **second call** is oriented to improve or repeat the failed tasks from the first call. The teacher must indicate each student the corresponding task/s. The grade of the additional work is not recoverable. The final mark will be calculated the same as in the first call.

In any case, the evaluation of this subject will be done in compliance with the University Regulations in this regard, approved by the Governing Council on 30th May 2017 (ACGUV 108/2017)

REFERENCES

Basic

- C. Collins, M. Galpin, M. Kaeppler. Android in Practice, Manning Publications 2011

- P.J. Deitel, H. V. Deitel, A. Deitel, M. Morgano. Android for Programmers: An App-Driven Approach. Prentice Hall; 1 edition 2011

- G. Milette, A. Stroud. Professional Android Sensor Programming, Wrox 2012

- Daniel Sauter. Rapid Android Development. Pragmatic Bookshelf - 2013

Additional

- Mario Zechner, Robert Green. Beginning Android Games, Apress 2011

- Daniel Shiffman. Learning Processing: A Beginner's Guide to Programming Images, Animation, and Interaction. 2008, Morgan Kaufmann.