COURSE DATA

DATA SUBJECT

Code: 34865
Name: Applications for mobile devices
Cycle: Undergraduate Studies
ECTS Credits: 6
Academic year: 2025-26

STUDY (S)

Degree	Center	Acad. year	Period
1400 - Degree in Computer Engineering	Escola Tècnica Superior d'Enginyeria	4	Second quarter
1407 - Degree in Multimedia Engineering	Escola Tècnica Superior d'Enginyeria	4	Second quarter

SUBJECT-MATTER

Degree	Subject-matter	Character
1400 - Degree in Computer Engineering	Optional subject	ELECTIVES
1407 - Degree in Multimedia Engineering	Optatividad	ELECTIVES

COORDINATION

GIL PASCUAL MIRIAM

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

It is recommended to have completed the courses that provide training in the Java programming language and computer graphics.

COMPETENCES / LEARNING OUTCOMES

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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.

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.

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.

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.

DESCRIPTION OF CONTENTS

1. Introduction

Platform architecture
Introduction to Kotlin
Functions, classes, and objects

2. Build your first app

App components
Layouts
Activities and interactivity

3. Activities and fragments

The Activity class
Fragments
Navigation bar and menus
Activity and fragment lifecycle
Intents
Permissions

4. App architecture (UI and storage)

App architecture
Databases
Coroutines

5. Networking

Permissions
Connecting to a web service
Accessing and using internet resources

6. Interface design

Accessibility guidelines
Usability guidelines
Advanced components
Themes
Fonts
Icons

7. Service and Broadcast Receiver

Service
Broadcast Receiver
Notifications
Alarms

8. Sensors and location

Location
Sensors: motion sensors, position sensors, environmental sensors, camera

9. Animations

Introduction to animations and dynamic interfaces
Images and graphics
Audio and video

10. Testing

Basic testing concepts
Unit testing
User interface testing
User interface performance testing

WORKLOAD

PRESENCIAL ACTIVITIES

Activity	Hours
Theory	30,00
Laboratory	20,00
Classroom practices	10,00
Total hours	**60,00**

NON PRESENCIAL ACTIVITIES

Activity	Hours
Attendance at other activities	0,00
Individual or group project	50,00
Independent study and work	40,00
Preparation of lessons	0,00
Preparation for assessment activities	0,00
Resolution of case studies	0,00
Total hours	**90,00**

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)

Copying or plagiarism of any activity that is part of the evaluation will result in the impossibility of passing the course, and the student will then be subject to the appropriate disciplinary procedures indicated in the ACTION PROTOCOL FOR FRAUDULENT PRACTICES AT THE UNIVERSITY OF VALENCIA (ACGUV 123/2020).

REFERENCES

- Roman Elizarov, Svetlana Isakova, Sebastian Aigner, and Dmitry Jemerov: Kotlin in Action, Second Edition, Manning Publications, 2022.
- Android Cookbook, Ian F. Darwin, O'Reilly Media, Inc.
- Beginning Android Programming with Android Studio, Jerome F. DiMarzio, John Wiley & Sons, 2016
- Kotlin documentation: https://kotlinlang.org/docs/home.html
- C. Collins, M. Galpin, M. Kaeppler. Android in Practice, Manning Publications 2011
- Mario Zechner, Robert Green. Beginning Android Games, Apress 2011
- Ian Darwin. Android Cookbook. Problems and Solutions for Android Developers. O'Reilly. 2017
- Daniel Sauter. Rapid Android Development. Pragmatic Bookshelf - 2013