**MOBILE COMPUTING**

Mestrado em Engenharia Eletrónica e de Computadores

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Code: 26200

Main Scientific Area: Computer Architecture, Distributed Systems and Cybersecurity

Lecturer: Nuno Filipe Macedo Cunha Mendes

Language of Instruction: Portuguese

Regime: S1

Contact Hours: 30h Total Workload: 130h

ECTS: 6,0

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**Objectives**

Familiarization with the Android mobile development platform, thus gaining fundamental knowledge for the development of projects, using not only the capabilities of Android devices (camera, storage, and other sensors) but also external APIs and SDKs.

Familiarization with development tool: Android Studio

**Learning Outcomes**

Understand the details of the KOTLIN development language with focus on Android

Learn and apply concepts related to using the Android Studio development tool

Understand the Introductory Concepts Relatively UI / UX Implementation on Android

Understand and apply programming concepts in Android notably related to the MVC Paradigm, Activities, Fragments, Views, Storage, Threading and Networking

Understand and use external libraries and external APIs within the context of an Android project

**Course Contents**

Recap of the object-oriented paradigm

Introduction to the Android universe

Getting started with Android Studio and how it works
Introducing the MVC Standard and how it fits into mobile development (specifically Android)
Programming in Android (KOTLIN) (Activities, Views, Fragments, Networking, Threading, Sensors)
Debugging in Android (LogCat and other useful tools)
External libraries on Android
External APIs on Android
Firebase as a mobile backend for Android development support

**Recommended Bibliography**

Documentação Oficial Android (https://developer.android.com/docs)
Kotlin in Action, Dmitry Jemerov and Svetlana Isakova, 2017, Manning
Ricardo Queirós, Android – Introdução ao Desenvolvimento de Aplicações, FCA, 2013

Ricardo Queirós, Desenvolvimento de Aplicações Profissionais em Android, FCA, 2014

**Learning and Teaching Methods**

The contents were defined based on the objectives that are intended to be achieved within the scope of this curricular unit, as well as the competences to be acquired by the students. The consistency between these parameters is then exemplified.

The exemplification and introduction of the Android mobile platform and its IDE of choice: Android Studio

In this sense, all the phases necessary for the development of a solid Android mobile application in the business world will be addressed, touching subjects like the design of the application guaranteeing a good UX / UI balance, the communication with external services using the respective APIs, as well as the inclusion of external libraries.

In this way, it is important to introduce students to the differences in UI concepts and user experience (UX) and how these two characteristics are fundamental for the development of mobile applications.

The use of the MVC standard focuses on the organizational method currently in place in the labor market, thus providing students with the ability to perform mobile development following the current framework rules that are naturally relevant to the Android platform. With this competence, the student can at the end of this CU, differentiate in the approaches regarding the development of an application and the respective organization of its components.

All the information transmitted will be encouraged through practical development both in the classes and through projects of evaluation of the Curricular Unit, with great accompaniment by the teacher.

In the end the student will be provided with theoretical and practical information to more smoothly face the current market of work in the area of mobile development, specifically in Android.

**Assessment Methods**

The evaluation will be done through a practical group project and a theoretical evaluation form. The weight of each component is 50% (culminating in 100%). The minimum grade for the approval of each component is 10 points.

Approval on project component is mandatory in order for the student to be eligible to the several exam seasons.