

Academic Year: (2020 / 2021)

Review date: 06-07-2020

Department assigned to the subject: Telematic Engineering Department

Coordinating teacher: CAMPO VAZQUEZ, MARIA CELESTE

Type: Compulsory ECTS Credits : 6.0

Year : 4 Semester : 2

REQUIREMENTS (SUBJECTS THAT ARE ASSUMED TO BE KNOWN)

Systems Architecture
Multimedia Applications
Programming
Systems Programming

OBJECTIVES

The goal of this course is that the student will know the design principles and the development of applications for mobile terminals. Mobile terminals are characterized by their limitations when compared with conventional computers in terms of processing power, memory, user interface, and energy consumption. They make extensive use of wireless communications, both for local area and for wide area networking.

To achieve this goal, the student must acquire the following specific competences and skills:

- To know the specific characteristics of mobile applications.
- To prototype mobile applications.
- To design and program applications in some of the most often used mobile applications development platforms: Android.
- To use fluently the different software tools for mobile applications development.
- To use mobile terminals to test and validate the applications developed.
- To be able to work in teams in an effective way, developing a fully functional application.
- To learn in an autonomous way.

The generic skills provided are:

- (PO a) The ability to apply knowledge of telecommunication technologies and engineering, specifically the ones related with the development of mobile applications.
- (PO b) The ability to design and conduct experiments, as well as to analyze and interpret data. This skill will be worked out in practical assignments in the lab.
- (PO g) The ability to effectively communicate information in speech, presentation, and in writing. Students will defend their practical in an oral presentation, and also submitting a written documentation.
- (PO j) Knowledge of contemporary issues. Students will work with the last mobile operating systems, and will test their applications in terminals.
- (PO k) Ability to use the techniques, skills, and modern engineering tools necessary for engineering practice. Students will use different software tools for the development of mobile applications, and terminals to validate the applications they have developed.

DESCRIPTION OF CONTENTS: PROGRAMME

The content of the program is divided in three blocks:

Part I. Introduction

1. Operating systems for mobile devices.
2. General Concepts of development of mobile applications.

Part II. Development of mobile applications:

1. Android platform.
 - 1.1. Introduction.
 - 1.2. Creating applications and activities.

- 1.3. User interfaces.
- 1.4. Intents, Broadcast Receivers and Internet.
- 1.5. Files, state and preferences.
- 1.6. Databases and content providers.
- 1.7. Maps and location based services.
- 1.8. Services and threads.
- 1.9. Audio, vídeo, camera.
- 1.10. Telephony and SMS.
- 1.11. Bluetooth, networks and WiFi.
- 1.12. Sensors.
- 1.13. Advance topics.
2. Other platforms.

Part III. Design and implementation of a mobile application.

LEARNING ACTIVITIES AND METHODOLOGY

The learning methodology will include:

- (1) Theory classes, where the teacher will present the knowledge students must acquire. The students will have the slides of the classes and some references and textbooks that will allow them to complete and to go deeply in those issues in which they are more interested (PO a, j).
- (2) Lab classes, where the students will implement, with teacher support, the mobile applications according to realistic requisites specifications. These applications will be implemented in groups, to foment the collaborative work, the decomposition of the application in modules, the specification of interfaces between the modules, and the documentation (PO b, g, j, k).

ASSESSMENT SYSTEM

The continuous evaluation will be based in the following criteria:

- Practices and exercises: 70%. Practices and exercises made in the lab will be evaluated. The students will develop projects working in teams. It will consist on the design, and development (PO b) of a mobile application, in which the knowledge and capacities acquired in the course will have to be applied. The students will have to write documentation and make an oral presentation about their work (PO g). The students will use modern software tools, and will test the applications in last generation mobile devices (PO j, k).
- Written exam: 30%. It will consist on a written exam to assess both the theoretical and the practical concepts acquired by the student individually (PO a, j, k).

As an alternative to the continuous evaluation, there will be a final exam with a total value of 60% in the ordinary exam, and of 100% in the extraordinary exam, for the students that will decide not to integrate in the previous scheme of continuous evaluation.

% end-of-term-examination:	0
% of continuous assessment (assignments, laboratory, practicals...):	100

BASIC BIBLIOGRAPHY

- Reto Meier Professional Android 4.0 Application Development, Wiley, 2012
- Reto Meier Professional Android 4th Edition, Wiley, 2018

BASIC ELECTRONIC RESOURCES

- Google . Training Android Developers: <http://developer.android.com/training/index.html>
- Google . Guides Android Developers: <http://developer.android.com/intl/es/guide/index.html>
- Google Developer Training Team . Android Developer Fundamentals Course: <https://developers.google.com/training/courses/android-fundamentals>