

Academic Year: (2022 / 2023)

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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)

Programming
Systems Programming
Systems Architecture
Multimedia Applications

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.

The specific objectives are the following:

- Knowing the specific characteristics of mobile applications.
- Prototyping mobile applications.
- Designing and program applications in some of the most often used mobile applications development platforms: Android.
- Using fluently the different software tools for mobile applications development.
- Using mobile terminals to test and validate the applications developed.
- Being able to work in teams in an effective way, developing a fully functional application.
- Learning in an autonomous way.

The basic competences are:

CB1: Students have demonstrated possession and understanding of knowledge in an area of study that builds on the foundation of general secondary education, and is usually at a level that, while relying on advanced textbooks, also includes some aspects that involve knowledge from the cutting edge of their field of study.

CB2: Students are able to apply their knowledge to their work or vocation in a professional manner and possess the competences usually demonstrated through the development and defence of arguments and problem solving within their field of study.

The general competences are:

CG1: Ability to write, develop and sign projects in the area of telecommunications engineering aimed at the design, development and utilization of telecommunications and electronic networks, services and applications, in accordance with the competences acquired in the degree program.

The specific competences are:

ECRT13: Ability to differentiate the concepts of network access and transport, circuit switching and packet switching networks, fixed and mobile networks as well as systems and applications of distributed networks, voice services, audio, data, video and interactive services and multimedia.

The learning outcomes are:

RA1: To acquire the knowledge and understanding of the general basic fundamentals of engineering, as

well as, in particular, of multimedia communications networks and services, audio and video signal processing, room acoustic control, distributed multimedia systems and interactive multimedia applications specific to Sound and Image Engineering within the telecommunications family.

RA5: Be competent to apply the knowledge acquired to solve problems and design audiovisual networks and services, to configure their devices, as well as to deploy adaptive, personal audiovisual applications and services on them, bringing network intelligence to the value for the user, maximising the potential of multimedia networks and services in the different social and economic spheres, knowing the environmental, commercial and industrial implications of the practice of engineering in accordance with professional ethics.

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.
2. Creating applications and activities.
3. User interfaces.
4. Intents, Broadcast Receivers and Internet.
5. Files, state and preferences.
6. Databases and content providers.
7. Maps and location based services.
8. Services and threads.
9. Advance topics.

Part III. Design and implementation of a mobile application.

LEARNING ACTIVITIES AND METHODOLOGY

The learning methodology will include:

- Theoretical 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.
- Laboratory sessions, 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.
- Tutoring sessions: Individualized attendance (individual tutoring) or in-group (group tutoring) for students with a teacher.

ASSESSMENT SYSTEM

% end-of-term-examination/test:	30
% of continuous assessment (assignments, laboratory, practicals...):	70

The continuous assessment will be based in the design and implementation of a mobile application: 70%. The students will develop their projects working in teams. It will consist on the design, and development 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. The students will use modern software tools, and will test the applications in last generation mobile devices.

The end-of-term exam: 30%. It will consist on a written exam to assess both the theoretical and the practical concepts acquired by the student individually. It will be necessary to obtain at least 3.0 points over 10 in this part to pass the subject.

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.

BASIC BIBLIOGRAPHY

- Reto Meier Professional Android 4th Edition, Wiley, 2018

BASIC ELECTRONIC RESOURCES

- 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>