Mobile Applications

Academic Year: (2021 / 2022)   **Review date: 04/06/2021 14:21:07**

Department assigned to the subject: Telematic Engineering Department

Coordinating teacher: CAMPO VAZQUEZ, MARIA CELESTE

Type: Electives ECTS Credits : 3.0

Year :   Semester :

REQUIREMENTS (SUBJECTS THAT ARE ASSUMED TO BE KNOWN)

Systems Programming
Systems Architecture

OBJECTIVES

The general goal of this course is that the students will know and manage the core technologies for mobile and multimedia applications. For achieving this purpose, students must acquire a series of knowledge and skills.

The specific objectives are the following:
- Knowing the characteristics related with hardware and software capabilities of mobile devices and their main differences with personal computers.
- Knowing what are the main operating systems for mobile devices and the main differences between them.
- Knowing the main application development languages for mobile devices in the different operating systems: Android and others.
- Designing and to program mobile applications.

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:
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:
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.
ETEGT5: Ability to follow transmission, switching and process technological progress to improve telematics networks and services.
ETEGT6: Ability to design network architectures and telematics services.
ETEGT7: Ability to program telematics services and applications in network and distributed systems.

The learning outcomes are:
RA1: Knowledge and Understanding. Knowledge and understanding of the general fundamentals of engineering, scientific and mathematical principles, as well as those of their branch or specialty, including some knowledge at the forefront of their field.

RA3: Design. Graduates will have the ability to make engineering designs according to their level of knowledge and understanding, working as a team. Design encompasses devices, processes, methods and objects, and specifications that are broader than strictly technical, including social awareness, health and safety, environmental and commercial considerations.

RA4: Research. Graduates will be able to use appropriate methods to carry out detailed research and studies of technical aspects, commensurate with their level of knowledge. The research involves bibliographic searches, design and execution of experiments, interpretation of data, selection of the best proposal and computer simulation. May require consultation of databases, standards and security procedures.

RA5: Applications. Graduates will have the ability to apply their knowledge and understanding to solve problems, conduct research, and design engineering devices or processes. These skills include knowledge, use and limitations of materials, computer models, process engineering, equipment, practical work, technical literature and information sources. They must be aware of all the implications of engineering practice: ethical, environmental, commercial and industrial.

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: Android platform.
1. Introduction.
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. 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 (assigments, 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.

As an alternative to the continuous evaluation, there will be a final exam with a total value of 60% in the ordinary exam,

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

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 Publishing, 2018

BASIC ELECTRONIC RESOURCES

- Google . Training Android Developers: https://developer.android.com/guide

- Google Developer Training Team . Android Developer Fundamentals v2: https://developer.android.com/courses/fundamentals-training/overview-v2