



Teaching Guide

Identifying Data					2014/15
Subject (*)	Programación de Sistemas		Code	614G01058	
Study programme	Grao en Enxeñaría Informática				
Descriptors					
Cycle	Period	Year	Type	Credits	
Graduate	1st four-month period	Fourth	Obligatoria	6	
Language	Spanish				
Prerequisites					
Department	Electrónica e Sistemas				
Coordinador	Vazquez Regueiro, Carlos	E-mail	carlos.vazquez.regueiro@udc.es		
Lecturers	Amor Lopez, Margarita Vazquez Regueiro, Carlos	E-mail	margarita.amor@udc.es carlos.vazquez.regueiro@udc.es		
Web					
General description	Programación de sistemas encaixados e dispositivos móbiles				

Study programme competences

Code	Study programme competences
A32	Capacidade de desenvolver procesadores específicos e sistemas embarcados, así como desenvolver e optimizar o software dos ditos sistemas.
A34	Capacidade de deseñar e implementar software de sistemas e de comunicacións.
B1	Capacidade de resolución de problemas
B3	Capacidade de análise e síntese
C2	Dominar a expresión e a comprensión de forma oral e escrita dun idioma estranxeiro.
C3	Utilizar as ferramentas básicas das tecnoloxías da información e as comunicacións (TIC) necesarias para o exercicio da súa profesión e para a aprendizaxe ao longo da súa vida.
C4	Desenvolverse para o exercicio dunha cidadanía aberta, culta, crítica, comprometida, democrática e solidaria, capaz de analizar a realidade, diagnosticar problemas, formular e implantar solucións baseadas no coñecemento e orientadas ao ben común.
C6	Valorar criticamente o coñecemento, a tecnoloxía e a información dispoñible para resolver os problemas cos que deben enfrontarse.
C7	Asumir como profesional e cidadán a importancia da aprendizaxe ao longo da vida.
C8	Valorar a importancia que ten a investigación, a innovación e o desenvolvemento tecnolóxico no avance socioeconómico e cultural da sociedade.

Learning outcomes

Subject competencies (Learning outcomes)	Study programme competences		
Ability to develop Android applications in mobile devices, specific processors and embedded systems	A32 A34	B1 B3	C2 C3 C4 C6 C7 C8
Ability to develop Android applications with capacity of communications and interaction	A32 A34	B1 B3	C2 C3 C4 C6 C7 C8

Contents



Topic	Sub-topic
1.1. Introduction to Systems Program	Introduction to Systems Program Subject presentation
1.2. Introduction to Android	History and evolution Architecture and characteristics Main components
1.3. Development tools	SDK and Android Studio instalation Basic application and application structure Debugging Resources
2.1. Activities and Intents	Cycle of life Manifest Intents, explicit and implicit Parameters exchange
2.2. User interface	Layouts Views Events
2.3. Fragments	Concept Fragments statics and dynamics Fragments communication
2.4. Working in background	Local Services Bound Services Broadcast Receivers Processes and Threads Asynchronous threads
3.1. Interacting with user	Menu and Action Bar Contextual menu Notifications Dialogs Lists and Adapters
3.2. Data persistence	Preferences Files internal and external Data bases Content Providers Loaders
3.3. Interconnection	Sockets Connection by Post Protocols: XML y JSON
3.4. AppWidgets and Distribution	AppWidgets Publication Monetization and Publicity Optimization
4.1. System services and Sensors	System services Connectivity Wifi and Phone Services Sensors
4.2. Localization and Maps	Localization Maps (Google Maps library) Localization Services



4.3. Multimedia and Camera	Multimedia reproduction Audio Manager Camera
4.4. Animations and Graphics	Animations Graphics Multiple events

Planning			
Methodologies / tests	Ordinary class hours	Student?s personal work hours	Total hours
Laboratory practice	14	35	49
Supervised projects	7	24.5	31.5
Mixed objective/subjective test	2	0	2
Guest lecture / keynote speech	21	42	63
Personalized attention	4.5	0	4.5

(*)The information in the planning table is for guidance only and does not take into account the heterogeneity of the students.

Methodologies	
Methodologies	Description
Laboratory practice	<p>Students will develop practices in the laboratory for learning programming mobile devices with Android.</p> <p>A series of practices following a script to familiarize the student with the concepts and basic procedures of Android programming will be raised.</p> <p>It will also promote the expansion and improvement of the basic features of each proposed practice as well as the discussion and resolution of problems.</p> <p>Practices consist of a face-to-face part (which is delivered to the end) and other non-Presential delivered before the next class of laboratory.</p> <p>Part-time students could present all the practices of non Presential form.</p>
Supervised projects	<p>Works (applications) will be proposed to make students deepen in topics covered by the course and explore new knowledge.</p> <p>It will be valued especially that the application is functional and robust.</p> <p>Each work will be developed by a small number of students (typically between 2 and 4), so that coordination and working methodology is important.</p> <p>Ideas and problems will be discussed primarily during the hours tutoring in small groups.</p> <p>A report of follow-up in each phase of development will also be required.</p>
Mixed objective/subjective test	Examination of the contents of the subject that will combine theory with problem solving questions
Guest lecture / keynote speech	<p>Didactic exhibition of the theoretical content of the subject using slides and other ICT resources.</p> <p>Also, certain basic application will be explain in detail so that students can implement them and tested during laboratory practices.</p>

Personalized attention	
Methodologies	Description
Guest lecture / keynote speech	Keynote session: attend and answer questions from students in relation to the theoretical material exposed in the lectures.
Laboratory practice	Laboratory practice: attend and answer questions from students in relation to proposed or carried out in the laboratory practices.
Supervised projects	Supervised projects: attend and answer questions from students in relation to the proposed projects.



Assessment

Methodologies	Description	Qualification
Laboratory practice	Evaluation of the work done by the student in the laboratory practice by means of mixed tests.	40
Supervised projects	Evaluation of the work done by the student in the supervised projects by means of mixed tests.	20
Mixed objective/subjective test	The knowledge of the subject will be valued (including the problem solving) by means of mixed tests.	40

Assessment comments

The subject is approved by obtaining at least 50% of the rating.

It is necessary to get more than 30% of the note in each section: laboratory practice, supervised projects and mixed practice.

Sources of information

Basic	<ul style="list-style-type: none">- Wie Meng Lee (2012). Android 4 Desarrollo de aplicaciones. Wrox (Anaya Multimedia)- Lauren Darcey y Shane Conder (2012). Android 4. Programación. Anaya- Erik Hellman (2013). Android Programming: Pushing the Limits. Wiley- Scott McCracken (2012). Android. Curso de desarrollo de aplicaciones. Inforbook- Jesús Tomás Gironés (2012). El gran libro de Android. Marcombo- Joan Ribas Lequerica (2014). Manual imprescindible de desarrollo de aplicaciones para Android. Anaya Multimedia- Reto Meier (2012). Professional Android 4 Application Development. Wrox
Complementary	<ul style="list-style-type: none">- Lauren Darcey y Shane Conder (2012). Android Application development in 24 hours. SAMS- Joshua J. Drake , Zach Lanier , Collin Mulliner , Pau Oliva Fora, Stephen A. Ridley , Georg Wichersk (2014). Android Hacker's Handbook. Wiley- José Enrique Amaro Soriano (2012). Android. Programación de dispositivos móviles a través de ejemplos. Marcombo- Joan Ribas Lequerica (2012). Desarrollo de aplicaciones para Android. Anaya- Anders Goransson (2014). Efficient Android Threading: Asynchronous Processing Techniques for Android Applications. O'Reilly Media

Recommendations

Subjects that it is recommended to have taken before

Subjects that are recommended to be taken simultaneously

Sistemas Empotrados/614G01060

Subjects that continue the syllabus

Sistemas Operativos/614G01016

Concurrencia e Paralelismo/614G01018

Other comments

(*)The teaching guide is the document in which the URV publishes the information about all its courses. It is a public document and cannot be modified. Only in exceptional cases can it be revised by the competent agent or duly revised so that it is in line with current legislation.