UNIVERSIDADE DA CORUÑA

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 sóftware dos ditos sistemas.
A34	Capacidade de deseñar e implementar sóftware 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 presentaction
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	Students will develop practices in the laboratory for learning programming mobile devices with Android. A series of practices following a script to familiarize the student with the concepts and basic procedures of Android programming will be raised. 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. 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. Part-time students could present all the practices of non Presential form.
Supervised projects	Works (applications) will be proposed to make students deepen in topics covered by the course and explore new knowledge. It will be valued especially that the application is functional and robust. Each work will be developed by a small number of students (typically between 2 and 4), so that coordination and working methodology is important. Ideas and problems will be discussed primarily during the hours tutoring in small groups. A report of follow-up in each phase of development will also be required.
Mixed objective/subjective test	Examination of the contents of the subject that will combine theory with problem solving questions
Guest lecture / keynote speech	Didactic exhibition of the theoretical content of the subject using slides and other ICT resources. Also, certain basic application will be explain in detail so that students can implement them and tested during laboratory practices.

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