



Teaching Guide

Teaching Guide				
Identifying Data				2019/20
Subject (*)	Architectures and Mobile Platforms		Code	614502005
Study programme	Mestrado Universitario en Enxeñaría Informática (plan 2012)			
Descriptors				
Cycle	Period	Year	Type	Credits
Official Master's Degree	2nd four-month period	First	Obligatory	6
Language	SpanishGalician			
Teaching method	Face-to-face			
Prerequisites				
Department	Enxeñaría de Computadores			
Coordinador	Fernández Caramés, Tiago Manuel	E-mail	tiago.fernandez@udc.es	
Lecturers	Fernández Caramés, Tiago Manuel	E-mail	tiago.fernandez@udc.es	
Web	https://moodle.udc.es/course/view.php?id=50538			
General description	In this subject the student gains basic knowledge about mobile technologies and their application by means of design and development of applications for mobile devices.			

Study programme competences

Code	Study programme competences
A11	Capacidade de deseñar e desenvolver sistemas, aplicacións e servizos informáticos en sistemas encaixados e ubicuos.
B1	Capacidade de resolución de problemas.
B5	Habilidades de xestión da información.
B9	Capacidade para xerar novas ideas (creatividade).
B10	Capacidade para proxectar, calcular e deseñar produtos, procesos e instalacións en todos os ámbitos da enxeñaría informática
B13	Capacidade para o modelado matemático, cálculo e simulación en centros tecnolóxicos e de enxeñaría de empresa, particularmente en tarefas de investigación, desenvolvemento e innovación en todos os ámbitos relacionados coa Enxeñaría en Informática
B14	Capacidade para a elaboración, planificación estratéxica, dirección, coordinación e xestión técnica e económica de proxectos en todos os ámbitos da Enxeñaría en Informática seguindo criterios de calidade e ambientais
B17	Capacidade para a aplicación dos coñecementos adquiridos e de resolver problemas en contornas novas ou pouco coñecidos dentro de contextos máis amplos e multidisciplinares, sendo capaces de integrar estes coñecementos
B21	Posuír e comprender coñecementos que acheguen unha base ou oportunidade de ser orixinais no desenvolvemento e/ou aplicación de ideas, a miúdo nun contexto de investigación
B22	Que os estudantes saiban aplicar os coñecementos adquiridos e a súa capacidade de resolución de problemas en contornas novas ou pouco coñecidos dentro de contextos máis amplos (ou multidisciplinares) relacionados coa súa área de estudo
B23	Que os estudantes sexan capaces de integrar coñecementos e enfrontarse á complexidade de formular xuízos a partir dunha información que, sendo incompleta ou limitada, inclúa reflexións sobre as responsabilidades sociais e éticas vinculadas á aplicación dos seus coñecementos e xuízos
B25	Que os estudantes posúan as habilidades de aprendizaxe que lles permitan continuar estudando dun modo que haberá de ser en gran medida autodirixido ou autónomo
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

Learning outcomes	Study programme competences
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Understand, design and develop systems and services for mobile devices.	AJ11	BJ1 BJ5 BJ9 BJ10 BJ13 BJ14 BJ17 BC1 BC2 BC3 BC5	CJ4 CJ6 CJ7 CJ8
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Contents	
Topic	Sub-topic
Introduction to mobile architectures and platforms	Hardware: architectures and platforms. ARM architecture. Software: platforms and mobile operative systems. Historic perspective, development ecosystem, market and monetization.
User experience: Usability and user interfaces	Introduction to mobile app and user interface usability Style guides and design pattern for graphic user interfaces for mobile devices. Examples.



Mobile device architecture and software design. Application to Android	Building a first app: environment and development and debugging tools App components Relationship among apps, virtual machines and Linux processes Activity Life-cycle Task parallelization: AsyncTask Data serialization/deserialization, Fragments and Parcelables Services Content Providers, Content Resolvers, Loaders Recycler View Apps, processes and threads: IPC in Android Android Binder Geolocation Storage Multimedia Mobile device software patterns: MVC and its versions
Event-guided programming and concurrency management	Event-guided programming. Advanced concepts Patterns: Publisher/Subscriber, Active Object, Monitor Object, Half/Sync-Half-Async and Thread Pool. Application to Android
Web based, hybrid and native applications	Mobile web application development Hybrid mobile application development Development frameworks
Mobile platform sensing	Transducers Mobile displays. Types and technologies Mobile HMI
Pantallas e Mobile HMI	Pantallas nos dispositivos m3viles. Tipos e tecnolox3as empregadas. Mobile HMI.



Planning

Methodologies / tests	Competencies	Ordinary class hours	Student's personal work hours	Total hours
Guest lecture / keynote speech	A11 B5 B10 B13 B14 B17 B21 B25 C4 C6 C7 C8	21	33	54
ICT practicals	A11 B1 B5 B9 B10 B13 B14 B22 B23	26	52	78
Objective test	B1 B17 B22 B23	4	0	4
Personalized attention		14	0	14

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

Methodologies

Methodologies	Description
Guest lecture / keynote speech	Lectures on the content of the subject
ICT practicals	ICT practicals to put in practice the concepts learned on the lectures
Objective test	Test to assess the learned practical and theoretical concepts

Personalized attention

Methodologies	Description
ICT practicals	The professor will tutor the students and will guide them during the practical lessons. Part-time students: it will not be required the attendance to the practical lessons, which will be flexible with the delivery and defence dates. In the same way, tutoring will be adapted to the scheduling restrictions of the part-time students.

Assessment

Methodologies	Competencies	Description	Qualification
ICT practicals	A11 B1 B5 B9 B10 B13 B14 B22 B23	Valoración dos resultados e coñecementos obtidos nas prácticas desenvolvidas.	60
Objective test	B1 B17 B22 B23	Valoración das competencias asimiladas na materia.	40

Assessment comments

The practical part of the subject will consist in developing practical examples about the content of the theory lessons. Its evaluation will be performed progressively, with clear deadlines. Such a practical part could be replaced with the development of a mobile application or a individual assignment. The objective test will be divided into two parts: one oriented towards evaluating the practical developments and a second one about the theoretical content.

Part-time students: attendance to the practical part will not be required and its delivery will follow a flexible schedule.

Sources of information

Basic	- Theresa Neil (2012). Mobile Design Pattern Gallery. O'Reilly - N. D. Lane (2010). A Survey of Mobile Phone Sensing. IEEE Communications Magazine - Keith Andrews (2012). Human-Computer Interaction. Graz University of Technology - Zheng-Hua Tan (2004). Instrumentation and data acquisition. Aalborg University, Denmark - Google (2013). Android developers website. http://developer.android.com http://developer.android.com/training/index.html
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Complementary	- Pei Zheng (2005). Smart Phone and Next Generation Mobile Computing. Morgan Kaufmann - Sajal K. Das (2010). Mobile Handset Design . Wiley - Lauren Darcey (2011). Sams Teach Yourself Android Application Development in 24 Hours. Sams - Jakob Strom (2012). HMI Toolsuite for Android. Chalmers University of Technology, Gothenburg - Ricardo Galli Granada (2015). Principios y algoritmos de concurrencia. Autoeditado El libro "Principios y algoritmos de concurrencia" está disponible en Google Books.
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Recommendations

Subjects that it is recommended to have taken before

Subjects that are recommended to be taken simultaneously

Subjects that continue the syllabus

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.