



## Teaching Guide

Identifying Data				2024/25
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	Blanco Novoa, Óscar Fernández Caramés, Tiago Manuel	E-mail	o.blanco@udc.es tiago.fernandez@udc.es	
Web	campusvirtual.udc.gal			
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 / results

Code	Study programme competences / results
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 / results		
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

Contents	
Topic	Sub-topic
Introduction to mobile architectures and platforms	<p>Hardware: architectures and platforms. ARM architecture.</p> <p>Software: platforms and mobile operative systems. Historic perspective, development ecosystem, market and monetization.</p>
User experience: Usability and user interfaces	<p>Introduction to mobile app and user interface usability</p> <p>Style guides and design pattern for graphic user interfaces for mobile devices. Examples.</p>
Mobile device architecture and software design. Application to Android	<p>Building a first app: environment and development and debugging tools</p> <p>App components</p> <p>Relationship among apps, virtual machines and Linux processes</p> <p>Activity Life-cycle</p> <p>Task parallelization</p> <p>Fragments</p> <p>Services</p> <p>Apps, processes and threads</p> <p>Geolocation</p> <p>Storage</p> <p>Multimedia components</p>
Event-guided programming and concurrency management	<p>Event-guided programming. Advanced concepts</p> <p>Application to Android</p>



Mobile platform sensing	Introduction to sensing for mobile platforms  Basic concepts on sensing and types of sensors  Use of Sensors in Android
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Planning				
Methodologies / tests	Competencies / Results	Teaching hours (in-person & virtual)	Student's personal work hours	Total hours
Guest lecture / keynote speech	A11 B5 B10 B13 B14 B17 B21 B25 C4 C6 C7 C8	21	21	42
ICT practicals	A11 B1 B5 B9 B10 B13 B14 B22 B23	23	52	75
Objective test	B1 B17 B22 B23	4	14	18
Personalized attention		15	0	15

(\*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 and with attendance exemption academic waiver: it will not be required the attendance to the practical lessons. In the same way, tutoring will be adapted to the scheduling restrictions of the part-time students.

Assessment			
Methodologies	Competencies / Results	Description	Qualification
ICT practicals	A11 B1 B5 B9 B10 B13 B14 B22 B23	Evaluation of the results and knowledge acquired during the ICT practicals	60
Objective test	B1 B17 B22 B23	Evaluation of the competences acquired in the subject	40

Assessment comments
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## FIRST CALL

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.

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.

## SECOND CALL AND EXTRA CALLS

The students will have the opportunity to maintain the marks obtained during the ICT practicals and the supervised project. Such students will carry out a mixed test, establishing the final mark according to the same percentages applied for the first call. The rest of the students (including part-time students) will take a single mixed test (60% of the total mark) and will carry out a supervised project (40% of the total mark).

## OTHER COMMENTS

No marks will be preserved from one course to another.

The fraudulent performance of tests or assessment activities, once verified, will directly involve the qualification of failed in the call in which it is committed: the student will be qualified with "failed" (numerical grade 0) in the corresponding call of the academic year, both if the offense is committed in the first opportunity as in the second.

For this, the qualification will be modified in the first opportunity report, if necessary.

All aspects related to "academic exemption," "study dedication," "continuity," and "academic fraud" will follow current academic regulations of UDC.

## Sources of information

<b>Basic</b>	<ul style="list-style-type: none"><li>- Theresa Neil (2012). Mobile Design Pattern Gallery. O'Reilly</li><li>- N. D. Lane (2010). A Survey of Mobile Phone Sensing. IEEE Communications Magazine</li><li>- Keith Andrews (2012). Human-Computer Interaction. Graz University of Technology</li><li>- Ian Lake Reto Meier (2018). Professional Android. John Wiley &amp; Sons</li><li>- Google (2023). Android developers website. <a href="http://developer.android.com">http://developer.android.com</a></li><li>- JetBrains (2023). Kotlin. <a href="https://kotlinlang.org/">https://kotlinlang.org/</a></li></ul>
<b>Complementary</b>	<ul style="list-style-type: none"><li>- Sajal K. Das (2010). Mobile Handset Design . Wiley</li><li>- Lauren Darcey (2011). Sams Teach Yourself Android Application Development in 24 Hours. Sams</li><li>- Jakob Strom (2012). HMI Toolsuite for Android. Chalmers University of Technology, Gothenburg</li><li>- Ricardo Galli Granada (2015). Principios y algoritmos de concurrencia. Autoeditado</li></ul>

## 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



This subject will comply with the different regulations for university teaching, respecting the gender perspective (e.g. non-sexist language will be used).

The Green Campus guidelines on sustainability will be followed, including:

The submission of documents created for this subject:

It will be requested in virtual format and/or as electronic files.

It will be performed through Moodle, in digital format without the need for printing them.

Sustainable use of resources and prevention of negative impacts on the natural environment will be ensured.

The importance of ethical principles related to sustainability values in personal and professional behaviors will be taken into account.

**(\*)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.**