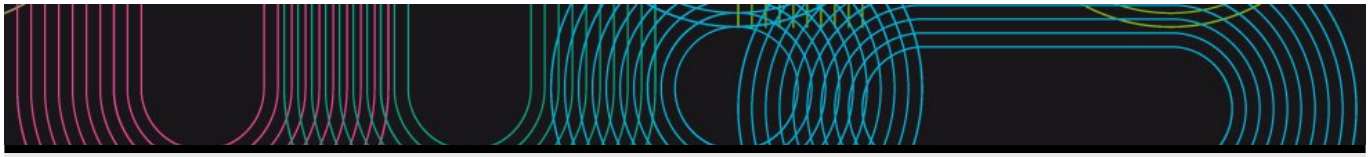

IDENTIFYING DATA				
Mobile devices				
Subject	Mobile devices			
Code	O06G151V01416			
Study programme	Grado en Ingeniería Informática			
Descriptors	ECTS Credits	Choose	Year	Quadmester
	6	Optional	4th	1st
Teaching language	#EnglishFriendly Spanish Galician			
Department				
Coordinator	Sorribes Fernández, José Manuel			
Lecturers	Sorribes Fernández, José Manuel			
E-mail	sorribes@uvigo.es			
Web	http://moovi.uvigo.gal			
General description	Has character of specialisation in the programming of applications for mobile devices employing the last available technologies. The matter is focused so that any student with knowledges of programming oriented to objects, was able to develop programs for mobile and wireless devices that cover a wide rank of applications, from games and multimedia applications until corporate applications. English Friendly subject: International students may request from the teachers: a) materials and bibliographic references in English, b) tutoring sessions in English, c) exams and assessments in English.			

Training and Learning Results	
Code	
A2	Students will be able to apply their knowledge and skills in their professional practice or vocation and they will show they have the required expertise through the construction and discussion of arguments and the resolution of problems within the relevant area of study.
A4	Students will be able to present information, ideas, problems and solutions both to specialist and non-specialist audiences.
A5	Students will acquire the learning skills that are required to pursue further studies with a high degree of independence.
B5	Ability to conceive, develop and maintain computing systems, services and applications through use of software engineering methods as tools to ensure quality, according to the knowledge and training acquired.
B6	Ability to conceive and develop centralized or distributed computing systems and architectures, integrating hardware, software and networks, according to the knowledge and training acquired.
B9	Ability to solve problems by taking the initiative, making decisions and acting independently and creatively. Ability to communicate the knowledge contents, skills and abilities of the Computer Science Engineer profession.
C4	Essential knowledge of use and programming of computers, operating systems, data bases and computer programs with application in engineering.
C5	Knowledge of the structure, organization, functioning and interconnection of computing systems, the foundations of their programming, and their application to the resolution of specific problems in engineering.
C23	Ability to design and assess human-computer interfaces to guarantee accessibility and usability of computer systems, services and applications.
C25	Ability to develop, maintain and assess software systems and services that satisfy all the demands of users and work reliably and efficiently, are easy to develop and maintain, and meet the quality standards, applying the theories, principles, methods and practices of Software Engineering.
C27	Ability to solve problems of integration according to available strategies, standards and technologies.
C28	Ability to identify and analyze problems and design, develop, implement, verify and document software solutions on the basis of sound knowledge of the theories, models and techniques available nowadays.
C36	Ability to design systems, applications and services based on network technologies, including the Internet, web, e-commerce, multimedia, interactive services and mobile computing.
D4	Analysis, synthesis and evaluation capacity
D5	Organizational and planning skills
D6	Ability to abstract: ability to create and use models that reflect real situations

D7	Ability to search, relate and structure information from various sources and to integrate ideas and knowledge.
D8	Ability to work in situations of lack of information and / or under pressure
D9	Ability to quickly integrate and work efficiently in unidisciplinary teams and to collaborate in a multidisciplinary environment
D11	Critical thinking
D13	Entrepreneurial spirit and professional ambition
D14	Have motivation for quality and continuous improvement

Expected results from this subject

Expected results from this subject	Training and Learning Results			
RA1. Handle distinct surroundings of development for the construction of applications for mobile devices.	A2		C4	D7 D9
RA2. Know the distinct operating systems used by the mobile devices.	A2 A5		C4 C5 C27 C28 C36	D4 D5 D6 D7 D8 D9 D11
RA3. Ensure the good operation of the applications developed.	A2 A4 A5	B5 B6 B9	C5 C23 C25 C27 C28 C36	D4 D5 D6 D7 D8 D9 D11 D13 D14
RA4. Understand the specific needs of this type of devices because of his architecture.	A2 A4 A5	B5 B6 B9	C4 C5 C27 C28 C36	D4 D5 D6 D7 D8 D9 D11 D13
RA5. Properly handle graphics and processing capabilities.	A2	B5 B6 B9	C4 C5 C23 C27 C28 C36	D4 D5 D6 D7 D8 D9 D11
RA6. Assume the responsibility of the information integrity and the unauthorised access to the same.	A2 A4 A5	B5 B9		D4 D5 D6 D7 D8 D9 D11 D14

Contents

Topic	
Development for mobile devices	Introduction, Development tools, Debugging and Emulation
Basic programming of applications for mobile devices	Business Logic and Design, Resources, Constants, Interface, Components and Events.
User Interaction Components. Dialogs	AlertDialog, Toast, Component Customizations
Basic User Interface	Elementary components, user interaction, debugging
Visualization of Collections. Lists	ArrayAdapter and ListView
Selection items. Menus	OptionMenu and ContextMenu
Storage	Storage preferences, internal file system, XML, internal and external storage
Multiactivities	Activity class and life cycle of an activity. Interaction between activities of a mobile application. Data sharing and application context

Storage with SQLite	Use of SQLiteOpenHelper and SQLiteDatabase. Execution of operations DML and DDL with databases SQLite.
Web applications with Android WebView and Apache Cordova	Using WebView. HTML+JavaScript applications, compilation and execution. Ionic, basics.
Connectivity with internet services. Multithread activities	Connectivity with web services, HTTP connections, connections over TCP/UDP sockets, XML and JSON exchange formats. I work with multithreaded activities with AsyncTask and Executor
Signature and publication of applications	Workflow, creation of necessary files, submission of the application to a Market.

Planning

	Class hours	Hours outside the classroom	Total hours
Lecturing	15	32	47
Laboratory practical	23.5	42.5	66
Problem solving	4	0	4
Autonomous problem solving	7	11	18
Objective questions exam	3	10	13
Project	0	2	2

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

Methodologies

	Description
Lecturing	They consist in masterclasses where will give the theoretical base of the matter and will expose examples, in addition to establishing the existent relation between the different topics. The professor will be able to request the active participation of the students.
Laboratory practical	Realization of complementary activities where the student propose an alternative solution to problems seen in classes of theory or practical. CONTINUOUS ASSESSMENT Mandatory character. Attendance: Not mandatory. OVERALL EVALUATION Mandatory character.
Problem solving	Resolution of doubts of the work in group during the hours of practices of laboratory.
Autonomous problem solving	Realization of a final practice that will allow to evaluate the work of the students during all the subject.

Personalized assistance

Methodologies	Description
Autonomous problem solving	All the forms of tutorship sessions will be able to make by telematic means (email, videoconference, forums of MOOVI, ...) Under the modality of previous concertation.

Assessment

	Description	Qualification	Training and Learning Results			
Objective questions exam	They will make two proofs written partial, one roughly in the half of the course, and another at the end. These proofs are eliminatory, that is to say, regarding the theoretical part, those students that approve these proofs will not need to present to first option. Results of learning: RA2, RA4, RA5, RA6.	60	A2 A4 A5	B5	C4 C5 C27 C28 C36	D4 D5 D7 D8 D11
Project	The students will make a project to measure that advance the subject, taking advantage of and applying the theoretical knowledges assimilated in the magistral session. This project will be necessary to deliver it when the subject finishes. Results of learning: RA1, RA2, RA3, RA4, RA5, RA6.	40	A2	B5 B6 B9	C4 C23 C25 C27 C28 C36	D4 D5 D6 D7 D8 D9 D11 D13 D14

Other comments on the Evaluation

CONTINUOUS ASSESSMENT SYSTEM

TEST 1: Evaluation objective questions

Description: Multiple choice test that will include evaluation of theoretical concepts corresponding to the first six topics. This test will take place approximately in the middle of the course.

Methodology(s) applied(s): Examination of objective questions.

% Qualification: 30%

% Minimum: For the release of this part of the course the student must obtain a grade equal to or greater than 4 points (out of 10).

Assessed skills: A2, A4, A5, B5, C4, C5, C27, C28, C36, D4, D5, D7, D8, D11

Assessed learning outcomes: RA2, RA4, RA5, RA6.

TEST 2: Evaluation objective questions

Description: Multiple choice test that will include evaluation of theoretical concepts corresponding to the first six topics. This test will take place approximately at the end of the course.

Methodology(s) applied(s): Examination of objective questions.

% Qualification: 30%

% Minimum: For the release of this part of the course the student must obtain a grade equal to or greater than 4 points (out of 10).

Assessed skills: A2, A4, A5, B5, C4, C5, C27, C28, C36, D4, D5, D7, D8, D11

Assessed learning outcomes: RA2, RA4, RA5, RA6

TEST 3: Project

Description: Delivery and defense of a project consisting of the development of an application for Android mobiles. The project will be presented and defended at the end of the course.

Methodology(s) applied: Project.

% Qualification: 40%

% Minimum: For the release of this part of the course, the student must obtain a grade equal to or greater than 5 points (out of 10).

Evaluated skills: A2, B5, B6, B9, C4, C23, C25, C27, C28, C36, D4, D5, D6, D7, D8, D9, D11, D13, D14

Assessed learning outcomes: RA1, RA2, RA3, RA4, RA5, RA6

- All students who take any of the tests are understood to be following the subject in person and therefore must follow the evaluation procedure described above.
- If a student does not take any of the tests, they will be assigned, at most, a grade of 4 in the total, according to the rest of the grades.
- The theme and scope of the project will be agreed with the teacher on the stipulated dates that will be published in Moovi.
- The project can be carried out in groups.
- In case of not passing the subject in the first call, the following will be saved for the extraordinary call and end of degree:
    - The mark of test 1 and test 2 in case of having passed both with an average score of 5.
    - The project mark in case of having obtained a minimum mark of 5.

GLOBAL EVALUATION SYSTEM

Procedure for choosing the global assessment modality: It is considered that the student opts for the global assessment system if they do not take Test 1 of the continuous assessment system.

TEST 1: Theoretical evaluation

Description: It consists of an individual test of the total subject.

Methodology(s) applied(s): Examination of objective questions.

% Qualification: 60%

% Minimum: For the release of this part of the course, the student must obtain a grade equal to or greater than 5 points (out of 10).

Assessed skills: A2, A4, A5, B5, C4, C5, C27, C28, C36, D4, D5, D7, D8, D11

Assessed learning outcomes: RA2, RA4, RA5, RA6

TEST 2: Project

Description: Delivery and defense of a project consisting of the development of an application for Android mobiles.

Methodology(s) applied: Project.

% Qualification: 40%

% Minimum: For the release of this part of the course, the student must obtain a grade equal to or greater than 5 points (out of 10).

Evaluated skills: A2, B5, B6, B9, C4, C23, C25, C27, C28, C36, D4, D5, D6, D7, D8, D9, D11, D13, D14

Assessed learning outcomes: RA1, RA2, RA3, RA4, RA5, RA6

- The theme and scope of the project will be agreed with the teacher on the stipulated dates that will be published in Moovi.
- If a student does not take any of the tests, they will be assigned, at most, a grade of 4 in the total, according to the rest of the grades.
- The project will be done individually.
- In case of not passing the subject in the first call, the following will be saved for the extraordinary call and end of degree:
    - The mark of test 1 in case of having obtained a minimum mark of 5.
    - The project mark in case of having obtained a minimum mark of 5.

EVALUATION CRITERIA FOR EXTRAORDINARY CALL AND FINAL DEGREE

The global assessment system set out above will be used for both continuous and global assessment students.

RECORD QUALIFICATION PROCESS

Regardless of the evaluation system and the call, if any part of the evaluation is not passed, but the overall score is greater than 4 (out of 10), the qualification in the minutes will be 4.

EVALUATION DATES

The dates of the tests corresponding to the continuous assessment system will be published in the calendar of activities, available on the ESEI website https://esei.uvigo.es/docencia/horarios/.

The official exam dates of the different calls, officially approved by the Xunta de Centro of the ESEI, are published on the ESEI website https://esei.uvigo.es/docencia/horarios/.

USE OF MOBILE DEVICES

All students are reminded of the prohibition of the use of mobile devices in evaluations of exercises and practices, in compliance with article 13.2.d) of the University Student Statute, regarding the duties of university students, which establishes the duty to "Refrain from the use or cooperation in fraudulent procedures in the evaluation tests, in the works that are carried out or in official documents of the university."

CONSULTATION/REQUEST FOR TUTORIALS

The tutorials can be consulted through the personal page of the teaching staff, accessible through https://esei.uvigo.es/docencia/profesorado/

Sources of information

Basic Bibliography

Tomás Gironés, Jesús; Lloret Mauri, Jaime, **El Gran Libro de Android**, 9788426733665, 9, Marcombo - 978-8426733665, 2022

Complementary Bibliography

Tomás Gironés, Jesús; Puga, Gonzalo; Santamaría, David; Barroso, Jorge, **El gran libro de android avanzado**, 9788426722577, 5, Marcombo - 978-8426722577, 2019

Ribas Lequerica, Joan, **Desarrollo De Aplicaciones Para Android**, 9788441538092, 1, Anaya Multimedia - 978-8441538092, 2017

Recommendations