Universitat de Lleida

DEGREE CURRICULUM

APPLICATIONS FOR MOBILE DEVICES

Coordination: MATEO FORNES, JORDI

Academic year 2023-24

APPLICATIONS FOR MOBILE DEVICES 2023-24

Subject's general information

Subject name	APPLICATIONS FOR MOBILE DEVICES
Code	102386
Semester	2nd Q(SEMESTER) CONTINUED EVALUATION
Typology	Degree: Bachelor's degree in Digital Interaction and Computing Techniques; Course: 2; Character: COMPULSORY; Modality: Attendance-based
Course number of credits (ECTS)	6
Type of activity, credits, and groups	Only examination
Coordination	MATEO FORNES, JORDI
Department	COMPUTER ENGINEERING AND DIGITAL DESIGN
Teaching load distribution between lectures and independent student work	Globally, the subject has 150 hours of work spread over 60 hours and 90 hours of individual student work. 6 ECTS = 25 * 6 = 150 hours of work 40% -> 60 face-to-face hours 60% -> 90 hours of autonomous student work
Important information on data processing	Consult this link for more information.
Language	Catalan (in Spanish if any student shows difficulties with Catalan). The material of the subject in English.

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Teaching staff	E-mail addresses	Credits taught by teacher	Office and hour of attention
MATEO FORNES, JORDI	jordi.mateo@udl.cat	0	

Subject's extra information

To follow this subject properly some previous knowledge in **JAVA** is recommended.

Learning objectives

- Understand the Android platform and the elements that make it up.
- Understand the most recommended and used development environment.
- Develop applications for the Android operating system.
- Establish the bases for the implementation of additional functionalities (access to the database, access to resources and features of the mobile, etc.).
- Get to know the step of publishing Android applications.

Competences

Basic:

- *CB3:* That students have the ability to gather and interpret relevant data (usually within their area of study) to make judgments that include a reflection on relevant social, scientific or ethical issues.

Transversal:

- *CT3*: Acquire training in the use of new technologies and information and communication technologies.
- *CT6*: Apply the gender perspective to the tasks of the professional field.

General:

- *CG1*: Capacity to conceive, plan and develop projects in the field of ICT.
- *CG2*: Capacity to design, develop, evaluate and ensure the accessibility, ergonomics, usability and security of computer systems.
- *CG4*: Capacity to use software engineering methods in the development of interactive computer applications.
- *CG7*: Capacity to solve problems with initiative, decision-making, autonomy and creativity.

Specific:

- *CE3*: Basic knowledge of the use and programming of computers, operating systems and databases, and their use in the development of interactive applications
- *CE6*: Capacity to design, develop, select and evaluate applications and computer systems, ensuring its reliability, security and quality.
- *CE10*: Capacity to analyse, design, build and maintain safe and efficient applications, choosing the most suitable paradigm and programming languages.
- *CE14*: Knowledge and application of the necessary tools for the storage, processing and access to information systems, including those based on the web.

Subject contents

Topic 1 - *Introduction to the Android platform*

Topic 2 - *Activities, Life Cycle and Communication*

Topic 3 - *Fragments*

Topic 4 - *Testing*

Topic 5 - *Design Patterns*

Topic 6 - *View Model View-Model and DataBinding*

Topic 7 - *Local persistence. Database management*

Topic 8 - *API and Services (Retrofit)*

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Topic 9 - *Firebase and Authentication*

Topic 10 - *Firebase and Persistence*

Topic 11 - *Firebase and Messaging Services*

Topic 12 - *Shared Preferences*

Topic 13 - *Recycler View*

Methodology

An active methodology is used where the student is the **protagonist** of their learning (*learning to learn*) and is **responsible** for deciding what final product they want to develop and what knowledge they need to achieve the objectives of each delivery. A **cooperative** methodology is proposed, working in teams of 3 to 4 members to promote interdisciplinarity. Students will **incrementally** develop an innovative **app**. It is always based on the previous knowledge introduced in the theoretical sessions and/or learned in other courses of this degree. The different work rhythms of each group are respected.

The deliveries are **functional**, with constant *feedback* and *suggestions* from the teaching staff and the rest of the teams, allowing **pivoting** actions and **corrections**.

The theoretical part consists of a short introduction to each specific topic, supported by transparencies and / or specific notes. Class sessions are focused on active learning by the student, culminating in a small practical application.

Laboratory: based on examples and small projects, which are proposed and solved weekly in class.

The critical capacity of students in the choice and recommendation of development technologies will also be fostered. At the beginning of the course, different technology will be assigned to each group of students, and they will have to defend that technology (pros / cons) in a critical debate between the different technologies.

*** This course will not have face-to-face classes because the degree is in extintion.**

Development plan

Week	Theory	Lab	Homework
1	**T0** - Course presentation *Codelab00*	**T1** - Introduction to the Android platform *Codelab01*	DA1. Sprint I. Game structure.
2	**T2** - Activities, Life Cycle and Communication *Codelab02*	**T2** - Activities, Life Cycle and Communication DA1. Sprint I. Game structure.	DA1. Sprint I. Game structure.
3	**T5** - Design patterns *Codelab03*	**T5** - Design patterns *Codelab04*	DA2. Sprint II. Game functionality. Rules and dynamics.
4	**T5** - MVVM i Databindings *Codelab05*	DA2. Sprint II. Game functionality. Rules and dynamics.	DA2. Sprint II. Game functionality. Rules and dynamics.
5	**T7** - Local persistence. Database management. *Codelab06*	**T8** - API and Services (Retrofit) *Codelab07*	DA3. Sprint III. Game persistence
6	**T4** - Testing *Codelab08*	DA3. Sprint III. Game persistence	DA3. Sprint III. Game persistence
7	**T9** - Firebase y Autenticación	**Holidays**	DA4. Sprint IV. User authentication
8	**First Partial**		
9	**Holidays**	**T9** - Firebase y Autenticación DA4. Sprint IV. Autenticación de usuarios.	DA4. Sprint IV. User authentication
10	**T12** - Shared Preferences DA5. Sprint V	**T3** - Fragments DA5. Sprint V	DA5. Sprint V

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Week	Theory	Lab	Homework
11	Codelab09	**Holidays**	DA5. Sprint V
12	**Holidays**	**T13** - Recycler View	DA6. Sprint VI
13	**T10** - Firebase and Persistence *Codelab10*	DA6. Sprint VI	DA6. Sprint VI
14	**T11** - Firebase and Messaging Services	DA7. Sprint VII. Closing and Publication	DA7. Sprint VII. Closing and Publication
15	DA7. Sprint VII. Closing and Publication	DA7. Sprint VII. Closing and Publication	DA7. Sprint VII. Closing and Publication
16	**Second Partial**		
17			
18			
19	**Recoveries**		

Evaluation

Acr.	Evaluation Activities	Weight	Minimum Mark	Groups	Recoverable
E1	1st partial exam	30%	NO	NO	YES
E2	2nd partial exam	45%	NO	NO	YES
PRA	Assesment	25 %	NO	NO	NO
*** To pass the course, **FINAL MARK** must be *greater than or equal to* **5**.					

Considerations:

- If you have not passed the subject, you can go to the recovery exam.
- In this case the grade will be calculated as follows: Final grade = 75% * recuperation grade + 25% * PRA
- The recovery exam can only be attended in case of having failed the subject.

Bibliography

- Andrew Hunt and David Thomas. 2000. *The pragmatic programmer: from journeyman to master*. Addison-Wesley Longman Publishing Co., Inc., USA
- The Busv Coder's Guide to Android development. Mark L. Murphy. CommonWare. Edition 3.6. **url:** https://commonsware.com/Android/Android_3-6-CC.pdf
- Bill Phillips and Brian Hardy. 2013. *Android Programming: The Big Nerd Ranch Guide* (1st. ed.). Big Nerd Ranch.
- Dawn Griffiths, David Griffiths, Head First Kotlin: A Brain-Friendly Guide. O'Reilly Media, Inc.
- Dawn Griffiths, David Griffiths, Head First Android Development: A Brain-Friendly Guide. O'Reilly Media, Inc.
- Kathy Sierra: Head First Java, 2nd Edition, O'Reilly Media, Inc.
- F. Ableson, C. Collins, R. Sen, "Android, guía para desarrolladores" Anaya Multimedia, 2011
- S. Komatineni , D. MacLean , S. Hashimi "Pro Android 3" Apress, 2011
- D. Smith , J. Friesen "Android recipes: a Problem-solution approach" Apress, 2011