DEGREE CURRICULUM

APPLICATIONS FOR MOBILE DEVICES

Coordination: SENDIN VELOSO, MONTSERRAT

Academic year 2022-23

APPLICATIONS FOR MOBILE DEVICES 2022-23

Subject's general information

<table>
<tr><td>Subject name</td><td>APPLICATIONS FOR MOBILE DEVICES</td></tr>
<tr><td>Code</td><td>102025</td></tr>
<tr><td>Semester</td><td>2nd Q(SEMESTER) CONTINUED EVALUATION</td></tr>
<tr><td>Typology</td><td>
<table>
<tr><th>Degree</th><th>Course</th><th>Character</th><th>Modality</th></tr>
<tr><td>Bachelor's Degree in Computer Engineering</td><td>3</td><td>COMPULSORY</td><td>Attendance-based</td></tr>
<tr><td>Bachelor's Degree in Computer Engineering</td><td>3</td><td>OPTIONAL</td><td>Attendance-based</td></tr>
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<tr><td>Course number of credits (ECTS)</td><td>6</td></tr>
<tr><td>Type of activity, credits, and groups</td><td>
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<tr><th>Activity type</th><td>PRALAB</td><td>TEORIA</td></tr>
<tr><th>Number of credits</th><td>3</td><td>3</td></tr>
<tr><th>Number of groups</th><td>1</td><td>1</td></tr>
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<tr><td>Coordination</td><td>SENDIN VELOSO, MONTSERRAT</td></tr>
<tr><td>Department</td><td>COMPUTER SCIENCE AND INDUSTRIAL ENGINEERING</td></tr>
<tr><td>Teaching load distribution between lectures and independent student work</td><td>30% Presential (equivalent to 45h)
70% Autonomous work (equivalent to 105h)</td></tr>
<tr><td>Important information on data processing</td><td>Consult this link for more information.</td></tr>
<tr><td>Language</td><td>Preferably Catalan (Spanish if any student shows dificulties with Catalan).</td></tr>
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APPLICATIONS FOR MOBILE DEVICES 2022-23

Teaching staff	E-mail addresses	Credits taught by teacher	Office and hour of attention
SENDIN VELOSO, MONTSERRAT	montse.sendin@udl.cat	6	

Subject's extra information

This subject belongs to a optional specialization module called 'Information Technologies'.

To follow this subject properly some previous knowledge in Java and/or in Kotlin programming language is recommended.

Learning objectives

- Knowing the Android platform and the elements that integrate it
- Knowing the most recommended IDE
- Develop applications for the Android operating system
- Get familiar in the User Interface design
- Knowing and managing some used API for Android
- Lay the foundations for the implementation of additional functionalities (data base access, location utility, resources and functionalities from the device, etc.)
- Knowing the step of publication for Android apps

Competences

University of Lleida strategic competences

CT2. Mastering a foreign language, especially English.

CT3. Training Experience in the use of the new technologies and the information and communication technologies.

Degree-specific competences

GII-T13. Capacity to use methodologies based in the user and the organisation in order to develop, evaluate and manage applications and systems based in the information technologies that ensure the accessibility, ergonomics and usability of the systems.

GII-T16. Capacity to conceive systems, applications and services based on network technologies, which include the internet, web pages, electronic commerce, multimedia, interactive services and mobile computing.

GII-T17. Capacity to comprise, apply and manage the computer systems guarantee and security.

Cross-disciplinary competences

EPS11. Capacidad de comprender las necesidades del usuario expresadas en un lenguage no técnioc.

Subject contents

Laying the foundations

APPLICATIONS FOR MOBILE DEVICES 2022-23

Block I - *Getting started*

- Theme 1 - Introduction to the Android platform and other mobile technologies
- Theme 2 - First steps: Android Studio development environment
- Theme 3 - Basics of Android applications

Block II – *Basic questions on User Interfaces*

- Theme 4 - Widgets: basic controls and selection controls
- Theme 5 - Organizing the screen: *Layouts*

Block III – *Advanced questions on User Interfaces*

- Theme 6 – Flexible User Interfaces with *fragments*
- Theme 7 – Menus and Navigation design

Exploring functionalities

Block IV – *Additional aspects*

- Theme 8 - Data persistence. Managing databases
- Theme 9 - Publication and distribution of an Android app

Methodology

Presential Part (class sessions)

- Theoretical-Practical Classes
- *Project-Based learning* and *Active Learning*
- Participatory and dynamic sessions
- It is worked with examples and small projects (*Mini-Activities*), to be proposed and solved weekly
- Put into practice of concepts through the development of a project (*Course project*).

Autonomous work (non presential):

- The development of the *Course Practical* will be done in non presential hours.

The **evaluation system** (detailed in the corresponding section) is composed of: 1) a writen tests (midterm exams); and 2) practices (to develop individually and/or in groups of two people).

SOFTWARE to be used:

- **Android Studio** (trying to maintain the last version of the environment and libraries), with diverse **emulators**, as well as the possibility to use an Android personal device.

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Development plan

Week	Laboratory addressed session - Theorical part (BsG)	Laboratory addressed session - Practical part (BsG)	Autonomous work

1	Subject presentation T1: Introduction to the Android platform		Study
2	T2: First steps: Android Studio development environment	*MiniActiv-1*: Good practices in resources management	Development environment configuration and *MiniActiv-1* completion
3	T3: Basics of Android applications	*MiniActv-2*: Endowing Helloworld of Interactivity and Navigation	Study and *MiniActiv-2* completion
4	T3: Basics of Android applications.	*MiniActv-3*: Knowing thoroughly the EPS with implicit intents	Study and *MiniActiv-3* completion
5	T3: Basics of Android applications	*MiniActv-4*: Expanding player service to demand	Study *and MiniActiv-4* completion
6	T3: Basics of Android applications		Study
7	T4: Widgets: basic controls and selection controls		Study and *Prac1* starting
8	T5: Organizing the screen: *Layouts*		Study and *Prac1* development
9	1rst midterm		
10	T5: Organizing the screen: *Layouts*		Study and *Prac1* development
11	T6: Flexible User Interfaces with *fragments*		Study and *Prac1* development
12	T6: Flexible User Interfaces with *fragments*		Study
13	T7: Menus and Navigation design		Study and *Prac2* starting *Prac1* delivey
14	T8: Data persistence. Managing databases		Study and *Prac2* development
15	T8: Data persistence. Managing databases T9: Publication and distribution of an Android app		Study and *Prac2* development
16	2nd midterm week		Study and *Prac2* completion
17	2nd midterm week		Study. *Prac2* delivey
18	Tutories		
19	Recovery Personalized interview (if *Prac* is below the minimum mark required)		
20			

Evaluation

Activt.	Description	Weight	Minimum Grade	In group	Presential	Recoverable
Part1	First midterm exam	30%	3,0	No	Yes	Yes

Part2	Second midterm exam	10%	NO	No	Yes	Yes
MiniActivs	Pack of Mini-activities	10%	No	Yes	No	No
Prac	Course practice	50%	4,0	Yes	No	Yes

Final grade = 0,30 * Part1 + 0,10 * Part2 + 0,10 * MiniActivs + 0,50 * Prac

- Subject is passed if **final grade** is greater or equal than **5,0** and each part is above the minimum required (1rst midterm and *Prac*).

Other considerations and criteria:

- Type of term exams:
  - 1st term exam: concept fixation and little problems solving.
  - 2nd term exam: questions about the resolution of the *Prac* and theorical part regarding Themes 8 and 9. Although the exam issues a mark to be pondered (10%), questions about *Prac*, besides, serve to validate it.
- Recovery exam: it will consist in the same type of exam than for the corresponding term exam.
- Pack of mini-activities (*MiniActivs*):
  - Continuous work as a practical application of the class sessions contents. Most of them propose a compulsary and an optional part.
  - *Objective*: put into practice *in-situ* new contents introduced in class during the 1st term. 2nd term contents will be applied directly to the Course practice (Prac).
  - *Delivery*: via the CV and also presentially (preferibly during the class).
  - *Evaluation*:
    - Compulsory part: up to 1 point (complete mark).
    - Compulsory and optionat part: up to 1,75 (0,75 points over the mark).
- Course practice (*Prac*):
  - Articulated in 2 deliveries, in which *Prac1* is the common trunk and *Prac2* is an extension (advances version of *Prac1*).
    - *Weight and calendar of each delivery*:
      - *Delivery 1* (*Prac1*): 13ª Week. (25% of the grade)
      - *Delivery 2 (Prac2)*: 17ª Week. (25% of the grade)
  - *Global minimum grade required*: 4 (in the average of both deliveries *Prac1* and *Prac2*).
  - *Avaluation and recovery system*: continuous avaluation
    - Will be required:
      - Minimal requirements to be fulfilled in code, which are delivered to students both, in a descriptive and numerical way.
      - Criteria set in the **Manual of good programming practices** will be required, specified as minimum requirements to fulfill.
      - Also additional requirements, which will be considered as extra points in the grade.
    - Students receive feedback according to these correction criteria.
      - *Prac1*: Possibility of improvement through the 2nd delivery.
        - Improvements applied to the common trunk (*Prac1*) by means of the *Prac2* delivery, will be counted applying a ***corrector factor of 0,85***. The resultant mark will **sustitute** the mark initially obtained in *Prac1*.
      - *Prac2,* in case the mark is under the minimum required: *personalized interview* during the 19th week (recovery), aiming to bring improvements.
- For all activities: programmed deliveries, unmovable dates.

Bibliography

Books

- E. Hellman
  "Android programming : pushing the limits"
  Wiley, 2014

- T. Gironés, J. Barcelona

  "El Gran libro de Android Avanzado"
  Marcombo, 2014

- F. Ableson, R. Sen, C. King

  "Android in Action"

  Manning Publications, 2012 (3rd Edition)

Kotlin specífics:

- D. Griffiths, D. Griffiths

  "Head First Kotlin: A Brain-Friendly Guide"

  Sebastopol: O'Reilly Media, 2019

- Pierre-Olivier Laurence, Amanda Hinchman-Dominguez, G. Blake Meike, Mike Dunn

  ”Programming Android with Kotlin”

  O'Reilly Media, Inc, 2021